



Tanzania Forest  
Conservation Group  
Shirika la Kuhifadhi  
Misitu ya Asili Tanzania



## Two surveys of the biodiversity and forest condition of Rondo Proposed Nature Reserve in 2012 and 2013

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Cover photo: African pitta in Rondo FR by Elia Mulungu. View from the eastern edge of the Rondo plateau by Andrew Perkin.

## Executive Summary

Rondo Forest Reserve, on the Rondo plateau in Lindi region, is part of the coastal forest mosaic of Tanzania. The reserve is at an altitude of 465-885m above sea level, approximately 60 km from Lindi town. The Coastal Forests of Eastern Africa are considered to be a globally important biodiversity hotspot (Mittermeier et al. 2004). With two endemic and two near-endemic genera and 60 endemic plant species, Rondo Forest has the highest concentration of single-site endemic plant taxa in the Coastal Forests (Clarke *et al.* 2000). The reserve also provides habitat for the Coastal Forest-endemic and Critically Endangered primate, the Rondo dwarf galago (*Galagoides rondoensis*) as well as being an important breeding site for bird species such as the East Coast Akalat (*Sheppardia gunningi*).

As part of its survey programme, the Tanzania Forest Conservation Group (TFCG) has been conducting biodiversity and forest disturbance surveys in selected coastal and Eastern Arc forests, including Rondo proposed Nature Reserve. Surveys were carried out in Rondo proposed Nature Reserve in 2012 and 2013 with the objective of assessing the status of plants, birds, mammals and herpetofauna in the reserve; the extent of endemism supported by the forest; evaluating the rate of disturbances in the forest and making recommendations for improved conservation and management of the reserve. A combination of opportunistic and systematic surveys were used to survey plants and animals in the forest. A total of six survey sites were selected within the reserve: Site 1 - Ntene (good forest), Site 2 - Nanyolyo (woodland area), Site 3 - Nndawa (good forest), Site 4 - Nchinjidi (valley), Site 5 – Nandemo (disturbed forest) and Site 6 – Mkundinganya (disturbed forest).

Across the survey sites, a total of 297 plant species, representing 79 families and 221 genera, were recorded in 2012 and 2013. A further 163 plants were recorded in addition to this total which have not yet been identified to species level. Species richness varied across sites, with Site 1 – Ntene found to be the most species rich in both years ( $n_{2012}=168$ ,  $n_{2013}=220$ ). The least number of plant species were recorded in Site 6 – Mkundinganya in 2012 ( $n=63$ ), however one of the highest number of species recorded was found at this site in 2013 ( $n=212$ ), despite the high rate of disturbance recorded here. Conversely, fewer species were recorded in Site 4 in 2013 than 2012, despite consistently low rates of disturbance recorded here during surveys. A total of 13 endemic plants were recorded, with the majority of these at Site 1 – Ntene ( $n=11$ ). Three invasive plant species are known in Rondo FR, *Stachytarpheta jamaicensis*, *Lantana camara* and *Maesopsis eminii*. In particular, *Maesopsis eminii* is emerging as a significant threat to native species, especially in the central part of the forest near Ntene village.

A total of 127 bird species, including 37 families, were recorded in Rondo Forest Reserve by the 2012 and 2013 surveys. This total included five threatened species including the Endangered Spotted ground-Thrush (*Zoothera guttata*). Seven species that are near-endemic to coastal forests were recorded, including the East Coast Akalat (*Sheppardia gunningi*) for which the reserve is an important breeding site. The number of bird species recorded was highest at Site 4 – Nchinjidi, and lowest at Site 6 – Mkundinganya.

Mammal surveys recorded 17 species in Rondo FR, plus one unidentified duiker. Four of these species are classified by IUCN as Threatened, including the Critically Endangered and coastal forest endemic Rondo dwarf galago (*Galagoides rondoensis*).

A short survey of herpetofauna in the reserve recorded nine reptile and six amphibian species. One of these is endemic to coastal forests, Loveridge's forest toad (*Mertensophryne loveridgei*) and two are endemic to Tanzania and Kenya (*Spelaeophryne methneri* and the Bearded pygmy chameleon, *Rhampholeon brevicaudatus*). Further surveys of herpetofauna in Rondo Forest Reserve are required to ascertain detailed information on the diversity of amphibians and reptiles in the forest.

Forest disturbance surveys included assessment of tree cutting (pole size and timber size) and other disturbances, such as agricultural encroachment, fire damage and footpaths or roads. An average of 45.8 disturbance events per hectare were recorded, with the lowest rate of disturbance recorded in Site 5 and the highest in Site 6 (Table 1). Disturbance was particularly high at Site 6 due to agricultural activities in this area, on the outskirts of the reserve, and it was at this site that the lowest number of total bird species were recorded by the surveys. Overall, rates of tree cutting (poles and timber) were lower in 2013 ( $n=11.8/\text{ha}$ ) than in 2012 ( $n=15.5/\text{ha}$ ), and the majority of tree cutting signs were old. After tree cutting, fire was the most frequently recorded type of disturbance in the reserve. Based on disturbance surveys it was found that the ongoing mechanical removal of the invasive species *Maesopsis eminii* presents concern for acceleration in illegal logging of other species in the area, and so requires careful monitoring.

**Table 1.** Detailed summary of disturbance events recorded in both 2012 & 2013 surveys in Rondo Forest Reserve.

Survey site	Category	Tree cutting		Other disturbance s	Total disturbance events	Disturbance events/ha
		Poles	Timbers			
Site 1. Ntene	Good forest	8	87	23	118	6.6
Site 2. Nanyolyo	Woodland	4	3	133	140	7.9
Site 3. Nndawa	Good forest	6	13	75	94	5.3
Site 4. Nchinjidi	Valley	28	8	6	42	2.4
Site 5. Nandemo	Disturbed forest	10	0	23	33	1.9
Site 6. Mkundinganya	Disturbed forest	233	85	68	386	21.8
<b>Total</b>					<b>813</b>	<b>45.8</b>

It is recommended that more patrols are conducted in Rondo Forest Reserve and that laws to protect the forest be enforced more effectively and consistently in order to protect the important biodiversity in the forest. Management effectiveness would also be enhanced by involving local communities in reserve management through joint forest management. Careful monitoring of forest biodiversity needs to continue, and community awareness of the biological importance of the forest enhanced. In addition, appropriate methods for the removal of invasive species are needed, to avoid unintended consequences such as increased pathways and thus human encroachment in the area.

#### **Tanzania Forest Conservation Group**

The Tanzania Forest Conservation Group (TFCG) is a Tanzanian non-governmental organization that has been promoting the conservation of Tanzania's forests since 1985. TFCG's mission is to conserve and restore the biodiversity of globally important forests in Tanzania for the benefit of the present and future generations. We achieve this through capacity building, advocacy, research, community development and protected area management, in ways that are sustainable and foster participation, cooperation and partnership.

TFCG supports field-based projects promoting participatory forest management, environmental education, community development, advocacy and research in the Eastern Arc Mountain and Coastal Forests. TFCG also supports a community forest conservation network that facilitates linkages between communities involved in participatory forest management. To find out more about TFCG please visit our website <http://www.tfcg.org>.

#### **Forest Justice in Tanzania**

Forest Justice in Tanzania (FJT) is a four-year project (2011-2014) that aims to promote improved governance and increased accountability in Tanzania's forest sector. The initiative is a partnership between the Community Forest Conservation Network of Tanzania, known as MJUMITA and the Tanzania Forest Conservation Group (TFCG). The project is working through four inter-related strategies, which include 1) monitoring forest governance and forest condition; 2) promoting enforcement; 3) conducting research, analysis and communication; and 4) setting standards. The project is financed by DfID through the Accountability in Tanzania programme (AcT). For more information about the project, please visit <http://www.tfcg.org/publications.html>.



Team Leader, Justine Gwegime. Photo by Elia Mulungu.



Tiny greenbul. Photo by Elia Mulungu



*Rhampholeon brevicaudatus*. Photo by Elia Mulungu.



View of the Rondo Plateau. Photo by Andrew Perkin



Road through Rondo FR. Photo by Andrew Perkin.



African pitta. Photo by Elia Mulungu

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We are extremely grateful to the people of Lindi rural district for their cooperation in carrying out this survey. In particular, we would like to thank Mr Charles Mwaipopo (Lindi rural District Natural Resource Officer), Kelvin Lyandala (Forest Manager), Lucas Mabusu (Assistant Forest Manager), village leaders and all the villagers from Ntene, for their local knowledge and support.

### **Report Writing**

The report has been written by Justine Gwegime, Julia Latham, Moses Mwangoka, Elia Mulungu, Roy Gereau and Nike Doggart. Results of the herpetofauna survey were provided by Joanna Larson.

### **Editing**

The overall editing of the report was carried out by Julia Latham. The botanical section was edited by Roy Gereau.

### **Maps**

Maps were produced by Sylvia Kalemera.

### **Technical Advice**

We are also grateful to Nike Doggart for her scientific and technical advice, especially on report writing and implementation of activities throughout the entire survey period.

# 1 Introduction

## 1.1 Background to the Survey

As part of the Forest Justice in Tanzania project, the Tanzania Forest Conservation Group (TFCG) has been carrying out biodiversity and forest condition surveys in selected forests in the Eastern Arc Mountains and Coastal Forests. The aim of the surveys is to document the biodiversity values and the levels of resource use and disturbance in these target forests.

This report describes biodiversity surveys in the Rondo Forest Reserve (Rondo FR) on the Rondo plateau in Lindi region, which is at an altitude of 465-885 m above sea level (Figure 1 & Figure 2). Rondo FR is 4 km from Ntene Rondo village, approximately 60 km from Lindi town (Perkin *et al.*, 2008). The objective of the surveys in Rondo FR is to provide up-to-date assessments of the biodiversity value and condition of the forest. Specific objectives were to: i) Assess the status of plants, primates, forest antelopes and birds in Rondo FR and the extent of endemism supported by the forest, and ii) To evaluate the current extent of forest disturbance and make site-level recommendations for improving protection and management.

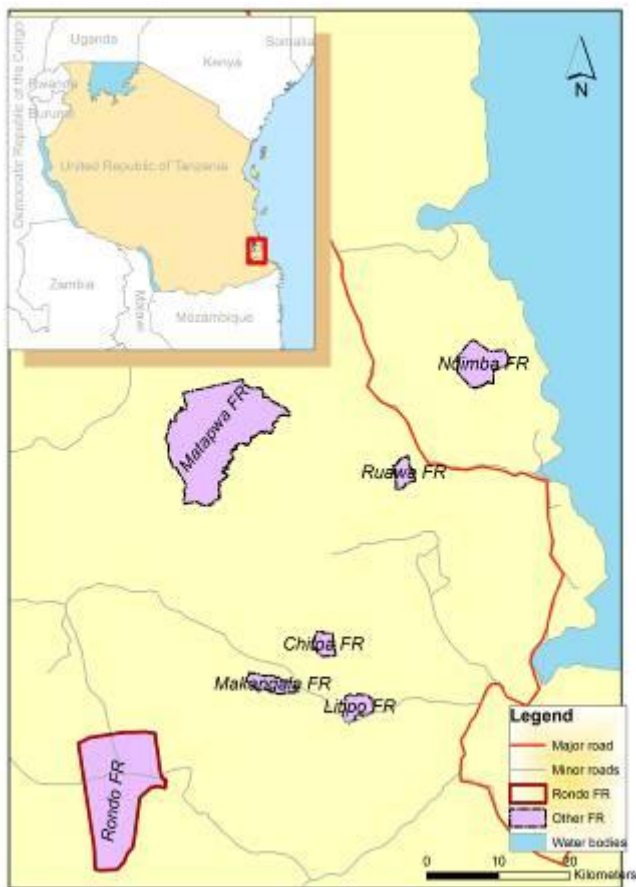


Figure 1. Location of Rondo Forest Reserve

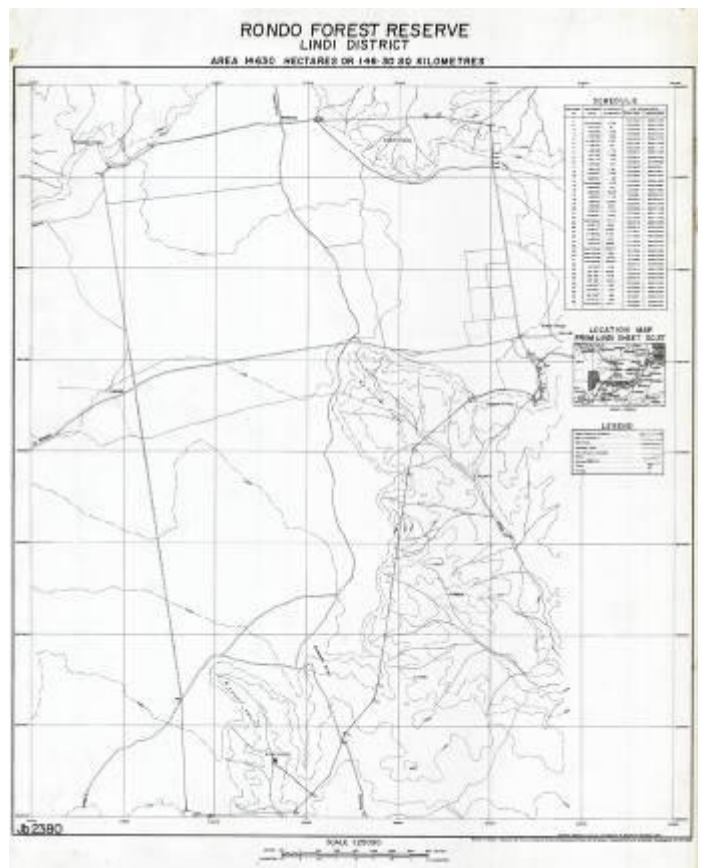


Figure 2. Map of Rondo FR boundary

## 1.2 Biodiversity of Rondo Forest Reserve

The conservation of Eastern African Coastal Forests is important due to the presence of unique biological resources, such as endemic or threatened flora and fauna, in these forests.

Rondo FR is an Eastern African Coastal Forest such coastal forests that have been frequently surveyed, and records have revealed species that were new to science. For example, the coastal forest endemic primate, the Rondo dwarf galago (*Galagoides rondoensis*), has been recorded in Rondo FR as have the near endemic East African collared fruit bat (*Myonycteris relicta*) and the lesser pouched rat (*Beamys hindei*) (Clarke *et al.*, 1995). The near endemic Grant's galago (*Galagoides granti*) has also been recorded in Rondo Forest, and the reptiles: the Rondo worm-lizard (*Chirindia rondoensis*), the Rondo Limbless Skink (*Melanoseps rondoensis*) and the Rondo Blind-snake (*Afrotyphlops rondoensis*) are endemic to the reserve (Howell *et al.*, 1991). The Bearded Pigmy-Chameleon (*Rhampholeon brevicaudatus*) and Usambara Green

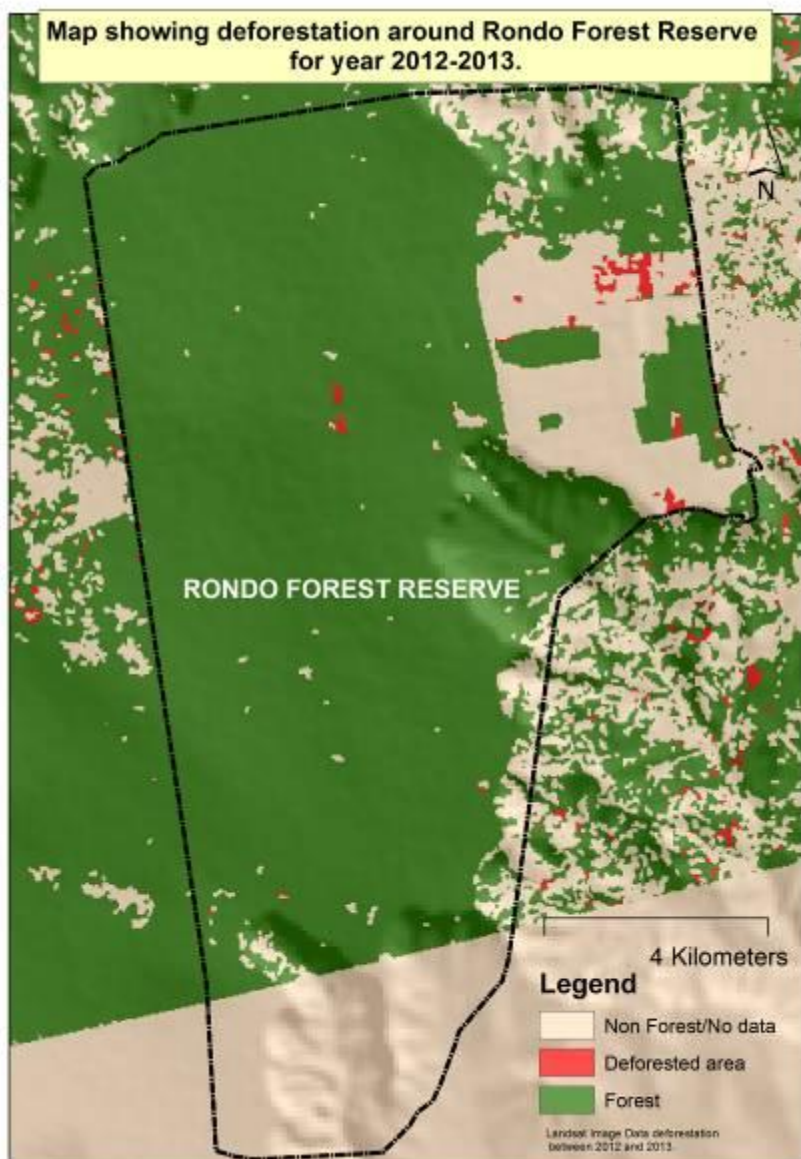
Snake (*Philothamnus macrops*), endemic to Eastern Arc and Coastal forests, have also been recoded in Rondo FR. Two amphibians that are endemic to coastal forests have been also been documented in Rondo FR (*Mertensophryne micranotis* and *Mertensophryne loveridgei*) and one (*Spelaeophryne methneri*) that is endemic to the Eastern Arc and Coastal forests (Poynton, 2000).

The Coastal Forests of Eastern Africa hotspot contains an estimated 4,050 plant species within 1,050 plant genera of which 1750 plant species and 28 genera are endemic to the hotspot as a whole (Mittermeier et al. 2004). Of these, at least 554 plant species are restricted to the Coastal Forests (Clarke et al. 2000).. The majority of these endemic species are woody plants, with the remainder being climbers, shrubs, herbs, grasses and sedges (Clarke et al., 2000). Rondo Forest has a particularly important concentration of single-site endemic taxa including 2 endemic genera and 60 endemic species (Clarke et al., 2000 p.137). A preliminary survey of vascular plants, birds, mammals, reptiles and amphibians found Rondo FR to have higher endemism in plant and bird species than other coastal forests (Burgess & Clarke, 2000).

The first bird survey of Rondo FR, conducted in 1988 by Holsten, Bräunlich and Huxham (1991), demonstrated the ornithological importance of the forest. A number of bird surveys have been conducted since and continue to identify the importance of the forest for bird species. For example, Rondo is one of the East African breeding sites for the East Coast Akalat (*Sheppardia gunningi*) and for the Endangered Spotted Ground Thrush (*Zoothera guttata*). The reserve is home to a significant breeding population of the African Pitta (*Pitta angolensis*). In addition, the endemic subspecies, the Rondo Green Barbet (*Stractolaema olivacea* spp. *hylophona*) is endemic to Rondo FR (Perkin et al., 2008).

### 1.3 Threats to Rondo forest

East African coastal forests are subject to a number of threats resulting in habitat loss and degradation (EACFE, 2006). In the 1950s an estimated 20 km<sup>2</sup> of primary forest was lost from Rondo FR when ‘the Steel Brothers, a British timber company removed up to 9,000 m<sup>3</sup> of Mvule *Milicia excels* per annum from the natural forests of the Rondo Plateau’ (Baker and Baker 2002). At present, increased anthropogenic activities such as expanding agriculture, invasive plant species (e.g. *Maesopsis emini*) and uncontrolled fires pose a serious threat to the FR and its biodiversity (Figure 3). The conservation and management of Rondo FR is important given these threats, and because it is ranked as the most important coastal forest in East Africa for endemic species. As such, updated surveys of the biodiversity and forest condition of the FR are necessary to inform conservation and management planning.



**Figure 3.** Map indicating areas of deforestation in Rondo FR in the year 2012-2013.

## 2 Forest Reserve Description

### 2.1 General description

**Name:** Rondo Forest Reserve

**Size:** 14,060 ha

**Boundary length:** 55 km, demarcated by a track (Figure 4)

**Location:** Lindi rural district, Lindi region

**Grid ref:** 10°04' S - 10°14' S and 39°08' E - 39°15' E

**Elevation:** 465 - 885 m a.s.l.

**Management:** Designated as FR in 1959; a central government Forest Reserve.

**Major Threats:** Timber and pole extraction, especially at the north central part of the reserve. Increasing spread of the introduced exotic species *Maesopsis eminii*.

**Villages:** Five Villages surround the Rondo Forest Reserve: Ntene, Ntemanji, Liganga, Mihimo and Nndawa.



**Figure 4.** Rondo FR boundary overlying a recent image from Google Earth.

The forest is located on the Rondo (Mwera) plateau at 870 m a.s.l. (maximum of 885 m a.s.l.), extending to the escarpment edge from 465 m a.s.l. in the Nchinjidi, Mtandi and Nanyolyo valleys. The reserve is about 4 km from Ntene Rondo village, and approximately 60 km west of Lindi town. All-weather access to the reserve is possible from Lindi town using the tarmac Lindi-Masasi road to Nyengedi (50 km) and taking a turning to the north marked by a sign for St. Cyprian's college. The forest reserve is reached by proceeding on this graded road past the college on the crest of the Rondo (Mwera) plateau and taking a turning to the west at Ntene village and following the road for 4 km.

### 2.2 Vegetation description

Rondo FR is characterized by different vegetation types. It is thought that variation in vegetation types might have been caused by the long history of disturbances within or in the vicinity of the FR (Clarke, 1995). Four vegetation types are found in the FR: Dry Evergreen Forest, Woodland, Transitional woodland and Plantation. Woodland, containing *Parinari curateifolia*, *Pteleopsis*, *Julbernardia*, *Isoberlinia* and *Brachystegia*, is found along the marginal areas the forest on the plateau, especially to the west and north of the reserve. Transitional woodland, containing *Brachystegia microphylla* with some *Faurea saligna*, mainly covers parts of the steep slopes of the plateau edge. Introduction of the plantation forest in 1952 resulted in the establishment of a number of trial plots for *Tectona grandis*, *Milicia excelsa*, *Pinus spp.*, *Maesopsis eminii* and *Grevillea robusta*. These plots are mainly found in the eastern, northeastern, southeastern and central part of the forest reserve. Dry evergreen forest is characterized by *Milicia excelsa*, *Albizia adianthifolia*, *Albizia gummifera*, *Dombeya sp.*, *Ricinodendron heudelotii* and *Dialium holtzii* and *Millettia sp.* in the upper canopy (20-30 m); with *Tabernaemontana ventricosa*, *Bussea eggelingii*, *Tricalysia pallens* and *Clausena anisata* dominant in the understorey (Clarke, 1995).

#### 2.2.1 Climate

Rainfall is unreliable, with a maximum 1,500 mm of rain per annum. Short rains occur from November to December and longer rains extend from February-March to April-May. Due to the deep leached sandy soil there is no surface water on the plateau even in the rainy season (Bhatia, 1990 cited in Clarke, 1996). The

dry season occurs from May-June to October-November and maximum temperatures reach over 30°C at the end of the dry season (Vollesen in Haywood & Davis, 1994 cited in Clarke 1996).

### 2.2.2 Soil

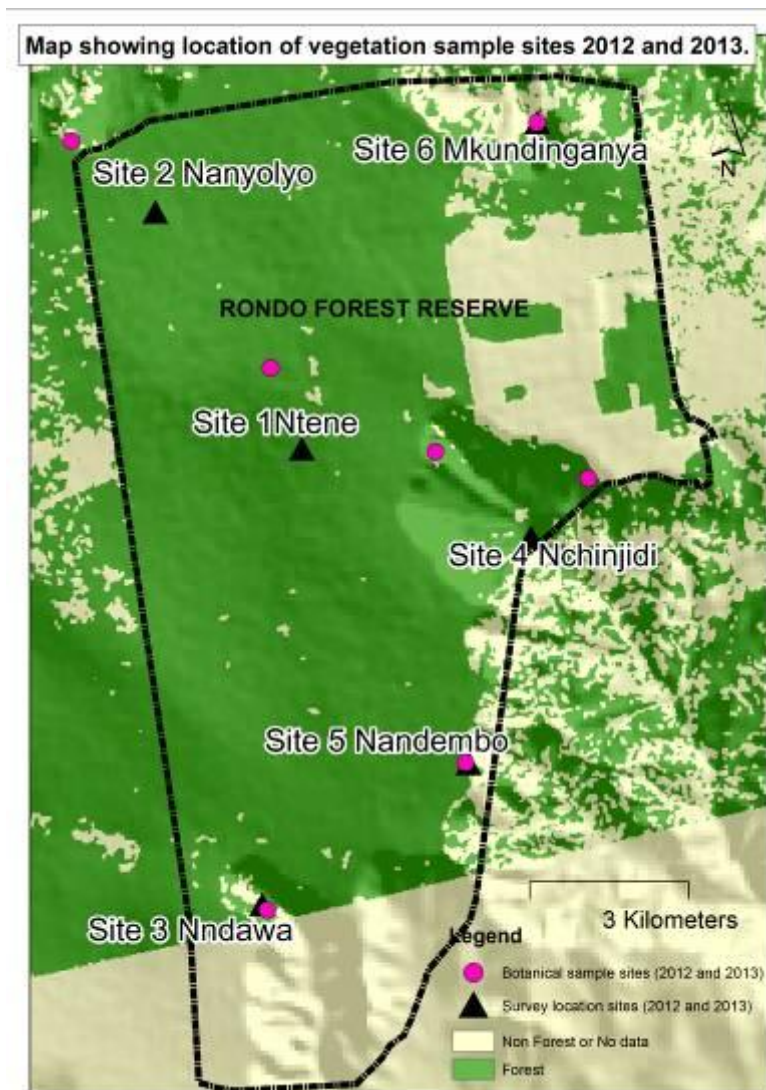
Rondo forest is mainly characterized by deep, leached sandy soils derived from terrestrial sands, gravels, calcretes and laterites of Miocene to Pleistocene age. Bhatia (1990) observed severe erosion where trees had been cleared at the forest boundaries.

### 2.3 Survey sites

Surveys were conducted in the same six locations across the FR in both 2012 and 2013 (Table 1; Figure 5).

**Table 2.** Rondo FR survey sites in 2012 and 2013.

Site	Location (UTM)	Elevation (m)
Site 1 - Ntene (Good forest-Central part)	520300/8879558	870 - 906
Site 2 - Nanyolyo (Woodland area-North western side)	516567/8885153	807 - 857
Site 3 - Nndawa (Good forest-South)	521944/8872790	643 - 778
Site 4 - Nchinjidi (Valley)	523657/8879020	562 - 717
Site 5 - Nandemo (disturbed forest-South eastern side)	522484/8874751	774 - 789
Site 6 - Mkundinganya (Disturbed forest)	524378/8874767	631 - 759



**Figure 5.** Location of vegetation sampling areas.

### 3 Plants

#### 3.1 Background

Previous surveys in Rondo FR have recorded at least 60 plant species endemic to the reserve (Clarke et al. 2000). Rondo is ranked as the most important coastal forest in eastern Africa for endemic plant species, with species such as *Leptactina papyrophloea*, *Canthium rondoense*, *Sterculia schliebenii* and *Plumbago ciliata* recorded in the reserve (Perkin et al., 2008).

#### 3.2 Objectives

The objectives of the botanical survey in Rondo Forest Reserve were as follows:

- 1) To document the current species composition of the vegetation in Rondo FR.
- 2) To document the presence of plant species endemic to the East African coastal forest or to Rondo FR; and / or threatened species.
- 3) To identify invasive plant species present in Rondo FR.

#### 3.3 Methods

##### 3.3.1 Botanical survey methods

Botanical collections and field identification were carried out in both 2012 and 2013. Plant species were identified and recorded along transects 1 km long and 5 m wide either side. Botanical specimens were collected for species with restricted range or threatened status, and for those species for which identification was uncertain. Field identifications were made by Moses Mwangoka.

##### 3.3.2 Sampling intensity

The same transects were walked in all six survey sites in both 2012 and 2013 (Table 3). Surveys were conducted over a total of 34 days, 17 days in 2012 and 17 days in 2013.

**Table 3.** Plant survey intensity in 2012 and 2013.

Year	Site name	Categories	Survey coord		Qty of samples	Survey dates	Collections per site
			X	Y			
2012	Site 1- Ntene	Good forest	518749	8882212	263	23-26/01/2012	109
	Site 2- Nanyolyo	Woodland	514985	8886495	111	27-29/01/2012	27
	Site 3-Nndawa	Good forest	521947	8872784	175	30/01-01/02/2012	77
	Site 4-Nchinjidi	Good forest	524747	8880127	239	02-04/02/2012	89
	Site 5-Nandembo	Disturbed	521859	8880634	104	05-06/02/2012	44
	Site 6-Mkundinganya	Disturbed	522429	8874767	86	06-08/02/2012	28
2013	Site 1-Ntene	Good forest	518749	8882212	247	08-10/04/2013	175
	Site 2-Nanyolyo	Woodland	514985	8886495	102	11-13/04/2013	62
	Site3- Nndawa	Good forest	521947	8872784	154	14-16/04/2013	110
	Site 4-Nchinjidi	Good forest	524747	8880127	94	17-19/04/2013	63
	Site 5- Nandembo	Disturbed	521859	8880634	111	20-21/04/2013	84
	Site 6-Mkundinganya	Disturbed	522429	8874767	237	21-22/04/2013	16

#### 3.4 Results

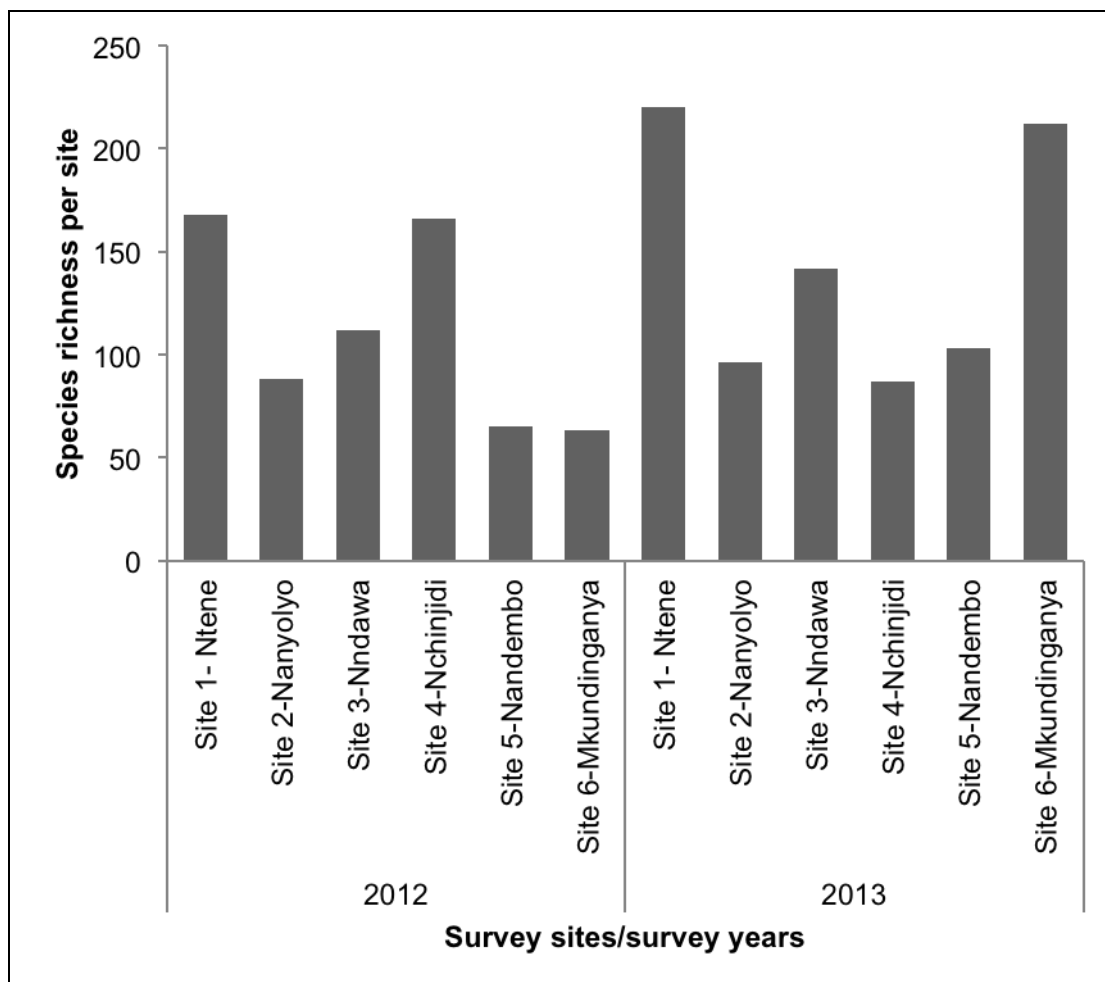
##### 3.4.1 Plant species richness

In total, 297 plant species representing 79 families and 221 genera were recorded in 2012 and 2013 (Appendix 1). This total includes 18 records not identified to the genus level and 145 not identified to the species level. As such, a total of 297 plants were identified to species level in 2012 and 2013, 31% (n=126) of which were recorded in 2012 only, 47% (n=190) in 2013 only and 21% (n=85) were recorded in both years. Site 1 – Ntene was found to be the most species rich site in both years (n<sub>2012</sub>=168, n<sub>2013</sub>=220), while the least number of plant species were recorded in Site 6 – Mkundinganya in 2012 (n=63), but one of the

highest number of species were recorded at this site in 2013 (n=212) (Table 4 and Figure 6). Appendices 2 and 3 provide a list of the plant collections made in 2012 and 2013 respectively.

**Table 4.** Plant species richness (i.e. identified to species level) recorded in Rondo FR in 2012 and 2013.

Site name	Site number	Forest Reserve	Categories	Species Richness	
				2012	2013
Ntene	1	Rondo	Good forest	168	220
Nanyolyo	2	Rondo	Woodland	88	96
Nndawa	3	Rondo	Good forest	112	142
Nchinjidi	4	Rondo	Good forest (Valley)	166	87
Nandembo	5	Rondo	Disturbed-South	65	103
Mkundinganya	6	Rondo	Disturbed-North	63	212



**Figure 6.** Plant species richness (i.e. identified to species level) in Rondo FR in 2012 and 2013.

### 3.4.2 Plant endemism

A total of 43 plant taxa (species and subspecies) endemic to the coastal forests or the combined coastal forests and Eastern Arc Mountains (and Lake Nyasa Climatic Region in one case) were recorded (Table 5). Endemism was found to vary across sites, with Site 1 – Ntene with the highest number of endemic plant taxa (n=40, 93%) compared to Site 2 – Nanyolyo with the lowest (n=15, 35%).



**Table 5.** Plant taxa endemic to the coastal forest zone or the combined Eastern Arc Mountains and coastal forests recorded in Rondo Forest Reserve in 2012 and 2013.

Family	Scientific name	Habit	Habitat	Sampling site						Coll. No		Distribution
				1	2	3	4	5	6	2012	2013	
Acanthaceae	<i>Justicia fittonioides</i>	H	Woodland	1	0	1	0	1	0	MM7658	MM8841	EAM+CF
Acanthaceae	<i>Sclerochiton tanzaniensis</i>	L	CWF	1	0	0	1	0	1		MM8762	EAM+CF
Acanthaceae	<i>Sclerochiton vogelii</i> subsp. <i>holstii</i>	S	CEDF	1	0	1	0	1	0		MM8725	EAM+CF
Acanthaceae	<i>Streptosiphon hirsutus</i>	S	Forest	1	0	1	1	0	1	MM7629	Rec.	CF: Rondo, Chitoo, Lake Lutamba
Acanthaceae	<i>Thunbergia heterochondros</i>	C	Forest	1	0	1	1	0	0	MM7625		EAM+CF
Acanthaceae	<i>Whitfieldia orientalis</i>	S	Forest	1	0	1	1	0	1	MM7603	Rec.	EAM+CF
Annonaceae	<i>Lettowianthus stellatus</i>	T	Forest	1	0	0	1	1	0	No coll		EAM+CF
Annonaceae	<i>Mkilua fragrans</i>	T	Forest	0	0	0	1	0	0	MM7652A		EAM+CF
Annonaceae	<i>Monodora minor</i>	T	Forest	1	0	1	0	1	1		MM8853	CF
Annonaceae	<i>Uvaria acuminata</i>	L	Forest/ woodland	1	1	1	1	0	1	MM7609	Rec.	EAM+CF
Annonaceae	<i>Xylopia collina</i>	T	Forest/fallow	1	1	1	1	1	1	MM7597,7663	MM8757	CF
Araliaceae	<i>Cussonia zimmermannii</i>	T	Forest	1	0	0	1	0	1		Rec.	EAM+CF
Asteraceae	<i>Vernonia zanzibariensis</i>	S	Forest	1	0	1	0	0	0	MM7610		EAM+CF
Burseraceae	<i>Commiphora fulvotomentosa</i>	T	Forest	1	0	0	1	0	0	No coll		EAM+CF
Capparaceae	<i>Maerua schliebenii</i>	T	Forest	1	0	1	1	1	0	MM7649		CF: Rondo, Lake Lutamba
Celastraceae	<i>Pristimera graciliflora</i> subsp. <i>newalensis</i>	L	CWF	1	1	1	1	1	1		MM8872	CF
Clusiaceae	<i>Vismia orientalis</i>	T	Forest	1	1	1	1	1	1	MM7626	MM8704	EAM+CF+LN
Combretaceae	<i>Pteleopsis apetala</i>	T	Forest/ woodland	1	1	1	1	0	0	No coll	Rec.	CF
Connaraceae	<i>Vismianthus punctatus</i>	T	CEDF	1	0	1	0	1	0		MM8839	CF
Dichapetalaceae	<i>Dichapetalum braunii</i>	L	Forest	1	0	1	1	0	0	MM7605		CF
Dichapetalaceae	<i>Dichapetalum macrocarpum</i>	T	Forest	1	1	0	0	0	0	No coll		CF
Dichapetalaceae	<i>Dichapetalum mossambicensis</i>	L	Woodland	1	1	0	0	0	0	No coll		EAM+CF
Ebenaceae	<i>Diospyros verrucosa</i>	T	CEDF	1	0	1	1	0	1		MM8856	EAM+CF
Euphorbiaceae	<i>Shirakiopsis trilocularis</i>	T	Forest	1	0	1	1	0	0	No coll		CF
Fabaceae	<i>Acacia latistipulata</i>	T	CEDF	1	0	0	0	0	0		MM8828	CF
Fabaceae	<i>Gigasiphon macrosiphon</i>	T	Forest	1	0	1	1	0	0	MM7554		EAM+CF
Fabaceae	<i>Mimosa busseana</i>	L	Forest	0	1	1	1	1	0	Rec.	MM8807	CF
Fabaceae	<i>Scorodophloeus fischeri</i>	T	Woodland	1	0	0	0	0	1	MM7586		EAM+CF
Linaceae	<i>Hugonia castaneifolia</i>	L	Forest	1	1	1	1	0	0	No coll		EAM+CF
Ochnaceae	<i>Gomphia lutambensis</i>	T	CEDF	1	0	0	0	0	0		MM8840	CF: Rondo, Lake Lutamba
Ochnaceae	<i>Ochna thomasiana</i>	T	Woodland	0	1	1	1	0	0	No coll		EAM+CF
Rubiaceae	<i>Aorantho penduliflora</i>	T	Forest	1	1	0	1	1	0	No coll	MM8721	EAM+CF
Rubiaceae	<i>Gardenia transvenulosa</i>	T	Woodland	1	1	1	1	1	1	MM7639	MM8849	CF

Family	Scientific name	Habit	Habitat	Sampling site						Coll. No		Distribution
				1	2	3	4	5	6	2012	2013	
Rubiaceae	<i>Heinsia bussei</i>	S	Forest	1	1	1	1	1	1	MM7632	MM8738	CF
Rubiaceae	<i>Leptactina oxyloba</i>	T	Forest	1	0	1	0	0	1		MM 8819	CF
Rubiaceae	<i>Leptactina papyrophloea</i>	T	Forest	1	0	1	1	1	0	MM7648	MM8847	CF
Rubiaceae	<i>Oxyanthus pyriformis</i> subsp. <i>tanganyikensis</i>	T	CEDF	1	1	1	1	1	1	MM7543	Rec.	EAM+CF
Rubiaceae	<i>Psydrax micans</i>	T	Forest	1	0	1	1	1	0	MM7643		CF
Rubiaceae	<i>Rothmannia macrosiphon</i>	T	Forest	1	0	1	1	0	0	No coll		EAM+CF
Rubiaceae	<i>Rytigynia binata</i>	T	CEDF	1	0	0	1	0	1		MM8702	EAM+CF
Rutaceae	<i>Zanthoxylum lindense</i>	T	Forest	1						No coll		CF
Solanaceae	<i>Solanum zanzibarense</i>	S	Fallow/CEDF	1	0	1	1	1	1	MM7660	MM8728	EAM+CF
Tiliaceae	<i>Grewia conocarpa</i>	T	Forest	1	1	1	1	1	1	Rec.	MM8737	CF
<b>TAXON RICHNESS PER SITE</b>				<b>40</b>	<b>15</b>	<b>30</b>	<b>31</b>	<b>18</b>	<b>18</b>			

#### Key to Table 4.

<p><b>Habitat</b>  S = Shrub    T = Tree</p> <p><b>Geographical range</b>  CF = endemic to the Coastal Forests of Eastern Africa Biodiversity Hotspot  EAM+CF = endemic to combined Eastern Arc Mountains and coastal forests zone  EAM+CF+LN = endemic to combined Eastern Arc, coastal forests zone, and Lake Nyasa Climatic Region of Tanzania</p> <p><b>Collection</b>  MM = Numbering in Moses Mwangoka's botanical collection series.  No coll = No collection</p>
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### 3.4.3 Invasive species

Three invasive plant species were recorded by the surveys, *Lantana camara* and *Stachytarpheta jamaicensis*. *Lantana camara* was recorded in all sites and *Stachytarpheta jamaicensis* was recorded only in Site 1 – Ntene. *Maesopsis eminii* was recorded in Sites 1, 4, and 6 and is discussed below. In addition to these, the introduced *Senna siamea* was recorded at Sites 1, 2, 4, and 6, and has the potential to become invasive.

### 3.5 Discussion

A total of 297 plants were identified to species level in Rondo FR in both 2012 and 2013 surveys. More unique species were recorded in 2013 than in 2012, with only 85 species recorded in both years. Interestingly, many more species were recorded in Site 6 in 2013 than in 2012, despite the high rate of disturbance recorded at this site. Conversely, fewer species were recorded in Site 4 in 2013 than 2012, despite the consistently low rates of disturbance recorded at this site (see section 7).

Previous surveys have identified the importance of Rondo FR in terms of endemic plant species. This survey recorded 20 plant taxa endemic to the coastal forest zone, of which three are Rondo area endemics (known only from Rondo, Chitoo, and Lake Lutamba), and none are strictly endemic to Rondo.

Nine of the 43 total endemic plant taxa recorded by this survey (21%) belonged to the family Rubiaceae, with three taxa from this family recorded in all survey sites, suggesting high abundance of this family.

Three invasive plant species are known in Rondo FR, *Stachytarpheta jamaicensis*, *Lantana camara* and *Maesopsis eminii*. In particular, *Maesopsis eminii* is emerging as a significant threat to native species especially in the central part of the forest near Ntene village (see section 7).

## 4 Birds

### 4.1 Background

Rondo FR is considered a hotspot in terms of bird species diversity within the coastal forests. Clarke (1995) recorded 121 bird species in Rondo FR including results from: Holsten *et al.* (1991), Bagger *et al.* (1990) and Eriksen *et al.* (1994). Of these species, one sub-species and one species are endemic to coastal forests: the Rondo Green Barbet (*Stractolaema olivacea hylophona*) and Reichenow's Batis (*Batis reichenowi*). A further four of these species are IUCN Red Listed above Least Concern: Spotted ground-thrush (*Zoothera guttata*) (EN), Plain-backed sunbird (*Anthreptes reichenowi*) (NT), Southern banded snake-eagle (*Circaetus fasciolatus*) (NT), and East Coast akalat (*Sheppardia gunningi*) (NT). Rondo Forest Reserve is part of the Lindi District Coastal Forest Important Bird Area (Baker and Baker, 2002).

### 4.2 Objective

- 1) To provide an updated checklist of birds in Rondo FR and compare it with existing records from previous years.
- 2) To document the flagship species, focusing on red listed species and species endemic to the Swahili Centre of endemism.

### 4.3 Methods

Two methods were used to assess bird fauna: mist netting and direct observations. These methods were adapted from Doggart *et al.* (2006). All six sites were surveyed in 2012, whilst all but Site 5 were surveyed in 2013.

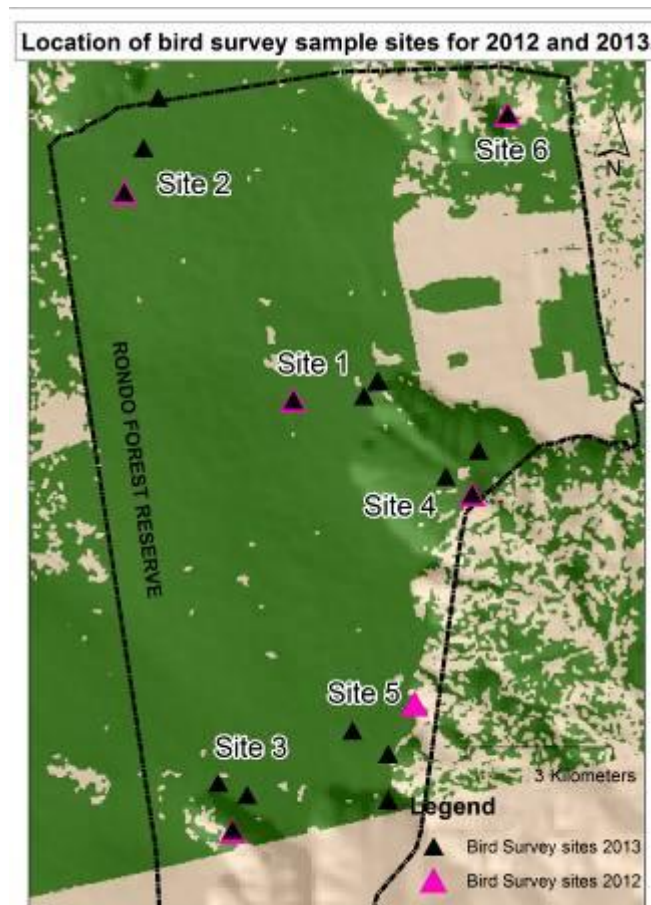


Figure 7. Location of bird survey sampling sites.

#### 4.3.1 Mist netting

Mist nets were set up in the good forest at Site 1 – Ntene in both 2012 and 2013. Nets were set at first light on each day and then checked frequently every 30 minutes until sunset when they were taken down. Captured birds were removed from the net, identified and then released. Birds were identified to the species level based on physical features.

### 4.3.2 Observations/opportunistic survey

Opportunistic surveys were conducted in all six survey sites in 2012 and five sites in 2013 (Sites 1, 2, 3, 4, 6). In each site, a birder walked in different directions (North, East, South and West) to compile a list of bird species seen or heard, with a focus on endemic species. Bird vocalisations were recorded using an acoustic recording device. At each site, observation survey effort was nine hours / day.

### 4.3.3 Sampling Intensity.

Bird surveys were conducted over a period of 17 days in both 2012 and 2013, resulting in a total of 34 days surveyed (Table 6).

**Table 6.** Bird survey sampling intensity in 2012 and 2013.

Site (Category)	NMH		S M	Number of observation days		Survey Coordinates		SD/Y	
	2012	2013		2012	2013	2012	2013	2012	2013
Site 1 (Good forest)	2352	5184	Mist-netting	4	5	520300/8879558	521713/ 8881304 521742/ 8881321 520300/ 8879558	24-27/01/2012	8-12/04/2013
Site 2 (Woodland)	-	-	Opp	3	3	516567/8885153	517257/ 8887083 516960/ 8886060 516567/ 8885153	28-30/01/2012	14-16/04/2013
Site 3 (Good forest)	-	-	Opp	4	4	521944/8872790	520750/ 8872321 520834/ 8873565 521944/ 8872790	31/01-3/02/2012	17-20/04/2013
Site 4 (Good forest Valley)	-	-	Opp	3	3	523657/8879020	520750/ 8872321 520834/ 8873565 521944/ 8872790	4-6/02/2012	21-23/04/2013
Site 5 (Disturbed)	-	-	Opp	2	NA	522484/8874751	521449/ 8881007 523657/ 8879020	08-09/02/2012	NA
Site 6 (Disturbed)	-	-	Opp	1	2	524378/8886747	524378/ 8886747	10/02/2012	24-25/04/2013

## 4.4 Results

A total of 127 bird species, including 37 families were recorded in 2012 and 2013 (See Appendix 5). 45% (n=57) of these were recorded in 2012 only, 19% (n=24) in 2013 only and 36% (n=46) were recorded in both years. Comparison across sites indicates fewer species were recorded in 2013 than 2012 in all sites except for Site 1 – Ntene (Table 7).

Overall, five bird species classified by IUCN as being above Least Concern were recorded: Bateleur (*Terathopius ecaudatus*) (NT), the Crowned Hawk-Eagle (*Stephanoaetus coronatus*) (NT), Spotted ground-Thrush (*Zoothera guttata*) (EN), the East coast Akalat (*Sheppardia gunning*) (NT) and the Plain backed Sunbird (*Anthreptes reichenowi*) (NT) (Table 8). Fourteen bird species were recorded using mist-netting methods, of these two were Near Threatened: East coast Akalat (*Sheppardia gunning*) and Plain backed Sunbird (*Anthreptes reichenowi*). The East coast Akalat was the most frequently caught species of those recorded using mist-netting methods (Table 9).

One sub-species that is endemic to coastal forests was recorded, the Rondo Green Barbet (*Stactolaema olivacea hylophona*). A further seven species were near endemic to coastal forests (these are characteristic coastal forest birds also found in the Eastern Arc forests and/or one other forest type, after Burgess & Clarke (2000)): the Eastern green tinkerbird (*Pogoniulus simplex*), the Tiny greenbul (*Phyllasterphus debilis*), the East Coast akalat (*Sheppardia gunning*), Kretschmer's longbill (*Macrosphenus kretschmeri*), Chestnut-fronted helmet shrike (*Prionops scopifrons*), Uluguru violet-backed sunbird (*Anthreptes neglectus*) and Plain-backed sunbird (*Anthreptes reichenowi*) (Table 8).

**Table 7.** Bird species richness in Rondo FR in 2012 and 2013.

Site name	Site number	Forest Reserve	Categories	Species richness	
				2012	2013
Ntene	1	Rondo	Good forest	25	53
Nanyolyo	2	Rondo	Woodland	44	41

Site name	Site number	Forest Reserve	Categories	Species richness	
				2012	2013
Nndawa	3	Rondo	Good forest	44	31
Nchinjidi	4	Rondo	Good forest (Valley)	67	41
Nandembo	5	Rondo	Disturbed-South	39	-
Mkundinganya	6	Rondo	Disturbed-North	27	18

**Table 8.** Checklist of threatened/endemic bird species in Rondo FR in 2012 and 2013.

Scientific name	Common name	Author	H	RL	R	Survey sites - 2012						Survey sites - 2013					
						1	2	3	4	5	6	1	2	3	4	6	
<b>ACCIPITRIDAE</b>																	
<i>Terathopius ecaudatus</i>	Bateleur	Daudin 1800	O	NT	W	1	1	0	1	0	0	0	0	0	0	0	
<i>Stephanoaetus coronatus</i>	Crowned Hawk-Eagle	Linnaeus 1766	F	NT	W	0	0	0	1	0	0	0	0	0	0	0	
<b>TURDIDAE</b>																	
<i>Zoothera guttata</i>	Spotted ground-Thrush	Vigors 1831	FF	EN	W	0	0	1	0	0	0	1	0	0	0	0	
<b>MUSCICAPIDAE</b>																	
<i>Sheppardia gunning</i>	East coast Akalat	Haagner 1909	FF	NT	NE	0	1	1	1	1	1	1	1	1	1	1	
<b>NECTARINIIDAE</b>																	
<i>Anthreptes neglectus</i>	Uluguru violet – backed Sunbird	Neumann, 1922	F	LC	NE	1	0	1	0	0	0	1	0	0	1	0	
<i>Anthreptes reichenowi</i>	Plain backed Sunbird	Gunning 1909	FF	NT	NE	0	1	0	1	1	0	1	1	1	1	1	
<b>RAMPHASTIDAE</b>																	
<i>Pogoniulus simplex</i>	Eastern Green Tinkerbird	Fischer & Reichenow, 1884	FF	LC	NE	0	0	0	1	0	0	1	1	0	1	0	
<b>PYCNONOTIDAE</b>																	
<i>Phyllasterphus debilis</i>	Tiny Greenbul	Sclater 1899	FF	LC	NE	1	0	0	0	0	0	1	1	1	0	0	
<b>SYLVIIDAE</b>																	
<i>Macrosphenus kretschmeri</i>	Kretschmer's Longbill	Reichenow & Friedmann 1895	FF	LC	NE	0	0	1	1	0	0	1	1	1	1	1	
<b>MALACONOTIDAE</b>																	
<i>Prionops scopifrons</i>	Chestnut-fronted helmet-shrike	Peters, 1854	F	LC	NE	0	1	0	0	0	0	0	0	0	0	0	
<b>SPECIES RICHNES</b>						<b>2</b>	<b>4</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	

**Key to Table 8**

1= Present, 0=Not recorded, H= Habitat with F = Forest, FF = Strictly Forest Dependent, O = Open; RL= Red list, R= Range, W = Widespread, E = Endemic to coastal forests, NE = Near Endemic to Coastal forest, EN= Endangered.

**Table 9.** Bird species recorded using mist netting methods in Rondo FR, in 2012 and 2013.

Family	Common name	Scientific name	Author	H	RL	R	C/F
ESTRILDIDAE	Peters's twinspace	<i>Hypargos niveoguttatus</i>	Peters 1868	O	LC	W	4
MUSCICAPIDAE	East coast akalat	<i>Sheppardia gunningi</i>	Haagner 1909	FF	NT	NE	8
PYCNONOTIDAE	Little greenbul	<i>Andropadus virens</i>	Cassin 1858	FF	LC	W	1
PLATYSTEIRIDAE	Cape batis	<i>Batis capensis</i>	Linnaeus 1766	F	LC	W	2

Family	Common name	Scientific name	Author	H	RL	R	C/F
NECTARINIIDAE	Olive sunbird	<i>Nectarinia olivacea</i>	Smith 1840	F	LC	W	3
RAMPHASTIDAE	Eastern green tinkerbird	<i>Pogoniulus simplex</i>	Fischer & Reichenow 1884	F	LC	NE	1
MUSCICAPIDAE	Eastern bearded scrub robin	<i>Erythropygia quadrivirgata</i>	Reichenow 1879		LC	W	2
CISTICOLIDAE	Grey backed camaroptera	<i>Camaroptera brachyura</i>	Vieillot 1820	F	LC	W	2
PYCNONOTIDAE	Yellow -bellied greenbul	<i>Chlorocichla flaviventris</i>	Smith 1834		LC	W	1
PYCNONOTIDAE	Tiny greenbul	<i>Phyllastrephus debilis</i>	Sclater 1899	FF	LC	NE	1
PITTIDAE	African pitta	<i>Pitta angolensis</i>	Vieillot 1816		LC	W	1
NECTARINIIDAE	Plain backed sunbird	<i>Anthreptes reichenowi</i>	Gunning 1909	FF	NT	NE	1
COLUMBIDAE	Tambourine dove	<i>Turtur tympanistria</i>	Temminck 1809	F	LC	W	1
PYCNONOTIDAE	Yellow streaked greenbul	<i>Phyllastrephus flavostriatus</i>	Sharpe 1876	FF	LC	W	1

#### Key to Table 8

H= Habitat, RL =Red listed, R=Range, C/F= Capture frequency, LC= Least concern, W= Widespread, NE = Near Endemic to coastal forests

#### 4.5 Discussion

This survey recorded 127 species of birds in Rondo FR. Effective conservation needs to continue to protect the habitat of Rondo FR and support these bird species. Most of the flagship species previously recorded by Holsten *et al.* (1991 & 1990) and Eriksen *et al.* (1993 & 1994) were also recorded by this survey, illustrating the continued importance of Rondo FR for these key species. The East Coast Akalat (*Sheppardia gunningi*; Figure 8) was the most frequently captured species using mist-netting methods, suggesting a high abundance of this species either at Site 1 – Ntene in particular or in Rondo FR itself.



**Figure 8.** East Coast Akalat (*Sheppardia gunningi*) (NT), recorded in Rondo FR in both 2012 and 2013

Variation in species richness between sites might suggest differences in habitat quality, function and stability between these areas. For example, more species were recorded in Site 4 - Nchinjidi than any other, with this site characterised by different habitat types ranging from open vegetation (woodland) on slopes to closed vegetation (riverine forest) on the river bank. The habitat variation at Site 4 coupled with its poor accessibility may have contributed to the higher number of bird species being recorded here.

Site 6 – Mkundinganya, located closest to farmland bordering the reserve, was found to have the highest rate of disturbance (see section 7), and the lowest number of total bird species were recorded here in 2012 and 2013 combined. As such survey findings indicate a negative correlation between rates of disturbance and bird species richness.

## 5 Mammals

### 5.1 Background.

Previous surveys have recorded 26 species of mammal from Rondo FR (Clarke, 1995) including one Coastal Forest-endemic and Critically Endangered species: Rondo galago (*Galagoides rondoensis*) and three Coastal Forest near-endemic mammal species: the Zanzibar galago (*Galagoides zanzibaricus*), Lesser pouched rat (*Beamys hindei*) and East African collared fruit bat (*Myonycteris relicta*). Six threatened mammal species can be found in Rondo FR (Perkin *et al.*, 2008).

### 5.2 Objectives

Mammal surveys were carried out in Rondo FR to provide an updated checklist of mammals in the forest. Transects were carried out with a focus on primates and forest antelopes, whilst camera traps were used to capture other, less conspicuous mammals such as civets, genets and mongoose.

### 5.3 Methods

#### 5.3.1 Transects

Line transects between 2-3 km in length were walked in all survey sites with their location recorded using GPS. Transects were walked during daylight hours and animal sightings, sounds, tracks and other signs

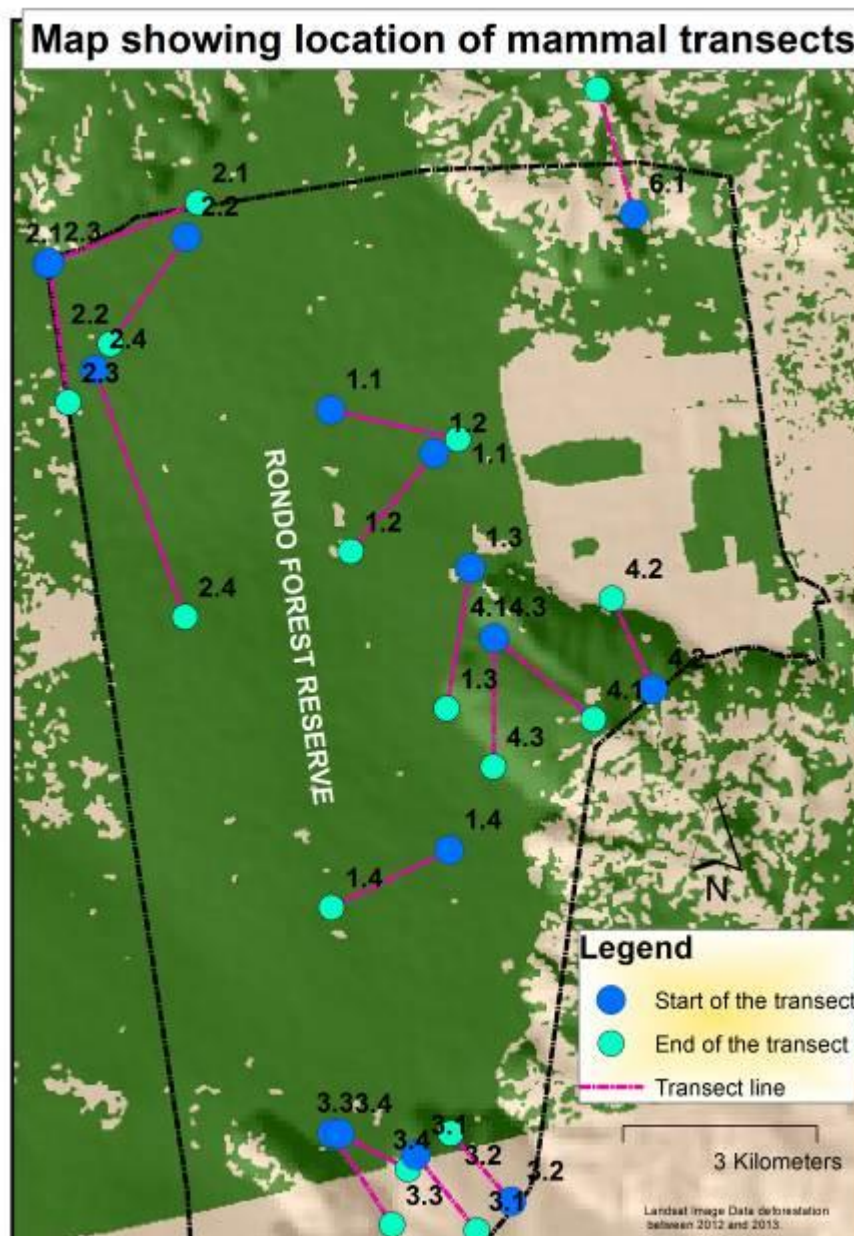
(including faeces, digging, tree and fruit eating) were recorded. As such, surveys were aimed at detecting diurnal species.

#### 5.3.2 Sampling intensity.

Transects were conducted in 2013 only (Table 10).

A systematic primate and ungulate survey was conducted in 2013 only. In 2012 we used only encounter survey (opportunistic observation of signs and vocalization identification).

**Figure 9.** Location of mammal transects.





**Table 10.** Primate and Antelope survey intensity.

Survey site	Category	Transect Number	Survey Coordinates		Survey Dates		TL	Total Number of Transects Covered/Site
			Start	End	Start	End		
Site 1-Ntene	Good forest	1.1	052186/8881477	0521397/8883418	9/4/2013	11/4/2013	2	4
	Good forest	1.2	0521029/8883197	0519740/8881676				
	Good forest	1.3	0521590/8881421	0521220/8879237				
	Good forest	1.4	0521262/8877041	0519444/8876154				
Site 2 -Nanyolyo	Woodland	2.1	0515044/8886139	0517384/8887092	12/4/2013	13/04/2013	2	4
	Woodland	2.2	0517196/8886557	0516025/8884901				
	Woodland	2.3	0515076/8886161	0515371/8883990				
	Woodland	2.4	0515779/8884499	0517177/8880661				
Site 3-Nndawa	Good forest	3.1	0520747/8872304	0521552/880486	14/04/2013	16/04/2013	2	4
	Good forest	3.2	052208/8871267	0521284/8872647				
	Good forest	3.3	0519453/8872648	0520376/8871227				
	Good forest	3.4	0519568/8872635	0520623/8872088				
Site 4- Nnchinjidi	Good forest/ Valley	4.1	0521955/8880340	0523451/889553	17/04/2013	19/04/2013	2	3
	Good forest/ Valley	4.2	053645/8880051	0523777/8880946				
	Good forest/ Valley	4.3	0521954/8880339	0521945/8878337				
Site 6- Mkundinganya	Disturbed	6.1	0524121/8886915	0523553/8888850	20/04/2013	20/04/2013	2	1
<b>Total</b>							<b>10</b>	<b>16</b>

### 5.3.3 Camera traps

Camera traps were placed in Site 1 – Ntene (good forest). Four camera traps were positioned in 2012 for 14 days between January and February, and three in 2013 for 66 days between April and June (Figure 10; Table 11). Camera traps were set in an area with high concentration of animal signs especially tracks and trails.

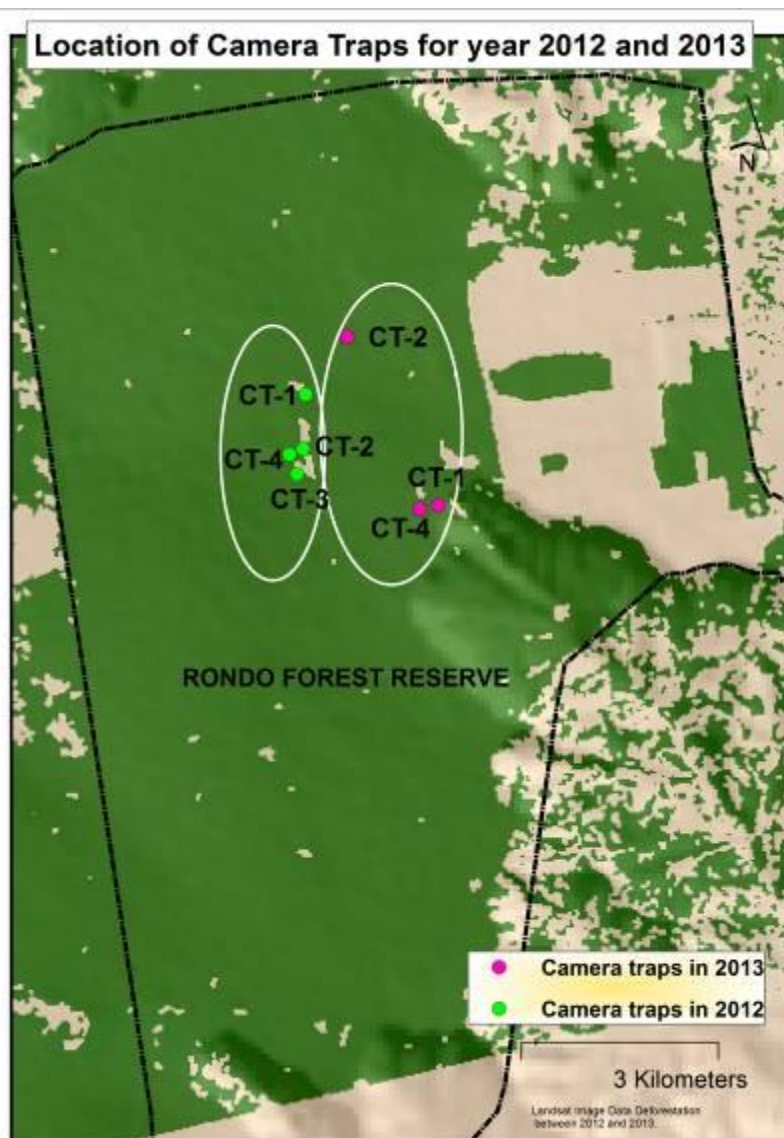


Figure 10. Location of camera traps.

**Table 11.** Camera traps sampling intensity in 2012 and 2013

Forest Site	Categories	CT No.	Camera Trap Location		Altitude (m)		Forest Habitat	Canopy	Period/Dates		Total Trap Effort	
			2013	2012	2013	2012			2013	2012	2013	2012
Site 1- Ntene	Good forest	1	0521605/ 8881090	0519577/ 8882797	827	872	Submontane	Closed	10/04- 16/06/2013	23/01- 5/02/2012	66days	14days
	Good forest	2	0520214/ 8883682	0519538/ 8881957	889	882	Submontane	Closed	14/04- 16/06/2013	24/01- 5/02/2012	62days	13days
	Good forest	3		0519447/ 8881573		876	Submontane	Closed		23/01- 5/02/2012		14days
	Good forest	4	0521315/ 8881029	0519331/ 8881875	838	886	Submontane	Closed	14/04- 16/06/2013	24/01- 5/02/2012	62days	13days

## 5.4 Results

### 5.4.1 Transects survey

Transect surveys identified 11 mammal species in Rondo FR, while one duiker remained unidentified (Table 12). Signs of two primate species were recorded, one of which was the Critically Endangered and Tanzanian endemic Rondo dwarf galango (*Galagoides rondoensis*). Two further Near Threatened (Chequered elephant shrew, *Rhynchocyon cirnei* and leopard, *Panthera pardus*) and one Vulnerable (African Lion, *Panthera leo*) mammal was recorded. In total, 156 different signs of antelopes and non-antelopes (Table 13), and 14 signs of primates (Table 14), were recorded during transect surveys.

**Table 12.** Checklist of mammals (including primates and ungulates) recorded using transect surveys in Rondo FR.

Order	Family	Species	Common name	Site no.						RL	
				1	2	3	4	5	6		
<b>Primates</b>											
Primates	Cercopithecidae	<i>Cercopithecus mitis</i>	Blue monkey	X							LC
	Galagidae	<i>Galagoides rondoensis</i>	Rondo dwarf galago	X							CR
<b>Antelopes</b>											
Artiodactyla	Bovidae	<i>Cephalophus natalensis</i>	Forest duiker	X	X	X	X	X	X	X	LC
	Bovidae	<i>Nesotragus moschatus</i>	Suni	X	X						LC
<b>Non-Antelopes</b>											
Macroscelidea	Macroscelididae	<i>Rhynchocyon cirnei</i>	Chequered elephant shrew	X		X					NT
Rodentia	Nesomyidae	<i>Cricetomys gambianus</i>	Giant pouched rat	X							LC
Artiodactyla	Suidae	<i>Potamochoerus larvatus</i>	Bushpig	X	X						LC
Carnivora	Felidae	<i>Panthera pardus</i>	Leopard	X	X	X	X	X	X	X	NT
	Felidae	<i>Panthera leo</i>	African Lion	X		X	X	X	X	X	VU
	Viverridae	<i>Civettictis civetta</i>	African civet	X	X		X	X	X		LC
	Hyaenidae	<i>Crocuta crocuta</i>	Spotted hyena				X	X	X		LC

**Table 13.** Type of antelope and non-antelope encounters during transect surveys in Rondo FR.

Family	Scientific name	Common name	Survey Site																								Total				
			1				2				3				4				5				6								
			S	T	TR	D	S	T	TR	D	S	T	TR	D	S	T	TR	D	S	T	TR	D	S	T	TR	D					
<b>ANTELOPE</b>																															
Bovidae	<i>Cephalophus natalensis</i>	Forest red duiker	0	0	3	0	0	6	2	6	0	3	3	5	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	31
Bovidae	<i>Neotragus moschatus</i>	Suni	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Bovidae	Unidentified duiker		0	0	0	0	0	0	0	0	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
<b>TOTAL</b>			<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>8</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>41</b>
<b>NON-ANTELOPE</b>																															
Macroscel-idea	<i>Rhynchocyon cirnei</i>	Chequered Elephant shrew	16	0	8	0	0	0	0	0	7	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
Nesomyidae	<i>Cricetomys gambianus</i>	Giant pouched rat	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Suidae	<i>Potamochoerus larvatus</i>	Bushpig	0	0	0	10	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
Felidae	<i>Panthera pardus</i>	Leopard	0	5	0	0	0	4	0	0	0	2	0	0	0	0	2	0	0	0	0	5	0	0	0	5	0	0	5	0	23
Viverridae	<i>Civettictis civetta</i>	African civet	0	0	6	0	0	2	5	3	0	0	0	0	0	4	0	5	0	5	0	5	0	4	0	3	0	4	0	3	42
Felidae	<i>Panthera leo</i>	Lion	0	0	8	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	4	0	0	0	4	0	0	0	4	0	20
Hyaenidae	<i>Crocuta crocuta</i>	Spotted hyena	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0	0	0	2	0	0	0	2	9
<b>TOTAL</b>			<b>16</b>	<b>5</b>	<b>25</b>	<b>10</b>	<b>0</b>	<b>6</b>	<b>5</b>	<b>11</b>	<b>7</b>	<b>2</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>5</b>	<b>9</b>	<b>10</b>	<b>0</b>	<b>4</b>	<b>9</b>	<b>5</b>	<b>156</b>				

**Key to Table 13**

S = Seen, T = Track, TR = Trail, D = Dung/pellets

**Table 14.** Type of primate encounter during transect surveys in Rondo FR.

Family	Scientific Name	Common Name	Survey sites												Total			
			1		2		3		4		5		6					
			S	H	S	H	S	H	S	H	S	H	S	H				
Cercopithecidae	<i>Cercopithecus mitis</i>	Blue monkey	8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	13
Galagidae	<i>Galagoides rondoensis</i> *	Rondo dwarf galago	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Total</b>			<b>8</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>

**Key to Table 14**

S = Seen, H = Heard \*based on vocalizations heard at dusk / night.

**5.4.2 Camera traps**

Camera traps captured a total of 93 images in 2012 and 268 in 2013 (Table 15) of 12 mammal and one reptile species. This includes the Near Threatened species Leopard (*Panthera pardus*) and Chequered elephant shrew (*Rhynchocyon cirnei*). The Chequered elephant shrew was the most captured mammal in 2013 (n=131), whilst in 2012 the most captured mammal was the Giant pouched rat (*Cricetomys gambianus*) (n=73).

**Table 15.** Camera trap results for 2012 and 2013

Family	Common name	Scientific name	RL	2012				Subtotal	2013			Subtotal	Total
				CT1	CT2	CT3	CT4		CT1	CT2	CT4		
Macroscelididae	Four toed elephant shrew	<i>Petrodromus tetradactylus</i>	LC	0	0	0	0	0	0	5	37	42	42
Macroscelididae	Chequered elephant shrew	<i>Rhynchocyon cirnei</i>	NT	0	0	0	7	7	20	67	44	131	131
Sciuridae	Red bellied coast squirrel	<i>Paraxerus palliatus palliatus</i>	DD	0	0	13	0	13	2	0	10	12	25
Cercopithecidae	Blue monkey	<i>Cercopithecus mitis</i>	LC	0	0	0	0	0	6	4	6	16	16
Nesomyidae	Giant pouched rat	<i>Cricetomys gambianus</i>	LC	0	1	72	0	73	0	11	3	14	87
Herpestidae	Bushy-tailed mongoose	<i>Bdeogale crassicauda</i>	LC	0	0	0	0	0	0	1	3	4	4
Mustelidae	Honey badger	<i>Mellivora capensis</i>	LC	0	0	0	0	0	2	1	1	4	4
Bovidae	Suni	<i>Nesotragus moschatus</i>	LC	0	0	0	0	0	15	3	5	23	23
Viverridae	Blotched genet	<i>Genetta tigrina</i>	LC	0	0	0	0	0	0	3	1	4	3
Viverridae	African civet	<i>Civettictis civetta</i>	LC	0	0	0	0	0	3	5	0	8	8
Viverridae	African palm civet	<i>Nandinia binotata</i>	LC	0	0	0	0	0	0	1	0	1	1
Felidae	Leopard	<i>Panthera pardus</i>	NT	0	0	0	0	0	2	0	0	2	2
Suidae	Bush pig	<i>Potamochoerus larvatus</i>	LC	0	0	0	0	0	0	4	0	4	4
Varanidae	Monitor lizard	<i>Varanus niloticus</i>	LC	0	0	0	0	0	0	4	0	4	4

Camera trap photos from Rondo FR in 2012 and 2013



Leopard. CT 1. 2013



Honey badger. CT 1. 2013



Civet. CT 1. 2013



Sykes monkey. CT 4. 2013.



Nile monitor lizard. CT 2. 2013



Bush pig CT 2. 2013



Bushy-tailed mongoose CT 4. 2013



African palm civet. CT 4. 2013





Suni. CT 1. 2013.



Suni. CT 1. 2013.



Red bellied coast squirrel. 2012.



Sykes monkey. CT 1. 2014.

Chequered elephant shrew CT 2. 2013 showing colour variation



Using both survey methods, four threatened species were recorded in Rondo FR across both years (Table 16).

**Table 16.** Summary of threatened mammal species (IUCN 2013) recorded by mammal surveys

Family	Species	Common name	Red list status
Galagidae	<i>Galagoides rondoensis</i>	Rondo dwarf galago	CR B1ab (ii,iii) ver 3.1 (2001)
Felidae	<i>Panthera pardus</i>	Leopard	NT ver 3.1 (2001)
Felidae	<i>Panthera leo</i>	African Lion	VU A2abcd ver 3.1 (2001)
Macroscelididae	<i>Rhynchocyon cirnei</i>	Chequered elephant shrew	NT ver 3.1 (2001)

## 5.5 Discussion

Transect surveys recorded the presence of 11 mammal species in Rondo FR, and one unidentified duiker, and camera traps recorded 13 mammal species and one reptile species. In total, the surveys recorded 17 mammal species in Rondo FR. Four of the mammal species recorded are classified as near-threatened or threatened on the IUCN Red List including two species classified as Near Threatened, one Vulnerable and one Critically Endangered. Rondo forest is known to be a critical site for the coastal forest endemic Rondo galago (*Galagoides rondoensis*), and this survey indicates their continued presence in Rondo FR (Perkin *et al.*, 2008).

## 6 Herpetofauna

Based on a field survey report provided by Joanna Larson

### 6.1 Background

Clarke (1995) summarises previous herpetofaunal research in Rondo noting that the combined results of Loveridge (1942 and 1944), the Danish ICBP expedition (1994) and the Frontier-Tanzania expedition to Rondo, recorded the presence of 13 forest dependent reptile species and six amphibian species.

### 6.2 Objective

The objective of this survey was to provide a checklist of herpetofauna found in Rondo FR, with a focus on endemic species and those listed as threatened in the IUCN Red List.

### 6.3 Methods

Two methods were employed to survey amphibians and reptiles: drift fences and pitfall traps, and opportunistic surveys. Both methods were employed at Site 1 – Ntene (good forest) over a period of six days in 2012 only.

#### 6.3.1 Drift fences and Pitfall traps

Two 55 m arrays of pitfall traps and drift fences, each comprising eleven 20-litre plastic buckets, were set up near the survey campsite and maintained for six nights. Each line was checked in the morning and evening every day throughout the survey period.

#### 6.3.2 Opportunistic survey

Opportunistic surveys searching for frogs, toads and reptiles were conducted on foot in different directions from camp. Searches were conducted within areas of ideal habitat, such as in rotten logs, under bark in leaf-litter and within trees.

### 6.4 Results

In total 16 species of herpetofauna were recorded. Of these, 7 were amphibian and 9 reptile. One Tanzanian endemic was recorded, the *Mertensophryne loveridgei*. In addition, *Spelaeophryne methneri* and the Bearded pygmy chameleon (*Rhampholeon brevicaudatus*) were recorded, both endemic to Tanzania and Kenya.

**Table 17.** Reptile and amphibian species recorded in Rondo FR.

Family	Scientific name	Common name	IUCN Red list	Range
<b>AMPHIBIANS</b>				
Arthroleptidae	<i>Arthroleptis stenodactylus</i>	Shovel-footed Squeaker	LC	W
Arthroleptidae	<i>Arthroleptis xenodactyloides</i>	Dwarf Squeaker	LC	W
Rhacophoridae	<i>Chiromantis xerampelina</i>	Grey foam-nest tree frog	LC	W
Brevicipitidae	<i>Breviceps mossambicus</i>	Mozambique Rain Frog	LC	W
Brevicipitidae	<i>Spelaeophryne methneri</i>	Scarlet-snouted frog	LC	NE
Bufoidea	<i>Mertensophryne loveridgei</i>	Loveridge's forest toad	LC	E
Bufoidea	<i>Mertensophryne</i> sp	?	?	
<b>REPTILES</b>				
Chamaeleonidae	<i>Chamaeleo dilepis</i>	Common African Flap-necked Chameleon	LC	W
Chamaeleonidae	<i>Trioceros melleri</i>	Meller's Chameleon	NA	W
Chamaeleonidae	<i>Rhampholeon</i>	Bearded Pygmy Chameleon	NA	NE

Family	Scientific name	Common name	IUCN Red list	Range
	<i>brevicaudatus</i>			
Scincidae	<i>Sepsina tetradactyla</i>	Four-fingered skink	NA	W
Scincidae	<i>Mabuya varia</i>	Variable Skink	NA	W
Cordylidae	<i>Cordylus tropidosternum</i>	East African spiny-tailed lizard	NA	W
Varanidae	<i>Varanus niloticus</i>	Nile monitor lizard	NA	W
Colubridae	<i>Lycophidion depressirostre</i>	Flat-snouted Wolf Snake	NA	W
Colubridae	<i>Philothamnus punctatus</i>	Spotted Green Snake	NA	W

## 6.5 Discussion

A short survey of herpetofauna in Rondo FR resulted in the recording of 9 species of reptile and 7 species of amphibian. Only one species *Mertensophryne loveridgei*, endemic to the Eastern Arc or coastal forests was recorded by both this survey and Loveridge (1942). A longer survey is required in order to obtain more information on the herpetofaunal diversity in the forest, and to ascertain the continued presence of endemic species previously recorded in Rondo FR. Of the 16 species recorded during this survey, the IUCN Red List has assessed only seven, with all of these categorized as Least Concern.

## 7 Forest disturbance

### 7.1 Background

Rondo FR has been subject to severe human disturbance as a result of shifting cultivation and intensive logging (Clarke, 1995). Fire damage has also been a persistent problem in the forest, for example in 1982 two separate reports of 334.6 ha and 745 ha of burnt forest were recorded (Clarke, 1995 and references therein). In three surveys of the Rondo/Noto landscape, Rondo FR was found to be the most disturbed forest in the area (Perkin *et al.*, 2008).

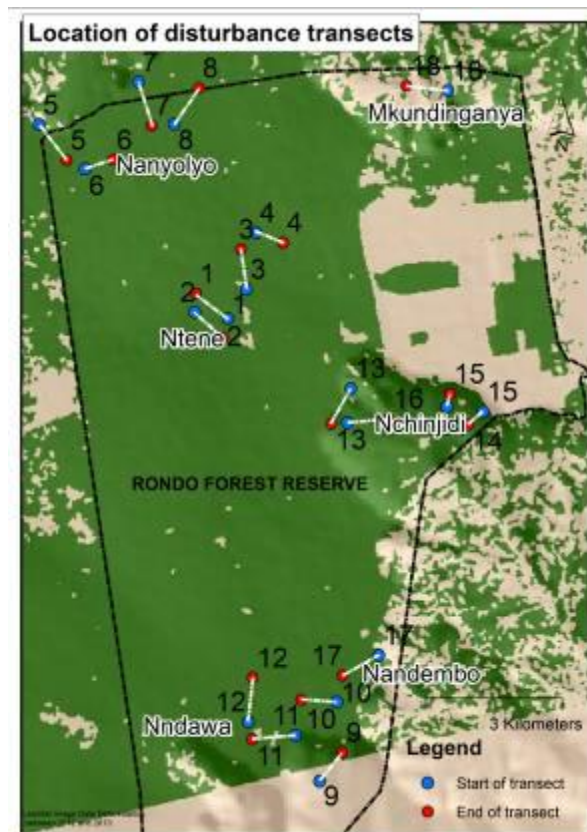
### 7.2 Objective

Disturbance surveys were carried out to meet the following objectives:

- 1) To identify the type and intensity of disturbances in Rondo FR
- 2) To gain a general understanding of the level of threats to Rondo FR and its fauna and flora
- 3) To suggest site-specific priorities for conservation and management

### 7.3 Methods and Materials

Methods used were adapted from the TFCG manual (Doggart *et al.*, 2006). A total of 36 disturbance transects were conducted in 2012 and 2013 (Figure 11). Each year, four transects were conducted in Sites 1, 2, 3 and 4 while two were conducted in Sites 5 and 6 (18 transects/year in total).



**Figure 11.** Location of disturbance transects.

A 50 m long rope was used to measure 50 m sections along each 1 km transect. Disturbance level was measured by recording the number of incidents of pole cutting, timber cutting, traps and other disturbances in a 10 m strip (5 m either side of the transect line) along each transect. The transect was sub-divided into 50 m sections using a 50 m length of rope, and data recorded separately for each section. The longitude, latitude and altitude of the start and end points of each disturbance transect were marked with a GPS, and transect bearing was recorded and followed using a compass (Table 18).

For the purpose of this survey, poles were defined as all trees with a diameter at breast height (DBH) of 5-15 cm. Timber trees were defined as all trees exceeding 15 cm DBH (see Appendices). All other forms of anthropogenic disturbance within 5 m of either side of each transect were also recorded for every 50 m section. These other forms of disturbance were defined as follows:

1. Fire damage: area affected by fire, demonstrated by burnt trees and ground vegetation.
2. Charcoal: area of charcoal burning evidenced by small patches of burnt ground with charcoal remains.
3. Pitsaw: area cleared for pitsaw activities, with pitsaw platform, or remains of such.
4. Timber/planks/poles: cut timber, planks or cut poles found on the ground ready for transport.
5. Trapping: animal traps of all varieties whether set or sprung.
6. Cultivation: evidence of crop cultivation (past or present).
7. Grazing: direct evidence or remains of cattle or goat grazing.
8. Footpath: including all human-used paths.
9. Clearing: well-established clearings within the forest as a consequence of human disturbance (usually short grassland, potentially previous settlement).

**Table 18.** Details of disturbance transects in Rondo FR.

Site No.	Site Name	CTG	TN	Coordinates		Survey Dates		Transect Length (km)		Transect area (ha)	Bearing	Elevation (m)	Total No. of Transects/ Site		Vegetation Type
				Start	End	2012	2013	2012	2013						
1	Ntene	GF	1	519152/ 8882171	518437/ 8882727	24/01/ 2012	9/4/2013	1	1	4	NE	875-880	4	4	DEF/ M. eminii
1	Ntene	GF	2	518414/ 8882314	519041/ 8881762	24/01/ 2012	9/4/2013	1	1		E/NE	887-872			
1	Ntene	GF	3	519561/ 8882819	519437/ 8883703	25/01/ 2012	10/4/ 2013	1	1		NW	890-877			
1	Ntene	GF	4	519765/ 8884064	520364/ 8883846	25/01/ 2012	10/4/ 2013	1	1		SE	873-904			
2	Nanyolyo	W	5	514985/ 8886445	515592/ 8885661	26/01/ 2012	11/4/ 2013	1	1	3.75	SE	857-849	4	4	WF
2	Nanyolyo	W	6	515999/ 8885468	516611/ 8885668	26/01/ 2012	11/4/ 2013	1	0.75		NE	843-826			
2	Nanyolyo	W	7	517179/ 8887380	517464/ 8886421	27/01/ 2012	12/4/ 2013	1	1		E/SE	818-812			
2	Nanyolyo	W	8	517969/ 8886454	518507/ 8887246	27/01/ 2012	12/4/ 2013	1	1		NE	808-807			
3	Nndawa	GF	9	521172/ 8871996	521668/ 8872626	28/01/ 2012	14/4/ 2013	1	1	4	N	554-601	4	4	Thicket/ Shrubs
3	Nndawa	GF	10	521552/ 8873735	520767/ 8873785	28/01/ 2012	14/04/ 2013	1	1		NW	777-746			
3	Nndawa	GF	11	520637/ 8873005	519682/ 8872914	29/01/ 2012	15/04/ 2013	1	1		W	653-687			
3	Nndawa	GF	12	519595/ 8873299	519699/ 8874271	29/01/ 2012	15/04/ 2013	1	1		NW	692-707			
4	Nchinjidi	GF (VF)	13	521859/ 8880634	521426/ 8879860	30/01/ 2012	17/04/ 2013	1	1	4	NW	717-674	4	4	DEF
4	Nchinjidi	GF (VF)	14	523976/ 8880240	524444/ 8879841	30/01/ 2012	17/04/ 2013	1	1		SE	589-562			
4	Nchinjidi	GF (VF)	15	524767/ 8880127	524043/ 8880518	31/01/ 2012	18/04/ 2013	1	1		SW	623-610			
4	Nchinjidi	GF (VF)	16	521780/ 8879881	522696/ 8879966	31/01/ 2012	19/04/ 2013	1	1		SE	626-561			
5	Nandembo	DST	17	522479/ 8874767	521675/ 8874316	02/02/ 2012	16/04/ 2013	1	1	1	SW	789-774	1	1	DEF/DST
6	Mkundin-	DST	18	524001/ 523079/	523079/	03/02/ 20/04/	20/04/	1	1	1	NW	760-631	1	1	Thicket/

Site No.	Site Name	CTG	TN	Coordinates		Survey Dates		Transect Length (km)		Transect area (ha)	Bearing	Elevation (m)	Total No. of Transects/ Site		Vegetation Type
				Start	End	2012	2013	2012	2013				2012	2013	
	ganya			8887191	8887298	2012	2013								Shrubs
<b>TOTAL</b>										<b>17.75</b>			<b>18</b>	<b>18</b>	

### Key to Table 18

CTG=Category, TN= Transect Number

#### Vegetational types:

DEF= Dry Evergreen Forest , WF = Woodland Forest,

#### Categories:

GF= Good forest, DIST= Disturbed, VF= Valley floor.

## 7.4 Results

A total of 813 disturbance events were recorded along the 36 transects at six sites in Rondo FR in 2012 and 2013, with a disturbance rate of 45.8 disturbances/ha (Table 19). Overall, rates of tree cutting (poles and timber) were lower in 2013 (n=11.8/ha) than in 2012 (n=15.5 /ha).

**Table 19.** Summary of results from 2012 and 2013 disturbance surveys in Rondo FR.

Survey	Site Number	Site Name	CTG	TN	Poles				Timber				Other Disturbances	Total number of disturbances/ Total rate of disturbance	
					LVPs	NDPs	CTPs		LVTs	NDTs	CTTs				
							O	F			O	F			
2012	1	NT	GF	1	301	4	1	0	204	7	9	0	2		
	1	NT	GF	2	395	8	2	0	220	18	7	0	2		
	1	NT	GF	3	412	14	5	0	281	13	17	0	0		
	1	NT	GF	4	371	11	0	0	292	6	21	0	0		
	<b>Subtotal Site 1</b>					<b>1479</b>	<b>37</b>	<b>8</b>	<b>0</b>	<b>997</b>	<b>44</b>	<b>54</b>	<b>0</b>	<b>4</b>	<b>66</b>
	<b>Disturbance subtotal/ha – site 1</b>							<b>2</b>	<b>0</b>			<b>13.5</b>	<b>0</b>	<b>1</b>	<b>16.5</b>
	2	NAN	W	5	330	8	0	0	158	14	0	0	14		
	2	NAN	W	6	283	7	0	0	222	11	2	0	16		
	2	NAN	W	7	322	5	2	0	196	4	0	0	20		
	2	NAN	W	8	292	15	0	0	224	7	0	0	17		
	<b>Subtotal Site 2</b>					<b>1227</b>	<b>35</b>	<b>2</b>	<b>0</b>	<b>800</b>	<b>36</b>	<b>2</b>	<b>0</b>	<b>67</b>	<b>71</b>
	<b>Disturbance subtotal/ha – site 2</b>							<b>0.53</b>	<b>0</b>			<b>0.53</b>	<b>0</b>	<b>17.9</b>	<b>18.9</b>
	3	NND	GF	9	263	7	3	0	123	2	4	0	12		
	3	NND	GF	10	428	4	0	0	217	10	0	0	0		



Survey	Site Number	Site Name	CTG	TN	Poles				Timber				Other Disturbances	Total number of disturbances/ Total rate of disturbance
					LVPs	NDPs	CTPs		LVTs	NDTs	CTTs			
							O	F			O	F		
	3	NND	GF	11	438	3	0	0	125	9	2	0	11	
	3	NND	GF	12	339	2	0	0	194	4	0	0	14	
	<b>Subtotal site 3</b>				<b>1468</b>	<b>16</b>	<b>3</b>	<b>0</b>	<b>659</b>	<b>25</b>	<b>6</b>	<b>0</b>	<b>37</b>	<b>46</b>
	<b>Disturbance subtotal/ha – site 3</b>						<b>0.75</b>	<b>0</b>			<b>1.5</b>	<b>0</b>	<b>9.25</b>	<b>11.5</b>
	4	NCH	GF (VF)	13	682	3	1	1	127	2	0	0	0	
	4	NCH	GF (VF)	14	568	14	0	0	192	14	0	0	0	
	4	NCH	GF (VF)	15	479	14	0	0	195	8	0	0	3	
	4	NCH	GF (VF)	16	471	18	10	0	164	10	3	0	0	
	<b>Subtotal site 4</b>				<b>2200</b>	<b>49</b>	<b>11</b>	<b>1</b>	<b>678</b>	<b>34</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>18</b>
	<b>Disturbance subtotal/ha – site 4</b>						<b>2.75</b>	<b>0.25</b>			<b>0.75</b>	<b>0</b>	<b>0.75</b>	<b>4.5</b>
	5	NAND	DST	17	367	60	4	0	174	35	0	0	11	
	<b>Subtotal site 5</b>				<b>367</b>	<b>60</b>	<b>4</b>	<b>0</b>	<b>174</b>	<b>35</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>15</b>
	<b>Disturbance subtotal/ha – site 5</b>						<b>4</b>	<b>0</b>			<b>0</b>	<b>0</b>	<b>11</b>	<b>15</b>
	6	MKU	DST	18	141	13	132	0	42	11	49	0	34	
	<b>Subtotal site 6</b>				<b>141</b>	<b>13</b>	<b>132</b>	<b>0</b>	<b>42</b>	<b>11</b>	<b>49</b>	<b>0</b>	<b>34</b>	<b>215</b>
	<b>Disturbance subtotal/ha – site 6</b>						<b>132</b>	<b>0</b>			<b>49</b>	<b>0</b>	<b>34</b>	<b>215</b>
	<b>Total (2012)</b>				<b>6882</b>	<b>210</b>	<b>160</b>	<b>1</b>	<b>3350</b>	<b>185</b>	<b>114</b>	<b>0</b>	<b>156</b>	<b>431</b>
	<b>Disturbance total/ha – 2012</b>						<b>9</b>	<b>0.06</b>			<b>6.4</b>	<b>0</b>	<b>8.8</b>	<b>24.3</b>
2013	1	NT	GF	1	232	2	0	0	183	6	12	0	2	
	1	NT	GF	2	260	3	0	0	195	7	8	0	9	
	1	NT	GF	3	207	1	0	0	255	12	4	0	5	
	1	NT	GF	4	232	7	0	0	230	9	9	0	3	
	<b>Subtotal Site 1</b>				<b>931</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>863</b>	<b>34</b>	<b>33</b>	<b>0</b>	<b>19</b>	<b>52</b>
	<b>Disturbance subtotal/ha – site 1</b>						<b>0</b>	<b>0</b>			<b>8.25</b>	<b>0</b>	<b>4.75</b>	<b>13</b>
	2	NAN	W	5	335	6	0	0	205	0	0	0	14	
	2	NAN	W	6	184	1	2	0	160	1	1	0	16	
	2	NAN	W	7	272	0	0	0	202	8	0	0	20	
	2	NAN	W	8	229	10	0	0	209	3	0	0	16	
	<b>Subtotal Site 2</b>				<b>1020</b>	<b>17</b>	<b>2</b>	<b>0</b>	<b>776</b>	<b>12</b>	<b>1</b>	<b>0</b>	<b>66</b>	<b>69</b>
	<b>Disturbance subtotal/ha – site 2</b>						<b>0.53</b>	<b>0</b>			<b>0.27</b>	<b>0</b>	<b>17.6</b>	<b>18.4</b>
	3	NND	GF	9	217	11	0	0	120	12	3	0	12	
	3	NND	GF	10	424	6	0	1	213	2	1	0	0	
	3	NND	GF	11	451	4	1	0	130	6	1	0	12	
	3	NND	GF	12	334	5	1	0	221	2	2	0	14	
	<b>Subtotal site 3</b>				<b>1426</b>	<b>26</b>	<b>2</b>	<b>1</b>	<b>684</b>	<b>22</b>	<b>7</b>	<b>0</b>	<b>38</b>	<b>48</b>
	<b>Disturbance subtotal/ha – site 3</b>						<b>0.5</b>	<b>0.25</b>			<b>1.75</b>	<b>0</b>	<b>9.5</b>	<b>12</b>
	4	NCH	GF (VF)	13	511	2	8	0	222	2	0	0	0	
	4	NCH	GF (VF)	14	503	13	0	0	221	16	0	0	0	
	4	NCH	GF (VF)	15	544	3	2	0	180	4	0	0	1	

Survey	Site Number	Site Name	CTG	TN	Poles				Timber				Other Disturbances	Total number of disturbances/ Total rate of disturbance
					LVPs	NDPs	CTPs		LVTs	NDTs	CTTs			
							O	F			O	F		
	4	NCH	GF (VF)	16	468	17	6	0	195	9	5	0	2	
	<b>Subtotal site 4</b>				<b>2026</b>	<b>35</b>	<b>16</b>	<b>0</b>	<b>818</b>	<b>31</b>	<b>5</b>	<b>0</b>	<b>3</b>	<b>24</b>
	<b>Disturbance subtotal/ha – site 4</b>						<b>4</b>	<b>0</b>			<b>1.25</b>	<b>0</b>	<b>0.75</b>	<b>6</b>
	5	NAND	DIST	17	372	54	6	0	201	30	0	0	12	
	<b>Subtotal site 5</b>				<b>372</b>	<b>54</b>	<b>6</b>	<b>0</b>	<b>201</b>	<b>30</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>18</b>
	<b>Disturbance subtotal/ha – site 5</b>						<b>6</b>	<b>0</b>			<b>0</b>	<b>0</b>	<b>12</b>	<b>18</b>
	6	MKU	DIST	18	175	6	101	0	100	14	36	0	34	
	<b>Subtotal site 6</b>				<b>175</b>	<b>6</b>	<b>101</b>	<b>0</b>	<b>100</b>	<b>14</b>	<b>36</b>	<b>0</b>	<b>34</b>	<b>171</b>
	<b>Disturbance subtotal/ha – site 6</b>						<b>101</b>	<b>0</b>			<b>36</b>	<b>0</b>	<b>34</b>	<b>171</b>
	<b>TOTAL (2013)</b>				<b>5950</b>	<b>151</b>	<b>127</b>	<b>1</b>	<b>3442</b>	<b>143</b>	<b>82</b>	<b>0</b>	<b>172</b>	<b>382</b>
	<b>Disturbance total/ha – 2013</b>						<b>7.2</b>	<b>0.06</b>			<b>4.6</b>	<b>0</b>	<b>9.7</b>	<b>21.5</b>
<b>OVERALL TOTAL (2012 &amp; 2013)</b>					<b>12832</b>	<b>361</b>	<b>287</b>	<b>2</b>	<b>6792</b>	<b>328</b>	<b>196</b>	<b>0</b>	<b>328</b>	<b>813</b>
<b>OVERALL TOTAL/HA (2012 &amp; 2013)</b>							<b>16.2</b>	<b>0.1</b>			<b>11</b>	<b>0</b>	<b>18.5</b>	<b>45.8</b>

**Key to Table 19:**

T.NO. = Transect number

**Poles:**

LVPs= Live poles, NDPs= naturally dead poles, CTPs=Cut poles, O= old cut poles, F = Fresh cut poles

**Timbers:**

LVTs= Live timbers, NDTs= naturally dead timbers, CTTs = Cut timbers, O= Old cut timbers, F= Fresh cut timbers

**Survey sites names:**

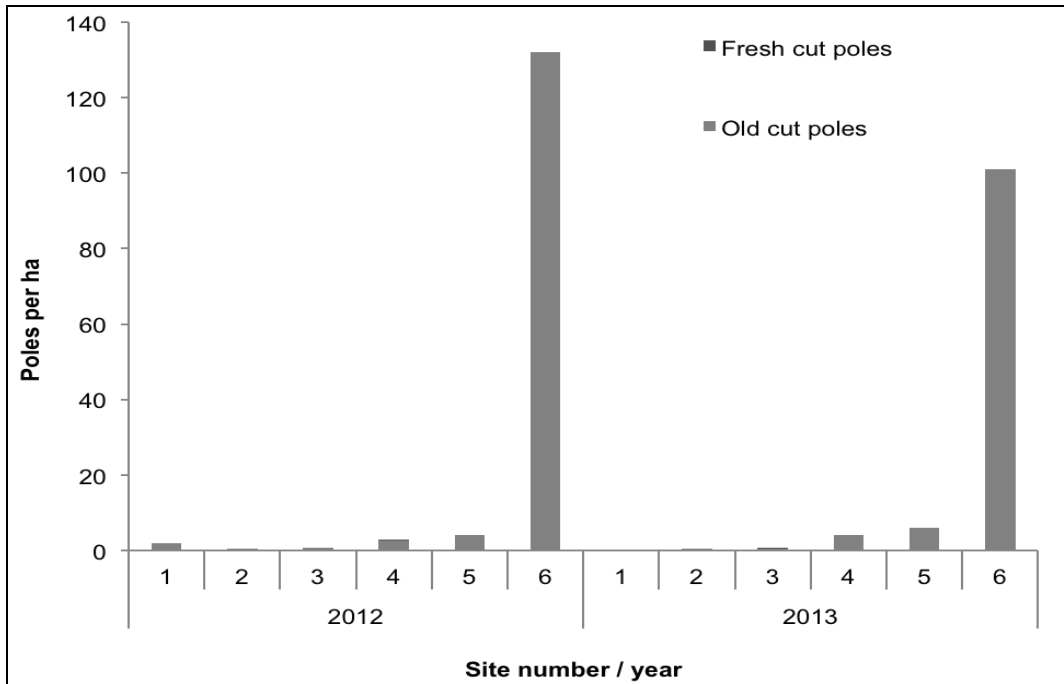
NT= Ntene, NAN=Nanyolyo, NND= Nndawa, NCH= Nchinjidi, NAND=Nandembo, MKU= Mkundinganya

**Categories:**

GF= Good forest, W= Woodland, GF (VF) = Good forest (Valley floor), DIST= Disturbed.

### 7.4.1 Pole extraction

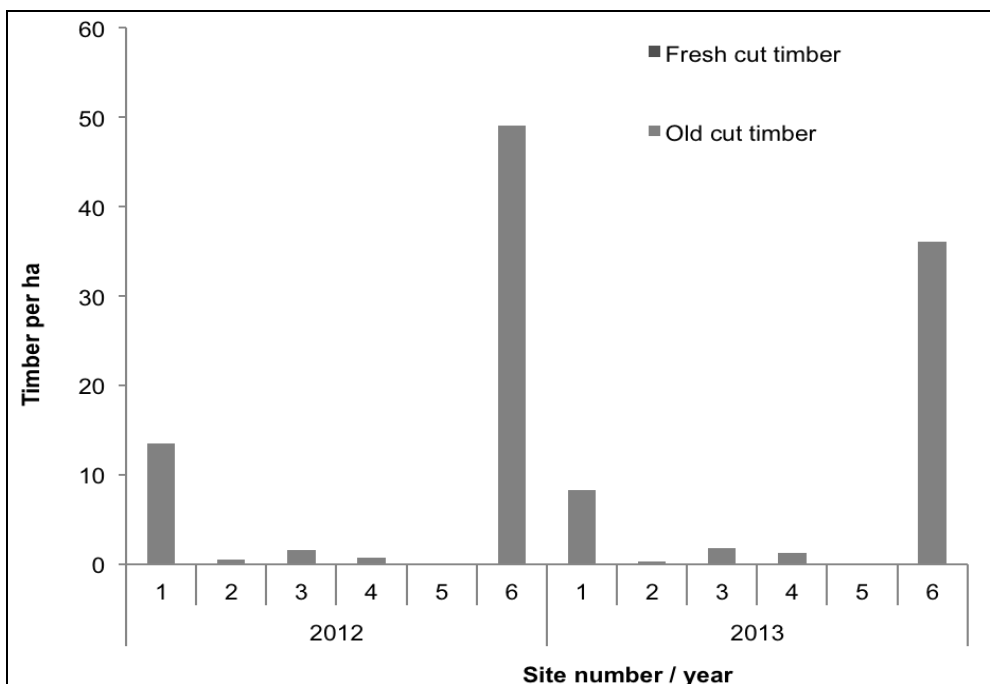
A total of 289 pole disturbance events were recorded in 2012 & 2013. Of these, 99.3% (n=287) were old cut poles and 0.7% (n=2) were fresh cut. Site 6 – Mkundinganya had the highest rate of pole disturbances across the sites in both years, while Site 2 – Nanyolyo in 2012 and Site 1 – Ntene in 2013 had the lowest rate of pole disturbance (Figure 12).



**Figure 12.** Rate of cut poles recorded per hectare across survey sites in Rondo FR in 2012 and 2013.

### 7.4.2 Timber Extraction

A total of 196 timber disturbance events were recorded in 2012 & 2013. All of these were old cut timber events, with no recorded fresh cut timber in either 2012 or 2013. Again, site 6 – Mkundinganya had the highest rate of timber disturbances across the sites in both years, whilst no recordings of timber disturbance were made in Site 5 – Nandembo in both 2012 and 2013 (Figure 13).



**Figure 13.** Rate of cut timber recorded per hectare across survey sites in Rondo FR in 2012 and 2013.

### 7.4.3 Other disturbances

Overall, a total of 328 other disturbances were recorded across the survey area in 2012 and 2013 (Table 20). Of these, 78% (n=255) was fire damage, 7 % ( n=24) was paths or roads and 15 % ( n=49) was agricultural encroachment (cultivation). Again, Site 6 – Mkundinganya had the highest rate of other disturbances in both years, while site 4 – Nchinjidi was found to have the lowest rate of other disturbances in both 2012 and 2013 (Figure 14). Fire was the most frequently recorded type of other disturbance across the sites in both years (Figure 15).

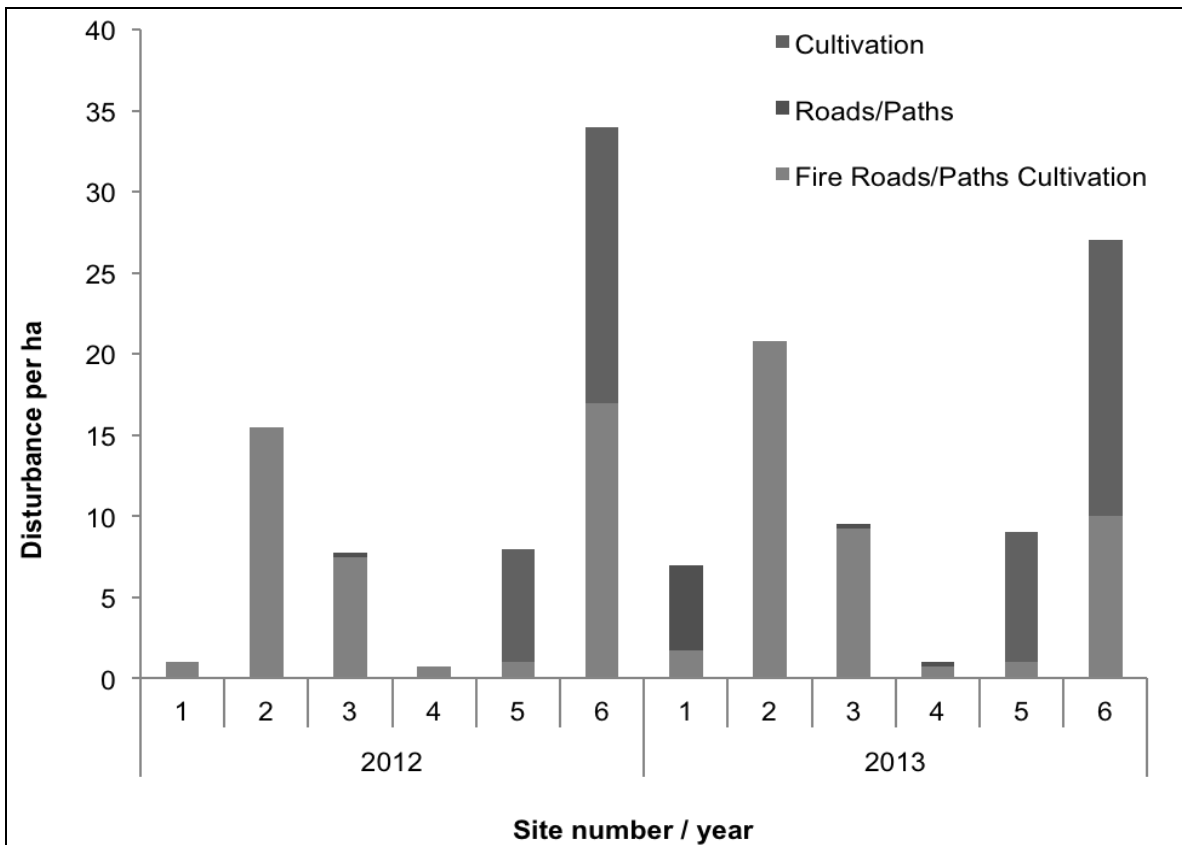
**Table 20.** Summary of other disturbances events in Rondo FR in 2012 and 2013 .

Year	Site	Category	Other disturbance events			Total
			Fire	Road	Cultivation	
2012	1 - Ntene	GF	4	0	0	4
	<b>Disturbance/ha – Site 1</b>		<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
	2 - Nanyolyo	W	58	0	0	58
	<b>Disturbance/ha – Site 2</b>		<b>15.47</b>	<b>0</b>	<b>0</b>	<b>15.47</b>
	3 - Nndawa	GF	30	1	0	31
	<b>Disturbance/ha – Site 3</b>		<b>7.5</b>	<b>0.25</b>	<b>0</b>	<b>7.75</b>
	4 - Nchinjidi	GF (VF)	3	0	0	3
	<b>Disturbance/ha – Site 4</b>		<b>0.75</b>	<b>0</b>	<b>0</b>	<b>0.75</b>
	5 - Nandembo	DIST	4	0	7	11
	<b>Disturbance/ha – Site 5</b>		<b>1</b>	<b>0</b>	<b>7</b>	<b>11</b>
	6 - Mkundinganya	DIST	17	0	17	34
<b>Disturbance/ha – Site 6</b>		<b>17</b>	<b>0</b>	<b>17</b>	<b>34</b>	
<b>Subtotal 2012</b>			<b>116</b>	<b>1</b>	<b>24</b>	<b>141</b>
<b>Disturbance/ha – Subtotal 2012</b>			<b>6.5</b>	<b>0.06</b>	<b>1.4</b>	<b>7.9</b>
2013	1 - Ntene	GF	7	21	0	28
	<b>Disturbance/ha – Site 1</b>		<b>1.75</b>	<b>5.25</b>	<b>0</b>	<b>7</b>
	2 - Nanyolyo	W	78	0	0	78
	<b>Disturbance/ha – Site 2</b>		<b>20.8</b>	<b>0</b>	<b>0</b>	<b>20.8</b>
	3 - Nndawa	GF	37	1	0	38
	<b>Disturbance/ha – Site 3</b>		<b>9.25</b>	<b>0.25</b>	<b>0</b>	<b>9.5</b>
	4 - Nchinjidi	GF (VF)	3	1	0	4
	<b>Disturbance/ha – Site 4</b>		<b>0.75</b>	<b>0.25</b>	<b>0</b>	<b>1</b>
	5 - Nandembo	DIST	4	0	8	12
	<b>Disturbance/ha – Site 5</b>		<b>1</b>	<b>0</b>	<b>8</b>	<b>12</b>
	6 - Mkundinganya	DIST	10	0	17	27
<b>Disturbance/ha – Site 6</b>		<b>10</b>	<b>0</b>	<b>17</b>	<b>27</b>	
<b>Subtotal 2013</b>			<b>139</b>	<b>23</b>	<b>25</b>	<b>187</b>
<b>Disturbance/ha – Subtotal 2012</b>			<b>7.8</b>	<b>1.3</b>	<b>1.4</b>	<b>10.5</b>
<b>Overall Total (2012 &amp; 2013)</b>			<b>255</b>	<b>24</b>	<b>49</b>	<b>328</b>
<b>Disturbance/ha – Overall total (2012 &amp; 2013)</b>			<b>14.4</b>	<b>1.4</b>	<b>2.8</b>	<b>18.5</b>

**Key to Table 20:**

**Category:**

GF= good forest, W= Woodland, DIST=Disturbed, GF(VF) =Good forest ( Valley Floor).



**Figure 14.** Rate of other disturbance events recorded per hectare across survey sites in Rondo FR in 2012 and 2013.



Using a combination of remote sensing and ground-truthing the team also assessed the area in which *M. eminii* is found. The area at highest risk is shown in Figure 15.

**Figure 15.** Map of areas affected by fire, cultivation and *Maesopsis eminii*.

## 7.5 Discussion

Coastal forests and the biodiversity they support are under threat of degradation and loss due to a wide range of natural and human-induced causes (EACFE, 2006). Between 1949 and 1985, Rondo FR was threatened by a number of companies extracting timber for export. Tree species that were targeted for logging include Mpingo (*Dalbergia melanoxylon*), Mninga (*Pterocarpus angolensis*) and Mvule (*Millicia excelsa*) (Clarke, 1995). However, since the 1990s this activity has reduced, with the level of disturbance in the forest showing significant decrease in recent years. For example, Perkin *et al.* (2008) recorded similar numbers of cut trees in Rondo FR to that in this survey, except for the high rates of disturbance at Site 6. Two local forest guides indicated that this area of Rondo FR was particularly affected by agricultural activities, with trees cleared for cultivation. Interestingly, no pitsawing activities

were recorded by this survey, whereas Eriksen *et al.* (1993) recorded signs of small-scale pitsawing activities in the forest (1993).

In a study of disturbance in ten Coastal forests in Tanzania Ahrends (2005) found that 16.35% of all trees had been cut. In contrast in Rondo FR only 2.3% of trees had been cut although the rate varied significantly across the reserve with the rate of cut trees at Site 6 reaching 47%. Fire is a persistent threat to the forest with fire damage recorded in all sites. Bhatia (1990) recorded 334.6 ha burnt in 1981 while in 1985 Erikson *et al.* (1993) recorded increased incidents of fire with 745 ha burnt. A total of 255 fire incidents were recorded in this survey, with 53% of these recorded in the north-western side of the reserve (Nanyolo). Increasing fire damage poses a threat to the habitat of Rondo FR and globally threatened species such as the Rondo dwarf galago (*Galagoides rondoensis*), the spotted ground-thrush (*Zoothera guttata*), African elephant (*Loxodonta Africana*) and East Coast Akalat (*Sheppardia gunning*).

Findings of the survey indicate that agricultural encroachment is a threat on the northern border of the reserve (Site 6), followed by the central part of Nchinjidi valley and in the vicinity of the south-eastern part of the reserve.

The invasive species, *Maesopsis eminii*, was introduced to the reserve from Uganda and Bukoba. This species was discovered by the TFCG survey, and it appears to be spreading especially in the central part of the reserve. This resulting competition with native species presents concerns for the stability of the reserve's ecosystem. However, the recommended mechanical removal (Figure 16) of this species needs to be carefully monitored as it is resulting in increased logging due to increased access to the forest around the newly cleared areas.



**Figure 16.** Mechanical removal of *Maesopsis eminii*.

## 8 Conclusions and Recommendations

Survey results indicate that Rondo Forest remains a hotspot for biodiversity within the coastal area, with a high diversity of endemic and / or threatened plant and animal species. Five IUCN threatened mammal species and five threatened bird species were recorded in the reserve. In addition, three species of herpetofauna were recorded by the surveys that are endemic or near-endemic to the Eastern African Coastal Forests.

Threats including fire, agricultural encroachment and tree cutting are negatively affecting the biodiversity of the reserve with lower bird species richness in the north of the reserve where the forest has been affected by agricultural encroachment. Effective monitoring of threats is crucial to conserve the important biodiversity of Rondo FR.

Based on survey findings the following actions are recommended:

### 8.1 Management recommendations

- 1) Increase patrols and law enforcement in the reserve.
- 2) Establish joint forest management based on equitable sharing of responsibilities and benefits.
- 3) Provide training on different economic activities for communities adjacent to the reserve in order to reduce dependence on shifting cultivation.
- 4) Raise community awareness on the biological value of the forest.
- 5) Allocate an adequate budget for the active management of the reserve.
- 6) Continue to remove the *Maesopsis* from the reserve.

### 8.2 Research recommendations

- 1) Identify appropriate methods for the removal of invasive species such as *Maesopsis eminii* are needed.
- 2) Careful monitoring of the biodiversity value and threats to forest is continued, for effective protection of Rondo FR.

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**Appendix 1.** Checklist of plant taxa (species, subspecies, varieties) recorded in Rondo Forest Reserve in 2012 & 2013

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Acanthaceae		H	Forest	MM7630		1			1									
Acanthaceae		Herb	CEDF		Rec.						1	1		1		1		
Acanthaceae	<i>Crossandra</i>	Herb	CWF		MM 8896						1			1		1		
Acanthaceae	<i>Isoglossa</i>	Herb	CEDF		MM 8707						1			1		1		
Acanthaceae	<i>Justicia</i>	Herb	CWF		MM 8898											1		
Acanthaceae	<i>Justicia fittonioides</i>	H	Woodland	MM7658		1		1		1								EAM+CF
Acanthaceae	<i>Justicia fittonioides</i>	Herb	CEDF		MM 8841						1					1		EAM+CF
Acanthaceae	<i>Justicia striata</i>	Herb	CEDF		MM 8718						1		1		1			AFR
Acanthaceae	<i>Sclerochiton tanzaniensis</i>	Liane	CWF		MM 8762						1			1		1		EAM+CF
Acanthaceae	<i>Sclerochiton vogelii</i> subsp. <i>holstii</i>	Shrub	CEDF		MM 8725						1		1		1			EAM+CF
Acanthaceae	<i>Streptosiphon hirsutus</i>	S	Forest		Rec.			1									1	CF
Acanthaceae	<i>Streptosiphon hirsutus</i>	S	Forest	MM7629		1		1	1									CF
Acanthaceae	<i>Thunbergia heterochondros</i>	c	Forest	MM7625		1		1	1									EAM+CF
Acanthaceae	<i>Thunbergia stelligera</i>	Liane	CEDF		MM 8695							1	1	1				AFR
Acanthaceae	<i>Whitfieldia orientalis</i>	T	T	MM7603	Rec.	1		1	1		1		1				1	EAM+CF
Amaranthaceae	<i>Celosia</i>	Herb	CEDF	MM 8700							1				1	1		
Amaranthaceae	<i>Cyathula</i>	Herb	CEDF	MM 8865							1		1			1		
Anacardiaceae	<i>Lannea schweinfurthii</i> var. <i>stuhlmannii</i>	T	Forest			1		1	1									AFR
Anacardiaceae	<i>Ozoroa obovata</i>	T	F/ Woodland	Rec		1	1	1			1	1		1	1	1		AFR
Anacardiaceae	<i>Rhus glaucescens</i>	T	Forest			1	1			1	1							WS
Anacardiaceae	<i>Sorindeia madagascariensis</i>	Tree	CEDF	Rec.							1		1	1				WS
Annonaceae	<i>Annona senegalensis</i> subsp. <i>senegalensis</i>	T	F/ Woodland			1	1				1							WS
Annonaceae	<i>Annona senegalensis</i> subsp. <i>senegalensis</i>	Tree	CWF	Rec.							1	1		1		1		WS
Annonaceae	<i>Artabotrys</i>	L	Woodland		MM 8842	1	1	1			1			1		1		
Annonaceae	<i>Artabotrys</i>	Liane	CEDF	MM8891							1		1			1		
Annonaceae	<i>Lettowianthus stellatus</i>	T	Forest			1			1	1								EAM+CF
Annonaceae	<i>Mkilua fragrans</i>	T	Forest	MM7652A					1									EAM+CF
Annonaceae	<i>Monanthes taxoides</i>	Liane	CEDF	MM 8832									1					
Annonaceae	<i>Monanthes taxoides</i> subsp. <i>buchananii</i>	L	Forest			1	1		1	1	1							AFR
Annonaceae	<i>Monanthes taxoides</i> subsp. <i>buchananii</i>	L	Forest			1	1	1	1	1	1							AFR
Annonaceae	<i>Monanthes taxoides</i> subsp. <i>buchananii</i>	L	Forest	MM7623	MM 8759	1		1	1		1							AFR
Annonaceae	<i>Monodora</i>	T	Forest	MM7600		1		1	1									
Annonaceae	<i>Monodora minor</i>	T	Forest		MM 8853						1		1		1	1		CF
Annonaceae	<i>Uvaria</i>	T	Forest	MM7651		1		1	1									
Annonaceae	<i>Uvaria</i>	T	Forest	MM7665		1		1		1								

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution	
						1	2	3	4	5	6	1	2	3	4	5	6		
Annonaceae	<i>Uvaria</i>	Liane	CEDF	MM8855												1		1	
Annonaceae	<i>Uvaria acuminata</i>	L	F/ Woodland	MM7609	Rec.	1	1	1	1			1						1	EAM+CF
Annonaceae	<i>Uvaria lucida</i> subsp. <i>lucida</i>	Tree	CWF	Rec.								1				1		1	AFR
Annonaceae	<i>Xylopi</i>	L	CWF		MM 8759							1				1		1	
Annonaceae	<i>Xylopi</i>	Tree	CWF	Rec.								1						1	
Annonaceae	<i>Xylopi collina</i>	L	Forest	MM7597		1	1	1	1	1	1								CF
Annonaceae	<i>Xylopi collina</i>	Tree	CWF	MM 8757								1				1			CF
Annonaceae	<i>Xylopi collina</i>	T	Fallow	MM7663		1			1	1									CF
Apiaceae	<i>Steganotaenia araliacea</i>	Tree	CWF		Rec							1				1			AFR
Apocynaceae	<i>Carvalhoa campanulata</i>	S	Forest	MM7542	Rec.	1		1		1	1	1			1		1	1	AFR
Apocynaceae	<i>Dictyophleba lucida</i>	L	F/ Woodland		MM 8705	1	1	1	1		1	1			1	1	1	1	WS
Apocynaceae	<i>Diplorrhynchus condylocarpon</i>	Tree	CWF		Rec.										1			1	AFR
Apocynaceae	<i>Funtumia africana</i>	T	Forest		Rec.	1			1	1	1	1						1	AFR
Apocynaceae	<i>Holarrhena pubescens</i>	T	F/ Woodland	MM7587	MM 8765	1	1	1	1	1	1	1	1	1	1	1	1	1	WS
Apocynaceae	<i>Landolphia buchananii</i>	L	F/ Woodland			1	1	1	1	1	1								AFR
Apocynaceae	<i>Landolphia parvifolia</i>	Liane	CWF		MM 8791							1			1				AFR
Apocynaceae	<i>Rauvolfia caffra</i>	T	Forest		Rec.	1			1			1			1		1	1	AFR
Apocynaceae	<i>Rauvolfia mombasiana</i>	T	F/ Woodland		MM 8836	1			1				1	1				1	AFR
Apocynaceae	<i>Secamone</i>	L	Forest	MM7551		1				1									
Apocynaceae	<i>Secamone</i>	Liane	CWF		MM 8883							1	1	1	1	1			
Apocynaceae	<i>Secamone parvifolia</i>	Liane	CEDF		MM 8861							1	1		1			1	AFR
Apocynaceae	<i>Tabernaemontana elegans</i>	T	Woodland		MM 8825	1	1	1	1			1			1			1	AFR
Apocynaceae	<i>Tabernaemontana pachysiphon</i>	T	Forest		Rec.	1		1	1			1						1	AFR
Apocynaceae	<i>Tabernaemontana ventricosa</i>	T	Forest		MM 8712	1			1			1							AFR
Araceae	<i>Culcasia</i>	Liane	CEDF		Rec.							1						1	
Araceae	<i>Culcasia orientalis</i>	H	Forest			1		1	1										AFR
Araliaceae	<i>Cussonia zimmermanii</i>	T	Forest		Rec.	1			1			1			1			1	EAM+CF
Asparagaceae	<i>Asparagus setaceus</i>	H	Forest		Rec.	1	1		1	1	1	1			1		1	1	AFR
Aspleniaceae	<i>Asplenium</i>	Fern	CEDF		MM 8742							1	1		1			1	
Asteraceae	<i>Aspilia kotschyi</i>	Herb	CWF		MM 8794							1			1			1	AFR
Asteraceae	<i>Bidens pilosa</i>	H	Forest			1			1										WS
Asteraceae	<i>Blepharispermum zanguebaricum</i>	Liane	CEDF		MM 8846										1			1	AFR
Asteraceae	<i>Brachylaena huillensis</i>	T	Forest	MM7659	Rec.	1			1			1			1	1	1	1	AFR
Asteraceae	<i>Hypericophyllum elatum</i>	Herb	CWF		MM 8758													1	AFR
Asteraceae	<i>Vernonia</i>	S	Forest			1		1	1										

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Asteraceae	<i>Vernonia</i>	S	Forest		MM 8735							1				1	1	
Asteraceae	<i>Vernonia</i>	Shrub	CWF		MM 8780							1				1	1	
Asteraceae	<i>Vernonia</i>	herb	CWF		MM 8893							1		1	1	1	1	
Asteraceae	<i>Vernonia colorata</i>	Shrub	CEDF		MM 8829							1				1		WS
Asteraceae	<i>Vernonia poskeana</i>	Herb	CWF		MM 8871							1		1			1	AFR
Asteraceae	<i>Vernonia zanzibarensis</i>	S	Forest	MM7610		1		1										EAM+CF
Bignoniaceae	<i>Fernandoa</i>	T	Forest			1		1	1									
Bignoniaceae	<i>Fernandoa magnifica</i>	Tree	CEDF		Rec.							1						AFR
Bignoniaceae	<i>Kigelia africana</i>	Tree	CEDF		Rec.							1		1	1		1	AFR
Bignoniaceae	<i>Markhamia lutea</i>	T	F/ Woodland			1		1		1								AFR
Bignoniaceae	<i>Markhamia obtusifolia</i>	T	F/ Woodland		Rec.	1	1	1		1	1	1			1		1	AFR
Bombacaceae	<i>Ceiba pentandra</i>	Tree	CEDF		Rec.							1						WS
Bombacaceae	<i>Rhodognaphalon schumannianum</i>	T	Forest		Rec.	1				1		1	1				1	AFR
Boraginaceae	<i>Cordia goetzei</i>	Tree	CWF		MM 8771							1	1				1	AFR
Boraginaceae	<i>Ehretia amoena</i>	T	Forest			1			1		1							AFR
Burseraceae	<i>Commiphora</i>	Tree	CWF		MM 8869							1		1			1	
Burseraceae	<i>Commiphora</i>	Tree	CEDF		MM 8709							1					1	
Burseraceae	<i>Commiphora africana</i>	T	Woodland		Rec.	1			1		1	1		1			1	AFR
Burseraceae	<i>Commiphora eminii</i> subsp. <i>zimmermannii</i>	T	Forest	MM7563		1		1	1									AFR
Burseraceae	<i>Commiphora fulvomentosa</i>	T	Forest			1			1									EAM+CF
Capparaceae	<i>Boscia salicifolia</i>	Tree	CWF		Rec.							1	1		1	1	1	AFR
Capparaceae	<i>Capparis erythrocarpos</i> var. <i>rosea</i>	Liane	CEDF		MM 8743							1	1	1		1	1	AFR
Capparaceae	<i>Cladostemon kirkii</i>	T	Forest	MM7594		1		1	1									AFR
Capparaceae	<i>Cladostemon kirkii</i>	Tree	CWF		MM 8776							1		1			1	AFR
Capparaceae	<i>Maerua angolensis</i>	T	Woodland				1		1									AFR
Capparaceae	<i>Maerua edulis</i>	T	Forest	MM7644		1				1								AFR
Capparaceae	<i>Maerua schliebenii</i>	T	Forest	MM7649		1				1								CF
Capparaceae	<i>Maerua schliebenii</i>	T	Forest	MM7649		1		1	1									CF
Celastraceae	<i>Pristimera graciliflora</i> subsp. <i>newalensis</i>	Liane	CWF		MM 8872							1	1	1	1	1	1	CF
Celastraceae	<i>Reissantia</i>	L	F/ Woodland	MM7583		1	1	1	1	1	1							
Celastraceae	<i>Salacia elegans</i>	Liane	CEDF		MM 8710							1	1	1			1	WS
Celastraceae	<i>Salacia madagascariensis</i>	L	Forest		MM 8736	1	1	1	1	1	1	1	1	1	1	1	1	WS
Chrysobalanaceae	<i>Parinari curatellifolia</i>	T	Woodland		Rec.	1	1	1	1	1				1		1	1	WS
Clusiaceae	<i>Garcinia</i>	T	Forest	MM7558		1		1	1									
Clusiaceae	<i>Garcinia</i>	Tree	CEDF		MM 8818							1				1	1	
Clusiaceae	<i>Harungana madascariensis</i>	Tree	CWF		MM 8874							1		1		1	1	WS

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Clusiaceae	<i>Psorospermum febrifugum</i> var. <i>febrifugum</i>	Tree	CWF		MM 8784							1		1	1		1	AFR
Clusiaceae	<i>Vismia orientalis</i>	T	Forest	MM7626	MM 8704	1	1		1			1	1	1	1	1	1	EAM+CF+L N
Combretaceae	<i>Combretum celastroides</i> subsp. <i>orientale</i>	L	Forest	MM7624		1		1	1									AFR
Combretaceae	<i>Combretum molle</i>	T	Woodland			1	1		1									WS
Combretaceae	<i>Combretum pentagonum</i>	L	F/ Woodland		MM 8870	1	1	1	1		1			1			1	AFR
Combretaceae	<i>Pteleopsis apetala</i>	T	F/ Woodland		Rec.	1		1	1			1	1					CF
Combretaceae	<i>Pteleopsis myrtifolia</i>	Tree	CEDF		MM 8734							1	1			1	1	AFR
Combretaceae	<i>Terminalia sericea</i>	Tree	CWF		Rec.									1			1	AFR
Commelinaceae	<i>Aneilema aequinoctiale</i>	Herb	CEDF		MM 8827							1		1			1	AFR
Commelinaceae	<i>Commelina benghalensis</i>	H	Forest			1			1									WS
Connaraceae	<i>Agelaea pentagyna</i>	L	Forest		Rec.	1		1	1			1					1	WS
Connaraceae	<i>Rourea coccinea</i> subsp. <i>boiviniana</i>	T	Woodland	MM7547		1	1		1									AFR
Connaraceae	<i>Rourea orientalis</i>	T	Forest			1		1	1									WS
Connaraceae	<i>Vismianthus punctatus</i>	Tree	CEDF		MM 8839							1		1		1		CF
Convolvulaceae	<i>Bonamia mossambicensis</i>	C	Woodland			1	1	1	1	1	1							AFR
Convolvulaceae	<i>Bonamia mossambicensis</i>	Liane	CWF		MM 8777							1	1	1	1	1	1	AFR
Convolvulaceae	<i>Convolvulus</i>	C	Forest	MM7622		1			1		1							
Convolvulaceae	<i>Ipomoea</i>	Liane	CEDF		MM 8831							1				1		
Convolvulaceae	<i>Ipomoea eriocarpa</i>	Liane	CWF		MM 8804							1		1			1	WS
Convolvulaceae	<i>Ipomoea shupangensis</i>	Liane	CWF		MM 8877							1		1	1		1	AFR
Convolvulaceae	<i>Ipomoea wightii</i>	C	Forest			1	1		1									WS
Cucurbitaceae		H	Forest	MM7650A		1				1								
Cucurbitaceae		L	Forest			1			1									
Cucurbitaceae	<i>Lagenaria</i>	Liane	CWF		MM 8878							1		1		1	1	
Cucurbitaceae	<i>Zehneria thwaitesii</i>	Liane	CWF		MM 8904									1			1	WS
Cyperaceae	<i>Cyperus</i>	Sedge	CWF		MM 8881							1		1		1		
Cyperaceae	<i>Cyperus</i>	Sedge	Woodland	MM7652		1				1	1							
Cyperaceae	<i>Cyperus amabilis</i>	Sedge	CWF		MM 8811								1			1	1	WS
Cyperaceae	<i>Cyperus cyperoides</i>	Sedge	CEDF		MM 8833							1		1			1	WS
Cyperaceae	<i>Cyperus distans</i>	Sedge	Woodland	MM7611			1			1	1							WS
Cyperaceae	<i>Kyllinga crassipes</i>	Sedge	CEDF		MM 8862							1			1		1	AFR
Cyperaceae	<i>Pycneus macrostachyos</i>	Sedge	CWF		MM 8790							1				1		WS
Cyperaceae	<i>Pycneus macrostachyos</i>	Sedge	CEDF		MM 8854									1		1		WS
Dichapetalaceae	<i>Dichapetalum</i>	T	Fallow		MM 8892												1	
Dichapetalaceae	<i>Dichapetalum braunii</i>	L	Forest		MM 7605	1		1	1									CF
Dichapetalaceae	<i>Dichapetalum macrocarpum</i>	T	Forest			1	1											CF

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Dichapetalaceae	<i>Dichapetalum mossambicensis</i>	L	Woodland			1	1										EAM+CF	
Dilleniaceae	<i>Tetracera boiviniana</i>	T	Woodland			1	1										AFR	
Dioscoreaceae	<i>Dioscorea</i>			MM7612		1	1		1	1	1							
Dioscoreaceae	<i>Dioscorea dumetorum</i>	C	Forest		MM 8755	1	1					1	1	1	1	1	1	WS
Dioscoreaceae	<i>Dioscorea hylophila</i>	Liane	CWF		MM 8767							1	1				1	AFR
Dioscoreaceae	<i>Dioscorea quartiniana</i>	Liane	CWF		MM 8806							1	1	1	1	1	1	WS
Dracaenaceae	<i>Dracaena mannii</i>	Tree	CEDF/CW F		Rec.	1		1		1		1	1	1				AFR
Ebenaceae	<i>Diospyros</i>	T	Fallow	MM7662						1	1							
Ebenaceae	<i>Diospyros</i>	T	Woodland			1			1									
Ebenaceae	<i>Diospyros</i>	T	Woodland		MM 8733		1		1			1			1		1	
Ebenaceae	<i>Diospyros verrucosa</i>	Tree	CEDF		MM 8856							1		1	1		1	EAM+CF
Ebenaceae	<i>Diospyros mespiliformis</i>	T	Woodland			1		1	1									WS
Erythroxylaceae	<i>Erythroxylum emarginatum</i>	T	Forest	MM7598		1			1									AFR
Erythroxylaceae	<i>Erythroxylum emarginatum</i>	Tree	CEDF		MM 8821							1				1	1	AFR
Euphorbiaceae	<i>Acalypha fruticosa</i>	S	Forest	MM7628		1		1	1	1								WS
Euphorbiaceae	<i>Acalypha ornata</i>	Shrub	CWF		MM 8798							1		1			1	AFR
Euphorbiaceae	<i>Acalypha racemosa</i>	S	Forest			1		1	1									WS
Euphorbiaceae	<i>Acalypha volkensii</i>	S	Forest			1		1	1									AFR
Euphorbiaceae	<i>Alchornea laxiflora</i>	T	Forest	MM7561		1		1	1									AFR
Euphorbiaceae	<i>Alchornea laxiflora</i>	Tree	CEDF		Rec.							1	1	1	1		1	AFR
Euphorbiaceae	<i>Antidesma membranaceum</i>	T	Forest		MM 8711	1						1		1			1	AFR
Euphorbiaceae	<i>Antidesma venosum</i>	T	F/ Woodland			1	1	1	1	1	1							AFR
Euphorbiaceae	<i>Antidesma venosum</i>	Tree	CEDF/CW F		Rec.							1	1		1	1	1	AFR
Euphorbiaceae	<i>Bridelia</i>	T	Woodland	MM7608			1	1			1							
Euphorbiaceae	<i>Bridelia</i>	Tree	CEDF		MM 8851							1		1		1		
Euphorbiaceae	<i>Bridelia atroviridis</i>	Tree	CEDF		MM 8697							1		1		1	1	AFR
Euphorbiaceae	<i>Bridelia cathartica</i>	Tree	CWF		Rec								1				1	AFR
Euphorbiaceae	<i>Bridelia micrantha</i>	T	F/ Woodland			1	1	1	1									WS
Euphorbiaceae	<i>Dalechampia scandens</i>	Liane	CWF		MM 8873							1	1		1		1	WS
Euphorbiaceae	<i>Drypetes</i>	T	Forest			1			1									
Euphorbiaceae	<i>Drypetes</i>	Tree	CEDF		MM 8724							1		1		1	1	
Euphorbiaceae	<i>Drypetes</i>	T	Forest			1		1	1									
Euphorbiaceae	<i>Erythrococca</i>	S	Forest			1		1	1									
Euphorbiaceae	<i>Erythrococca kirkii</i>	S	Forest	MM7618		1			1									AFR
Euphorbiaceae	<i>Flueggea virosa</i> subsp. <i>virosa</i>	S	Woodland			1	1	1	1	1	1							WS
Euphorbiaceae	<i>Flueggea virosa</i> subsp. <i>virosa</i>	Tree	CWF		Rec							1		1		1	1	WS

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Euphorbiaceae	<i>Hymenocardia acida</i> var. <i>acida</i>	T	Woodland		MM 8772	1			1			1	1	1	1	1	1	AFR
Euphorbiaceae	<i>Hymenocardia acida</i> var. <i>mollis</i>	H	Woodland	MM7581				1										AFR
Euphorbiaceae	<i>Hymenocardia ulmoides</i>	T	Forest		MM 8795	1	1	1	1	1	1	1		1			1	AFR
Euphorbiaceae	<i>Manihot</i>	T	Forest			1					1							cultivated
Euphorbiaceae	<i>Maprounea africana</i>	Tree	CWF		Rec.											1	1	AFR
Euphorbiaceae	<i>Margaritaria discoidea</i>	Tree	CEDF		Rec.							1	1	1			1	AFR
Euphorbiaceae	<i>Margaritaria discoidea</i>	T	Woodland				1		1									AFR
Euphorbiaceae	<i>Phyllanthus</i>	Shrub	CEDF		MM 8859							1		1			1	
Euphorbiaceae	<i>Phyllanthus</i>	Tree	CEDF		MM 8820							1		1			1	
Euphorbiaceae	<i>Phyllanthus</i>	Herb	CWF		MM 8899												1	
Euphorbiaceae	<i>Phyllanthus</i>	L	Forest	MM7661		1		1		1								
Euphorbiaceae	<i>Phyllanthus</i>	L	Fallow	MM7661		1		1	1	1								
Euphorbiaceae	<i>Phyllanthus glaucophyllus</i>	T	Woodland	MM7592												1		AFR
Euphorbiaceae	<i>Phyllanthus ovalifolius</i>	Shrub	CWF		MM 8876							1	1		1		1	WS
Euphorbiaceae	<i>Phyllanthus welwitschianus</i>	Shrub	CWF		MM 8895							1					1	WS
Euphorbiaceae	<i>Phyllanthus welwitschianus</i>	Shrub	CWF		MM 8897												1	WS
Euphorbiaceae	<i>Pseudolachnostylis maprouneifolia</i>	T	Woodland				1		1									AFR
Euphorbiaceae	<i>Riciodendron</i>	T	Woodland				1											
Euphorbiaceae	<i>Riciodendron heudelotii</i>	T	Forest			1		1	1									AFR
Euphorbiaceae	<i>Riciodendron heudelotii</i>	Tree	CEDF		Rec.							1		1			1	AFR
Euphorbiaceae	<i>Ricinus communis</i>	H	Forest			1			1									AFR
Euphorbiaceae	<i>Shirakiopsis</i>	Tree	CWF		MM 8875							1		1	1		1	
Euphorbiaceae	<i>Shirakiopsis trilocularis</i>	T	Forest			1		1	1									CF
Euphorbiaceae	<i>Suregada</i>	T	Forest	MM7604		1		1	1									
Euphorbiaceae	<i>Suregada zanzibariensis</i>	Tree	CEDF		MM 8850												1	AFR
Euphorbiaceae	<i>Suregada zanzibariensis</i>	T	Forest			1	1	1	1									AFR
Euphorbiaceae	<i>Tragia</i>	Herb	CWF		MM 8882									1		1		
Euphorbiaceae	<i>Tragia</i>	C	Forest			1			1									
Fabaceae	<i>Abrus</i>	Shrub	CWF		MM 8763												1	
Fabaceae	<i>Abrus precatorius</i>	C	Woodland			1	1	1	1	1	1							WS
Fabaceae	<i>Abrus precatorius</i>	Liane	CWF		MM 8785								1		1		1	WS
Fabaceae	<i>Acacia latistipulata</i>	Tree	CEDF		MM 8828							1						CF
Fabaceae	<i>Acacia brevispica</i>	L	Forest				1											AFR
Fabaceae	<i>Azelia quanzensis</i>	T	Forest		Rec.	1	1	1	1	1	1	1	1		1		1	AFR
Fabaceae	<i>Albizia</i>	T	Woodland		Rec.	1	1		1		1	1		1		1	1	
Fabaceae	<i>Albizia</i>	T	Woodland		Rec.		1		1		1	1	1			1	1	
Fabaceae	<i>Albizia gummifera</i> var. <i>gummifera</i>	T	Forest			1			1									WS
Fabaceae	<i>Albizia versicolor</i>	T	Woodland		Rec.		1		1			1	1	1			1	AFR

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Fabaceae	<i>Amblygonocarpus andongensis</i>	Tree	CWF		MM 8805							1	1		1		1	AFR
Fabaceae	<i>Bauhinia loeseneriana</i>	Tree	CEDF		MM 8696							1						AFR
Fabaceae	<i>Bobgunnia madagascariensis</i>	T	Woodland				1		1	1								AFR
Fabaceae	<i>Bobgunnia madagascariensis</i>	Tree	CWF		Rec.									1		1		AFR
Fabaceae	<i>Brachystegia</i>	T	Forest	MM7549			1											
Fabaceae	<i>Brachystegia microphylla</i>	T	Woodland						1		1							AFR
Fabaceae	<i>Brachystegia spiciformis</i>	Tree	CEDF		MM 8867							1					1	AFR
Fabaceae	<i>Caesalpinia volkensii</i>	L	Forest						1	1								AFR
Fabaceae	<i>Chamaecrista absus</i>	Liane	CWF		MM 8789							1			1	1		WS
Fabaceae	<i>Chamaecrista mimosoides</i>	Herb	CEDF		MM 8815								1	1				WS
Fabaceae	<i>Clitoria ternatea</i>	Liane	CWF		MM 8809								1	1				WS
Fabaceae	<i>Cordyla africana</i>	T	Forest					1	1									AFR
Fabaceae	<i>Crotalaria</i>	S	F/ Woodland	MM7626A		1	1	1	1	1	1							
Fabaceae	<i>Crotalaria goodiformis</i>	Herb	CEDF		MM 8845							1		1			1	AFR
Fabaceae	<i>Crotalaria goodiformis</i>	H	Forest	MM7606		1			1									AFR
Fabaceae	<i>Crotalaria lanceolata</i>	Herb	CWF		MM 8782							1	1					WS
Fabaceae	<i>Dalbergia</i>	L	Forest				1		1									
Fabaceae	<i>Dalbergia</i>	L	Forest				1			1	1							
Fabaceae	<i>Dalbergia armata</i>	T	Forest	MM7656			1		1	1								AFR
Fabaceae	<i>Dalbergia boehmii</i> subsp. <i>boehmii</i>	L	Forest	MM7578														AFR
Fabaceae	<i>Dalbergia bracteolata</i>	Liane	CWF		MM 8747							1	1		1	1	1	WS
Fabaceae	<i>Dalbergia melanoxylon</i>	T	Woodland				1				1							WS
Fabaceae	<i>Desmodium barbatum</i>	Herb	CWF		MM 8803							1		1		1	1	WS
Fabaceae	<i>Desmodium velutinum</i>	S	Woodland		MM 8739		1		1		1		1	1	1	1	1	WS
Fabaceae	<i>Dialium holtzii</i>	T	Forest		Rec.	1			1	1		1	1				1	AFR
Fabaceae	<i>Dichrostachys cinerea</i>	T	Woodland				1	1			1							WS
Fabaceae	<i>Dichrostachys cinerea</i>	Tree	CWF		Rec.							1	1	1	1			WS
Fabaceae	<i>Eriosema psoraloides</i>	Shrub	CWF		MM 8745							1	1	1			1	WS
Fabaceae	<i>Erythrophleum suaveolens</i>	Tree	CWF		Rec.								1		1		1	AFR
Fabaceae	<i>Gigasiphon macrosiphon</i>	T	Forest	MM7554		1		1	1									EAM+CF
Fabaceae	<i>Hymenaea verrucosa</i>	T	Forest		MM 8824	1	1	1	1	1	1	1				1	1	WS
Fabaceae	<i>Indigofera</i>	Shrub	CWF		MM 8800							1				1	1	
Fabaceae	<i>Indigofera emarginella</i>	S	Forest	MM7617			1			1	1							AFR
Fabaceae	<i>Indigofera nummulariifolia</i>	Herb	CEDF		MM 8864							1			1		1	WS
Fabaceae	<i>Indigofera ormocarpoides</i>	Shrub	CWF		MM 8901							1	1			1	1	WS
Fabaceae	<i>Millettia</i>	T	Forest	MM7637	Rec.	1		1	1	1	1	1		1		1	1	
Fabaceae	<i>Mimosa busseana</i>	Liane	CWF		MM 8807								1	1				CF



Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Fabaceae	<i>Mimosa busseana</i>	L	Forest				1	1	1	1							CF	
Fabaceae	<i>Mucuna gigantea</i>	C	Woodland				1	1									WS	
Fabaceae	<i>Mucuna poggei</i> var. <i>pesa</i>	Liane	CWF		MM 8748							1	1	1	1	1	1	AFR
Fabaceae	<i>Newtonia buchananii</i>	Tree	CEDF		MM 8835							1	1					AFR
Fabaceae	<i>Piliostigma thonningii</i>	T	Woodland		Rec.	1			1	1				1			1	AFR
Fabaceae	<i>Pterocarpus angolensis</i>	T	F/ Woodland		Rec.	1	1	1	1	1			1				1	AFR
Fabaceae	<i>Rhynchosia hirta</i>	C	Forest			1		1		1	1							WS
Fabaceae	<i>Scorodophloeus fischeri</i>	T	Woodland	MM7586		1					1							EAM+CF
Fabaceae	<i>Senna petersiana</i>	Tree	CWF		MM 8779							1	1				1	WS
Fabaceae	<i>Senna siamea</i>	Tree	CWF		Rec.							1	1		1		1	introduced
Fabaceae	<i>Tamarindus indica</i>	Tree	CWF		Rec.									1	1		1	WS
Fabaceae	<i>Tephrosia</i>	Shrub	CWF		MM 8799							1		1		1		
Fabaceae	<i>Teramnus labialis</i>	Liane	CWF		MM 8797							1		1			1	WS
Fabaceae	<i>Tetraptera tetrapleura</i>	T	Woodland					1	1	1								AFR
Flacourtiaceae		T	Woodland	MM7647			1		1									
Flacourtiaceae	<i>Bivinia jalbertii</i>	T	Forest	MM7550		1		1	1	1								WS
Flacourtiaceae	<i>Bivinia jalbertii</i>	Tree	CWF		MM 8750							1					1	WS
Flacourtiaceae	<i>Caloncoba welwitschii</i>	T	Forest		Rec.	1	1	1	1	1	1			1			1	AFR
Flacourtiaceae	<i>Casearia</i>	T	Forest			1			1									
Flacourtiaceae	<i>Casearia gladiiformis</i>	Tree	CEDF		Rec.							1						AFR
Flacourtiaceae	<i>Casearia gladiiformis</i>	T	Forest	MM7559		1	1	1	1									AFR
Flacourtiaceae	<i>Flacourtia indica</i>	T	Forest		MM 8722							1		1		1	1	WS
Flacourtiaceae	<i>Xylothea tettensis</i>	S	Forest		Rec.	1	1	1	1	1	1	1	1	1	1	1	1	AFR
Flagellariaceae	<i>Flagellaria guineensis</i>	H	Forest		Rec.	1	1	1	1			1		1	1		1	WS
Iridaceae	<i>Crocoshmia aurea</i> subsp. <i>aurea</i>	Herb	CEDF		MM 8693							1	1	1			1	AFR
Lamiaceae	<i>Hoslundia opposita</i>	S	Woodland		Rec.	1	1	1	1	1	1	1		1		1	1	AFR
Lamiaceae	<i>Plectranthus</i>	Herb	CEDF		MM 8822							1				1	1	
Lamiaceae	<i>Plectranthus pauciflorus</i>	Herb	CWF		MM 8768							1		1			1	AFR
Lamiaceae	<i>Tinneo aethiopia</i> subsp. <i>stolzii</i>	Herb	CEDF		MM 8719							1	1	1		1	1	AFR
Linaceae	<i>Hugonia</i>	L	Woodland	MM7655		1		1	1									
Linaceae	<i>Hugonia casteneifolia</i>	L	Forest			1	1	1	1									EAM+CF
Loganiaceae	<i>Anthocleista grandiflora</i>	T	Forest		Rec.	1						1				1	1	WS
Loganiaceae	<i>Mostuea brunonis</i> var. <i>brunonis</i>	S	Woodland	MM7633	MM 8860	1	1		1					1		1	1	WS
Loganiaceae	<i>Strychnos innocua</i>	T	Woodland				1		1									AFR
Loganiaceae	<i>Strychnos madagascariensis</i>	T	Woodland		Rec		1					1	1				1	WS
Loganiaceae	<i>Strychnos spinosa</i>	T	Woodland		Rec		1				1		1		1		1	WS
Loranthaceae		parasit e	CEDF		MM 8717							1		1			1	

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution	
						1	2	3	4	5	6	1	2	3	4	5	6		
Loranthaceae		parasit e	CEDF		MM 8716							1		1					
Loranthaceae	<i>Agelanthus subulatus</i>	P	Forest	MM7645		1			1									AFR	
Loranthaceae	<i>Erianthemum</i>	parasit e	CWF		MM 8749							1	1	1			1	1	
Loranthaceae	<i>Helixanthera kirkii</i>	parasit e	CWF		MM 8746							1	1	1	1			1	AFR
Malpighiaceae	<i>Acridocarpus</i>	Tree	CWF		MM 8773							1			1	1			
Malvaceae	<i>Hibiscus</i>	herb	CWF		MM 8793							1		1			1	1	
Malvaceae	<i>Hibiscus cannabinus</i>	S	Forest			1		1	1									WS	
Malvaceae	<i>Hibiscus surattensis</i>	Herb	CEDF		MM 8858							1			1			1	WS
Malvaceae	<i>Thespesia danis</i>	T	Woodland			1			1										AFR
Melastomataceae	<i>Dissotis</i>	Tree	CEDF		MM 8741							1	1		1			1	
Melastomataceae	<i>Heterotis rotundifolia</i>	herb	CWF		MM 8792								1	1					AFR
Melastomataceae	<i>Memecylon</i>	T	Forest	MM7638		1		1	1										
Melastomataceae	<i>Warneckea</i>	T	Forest	MM7557					1										
Melastomataceae	<i>Warneckea</i>	T	Forest	MM7557		1		1	1										
Meliaceae		T	Forest			1			1										
Meliaceae	<i>Khaya anotheca</i>	T	Forest			1			1										AFR
Meliaceae	<i>Pseudobersama mossambicensis</i>	Tree	CWF		MM 8885							1	1				1	1	AFR
Meliaceae	<i>Trichilia</i>	T	Forest			1		1	1										
Meliaceae	<i>Trichilia emetica</i>	Tree	CWF		Rec.									1				1	WS
Meliaceae	<i>Turraea</i>	Tree	CWF		MM 8764							1			1			1	
Meliaceae	<i>Turraea</i>	T	Forest	MM7544		1		1	1										
Meliaceae	<i>Turraea robusta</i>	T	Forest		MM 8731							1		1			1	1	AFR
Meliantaceae	<i>Bersama abyssinica</i>	T	Forest			1		1	1										AFR
Menispermaceae		Liane	CEDF		MM 8715									1			1	1	
Menispermaceae	<i>Cissampelos</i>	Liane	CEDF		MM 8698							1	1	1	1	1	1	1	
Menispermaceae	<i>Cissampelos pareira</i>	C	Woodland	MM7590		1					1								WS
Menispermaceae	<i>Tinospora caffra</i>	L	Forest	MM7595		1		1	1										AFR
Moraceae		T	Forest			1			1	1									
Moraceae	<i>Antiaris toxicaria</i> subsp. <i>welwitschii</i>	T	Forest		Rec.	1	1	1	1									1	AFR
Moraceae	<i>Ficus exasperata</i>	T	Forest		Rec	1	1		1			1						1	WS
Moraceae	<i>Ficus lutea</i>	T	Woodland		Rec.		1						1						WS
Moraceae	<i>Milicia excelsa</i>	T	Forest		Rec.	1	1	1	1	1	1	1	1	1	1	1	1	1	AFR
Moraceae	<i>Trilepisium madascariense</i>	T	Forest		Rec.	1		1	1			1	1	1			1		WS
Musaceae	<i>Ensete ventricosum</i>	H	Forest			1			1	1									AFR
Myrtaceae	<i>Syzygium guineense</i>	T	Forest			1		1	1										WS
Ochnaceae	<i>Gomphia lutambensis</i>	Tree	CEDF		MM 8840							1							CF

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Ochnaceae	<i>Ochna</i>	T	Woodland				1	1	1									
Ochnaceae	<i>Ochna</i>	T	Forest			1			1									
Ochnaceae	<i>Ochna</i>	T	Forest	MM7588			1	1		1								
Ochnaceae	<i>Ochna mossambicensis</i>	Tree	CWF		Rec.						1	1				1		AFR
Ochnaceae	<i>Ochna thomasiana</i>	T	Woodland				1	1	1									EAM+CF
Olacaceae	<i>Olax dissitiflora</i>	C	Woodland	MM7589		1					1							WS
Olacaceae	<i>Ximenia americana</i> L.	Tree	CWF		Rec							1	1				1	WS
Olacaceae	<i>Ximenia caffra</i>	T	Woodland				1	1	1									AFR
Oleaceae	<i>Jasminum</i>	C	Forest	MM 7575														
Oleaceae	<i>Schrebera trichoclada</i>	T	Woodland		MM 8801		1	1				1	1					WS
Opiliaceae	<i>Opilia</i>	L	Woodland	MM7591		1					1							
Orchidaceae	<i>Habenaria</i>	Herb	CWF		MM 8756						1						1	
Oxalidaceae	<i>Biophytum umbraculum</i>	Herb	CEDF		MM 8863						1		1					WS
Passifloraceae	<i>Adenia</i>	Liane	CEDF		Rec.						1	1	1					
Passifloraceae	<i>Adenia kirkii</i>	c	Woodland	MM7654		1		1	1									AFR
Passifloraceae	<i>Adenia kirkii</i>	Liane	CWF		MM 8796						1		1					AFR
Passifloraceae	<i>Paropsia</i>	L	Forest	MM7642		1		1	1									
Passifloraceae	<i>Schlechterina mitostemmatoides</i>	H	Forest							1								AFR
Pedaliaceae	<i>Sesamum angustifolium</i>	Herb	CWF		MM 8787								1				1	AFR
Poaceae		Grass	CWF		MM 8812						1	1						
Poaceae	<i>Eragrostis</i>	Grass	CWF		MM 8814						1		1					
Poaceae	<i>Olyra latifolia</i>	G	Forest			1			1									WS
Poaceae	<i>Olyra latifolia</i>	Grass	CWF		Rec.						1						1	WS
Poaceae	<i>Oplismenus hirtellus</i>	G	Forest			1		1	1									WS
Poaceae	<i>Panicum</i>	Grass	CEDF		MM 8823									1	1	1		
Poaceae	<i>Panicum trichocladum</i>	G	Forest			1	1		1									AFR
Poaceae	<i>Setaria megaphylla</i>	Grass	CEDF		Rec.									1	1	1		WS
Poaceae	<i>Setaria megaphylla</i>	G	Forest			1		1	1									WS
Polygalaceae	<i>Securidaca longependunculata</i>	T	Woodland		MM 8775		1		1				1				1	AFR
Polypodiaceae		FERN	Forest	MM7641		1			1									
Polypodiaceae	<i>Microgramma lycopodioides</i>	Fern	CEDF		MM 8844						1						1	WS
Proteaceae	<i>Faurea</i>	T	Woodland							1								
Proteaceae	<i>Faurea saligna</i>	Tree	CWF		MM 8894												1	AFR
Ranunculaceae	<i>Clematis</i>	C	Forest		Rec	1				1	1	1	1	1	1	1		
Rhamnaceae	<i>Helinus</i>	L	F/ Woodland	MM7552		1	1	1	1	1	1							
Rhamnaceae	<i>Helinus integrifolius</i>	Liane	CWF		MM 8754						1		1	1	1			WS
Rhamnaceae	<i>Maesopsis eminii</i>	T	Forest		Rec.	1			1		1						1	introduced

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Rhizophoraceae	<i>Cassipourea</i>	Tree	CEDF		Rec.							1	1		1		1	
Rubiaceae		T	Forest	MM7546		1					1							
Rubiaceae		T	Forest			1			1		1							
Rubiaceae		T	Forest		MM 8708							1						1
Rubiaceae		S	Forest			1			1	1								
Rubiaceae	<i>Afrocanthium parasiebenlistii</i>	T	Forest	MM7593		1		1	1									AFR
Rubiaceae	<i>Aorantho penduliflora</i>	T	Forest		MM 8721	1			1	1		1	1					EAM+CF
Rubiaceae	<i>Canthium</i>		Forest	MM7640		1			1									
Rubiaceae	<i>Canthium</i>	T	Forest	MM7640		1		1	1									
Rubiaceae	<i>Catunaregan spinosa</i>	T	Woodland		Rec		1	1					1	1				WS
Rubiaceae	<i>Chassalia</i>	S	Woodland	MM7607		1	1	1	1	1	1							
Rubiaceae	<i>Chassalia</i>	Tree	CEDF		MM 8848							1						1
Rubiaceae	<i>Chassalia umbraticola</i>	S	Woodland		MM 8900									1				1 AFR
Rubiaceae	<i>Coffea</i>	T	Forest	MM7627		1		1	1									
Rubiaceae	<i>Coptosperma</i>	Tree	CEDF									1						1
Rubiaceae	<i>Didymosalpinx norae</i>	T	Forest	MM7568		1	1											AFR
Rubiaceae	<i>Didymosalpinx norae</i>	L/S	Forest					1										AFR
Rubiaceae	<i>Didymosalpinx norae</i>	L/Shrub	CEDF		MM 8816							1					1	AFR
Rubiaceae	<i>Gardenia ternifolia</i> subsp. <i>jovis-tonantis</i>	Tree	CWF		MM 8774								1					AFR
Rubiaceae	<i>Gardenia transvenulosa</i>	T	Woodland	MM7639	MM 8849		1		1	1	1	1		1		1		CF
Rubiaceae	<i>Geophila obvallata</i>	Herb	CEDF		MM 8826							1		1				1 AFR
Rubiaceae	<i>Geophila obvallata</i>	t	Forest	MM7621		1		1	1									AFR
Rubiaceae	<i>Heinsia bussei</i>	S	Forest	MM7632	MM 8738	1	1	1	1	1	1	1		1				1 CF
Rubiaceae	<i>Keetia zanzibarica</i>	L	Woodland			1	1	1	1	1	1							AFR
Rubiaceae	<i>Keetia zanzibarica</i>	Liane	CWF		MM 8783							1		1	1			1 AFR
Rubiaceae	<i>Leptactina</i>	T	Forest	MM7614		1			1									
Rubiaceae	<i>Leptactina</i>	T	Forest	MM7615		1		1	1	1	1							
Rubiaceae	<i>Leptactina hexamera</i>	T	Forest			1		1	1	1								AFR
Rubiaceae	<i>Leptactina oxyloba</i>	Tree	CEDF		MM 8819							1		1				1 CF
Rubiaceae	<i>Leptactina papyrophloea</i>	T	Forest	MM7648		1			1									CF
Rubiaceae	<i>Leptactina papyrophloea</i>	T	Forest	MM7648		1		1	1	1								CF
Rubiaceae	<i>Leptactina papyrophloea</i>	T	Forest		MM 8847							1		1				CF
Rubiaceae	<i>Margaritopsis abrupta</i>	S	Forest	MM7540	MM 8714	1		1	1	1		1		1		1	1	AFR
Rubiaceae	<i>Margaritopsis abrupta</i>	S	S	MM7541		1	1	1	1	1								AFR
Rubiaceae	<i>Multidentia</i>	T	Woodland		Rec.		1					1	1					1
Rubiaceae	<i>Mussaenda</i>	Tree	CEDF		Rec.									1				1
Rubiaceae	<i>Mussaenda</i>	T	Forest	MM7560		1			1									
Rubiaceae	<i>Oldenlandia</i>	Herb	CWF		MM 8880							1	1	1	1	1	1	

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution	
						1	2	3	4	5	6	1	2	3	4	5	6		
Rubiaceae	<i>Oldenlandia affinis</i>	Herb	CEDF		MM 8706							1			1	1	1	WS	
Rubiaceae	<i>Oxyanthus pyriformis</i>	T	Forest		MM 8834							1		1			1	AFR	
Rubiaceae	<i>Oxyanthus pyriformis</i> subsp. <i>tanganyikensis</i>	Tree	CEDF	MM7543	Rec.	1		1	1	1			1				1	EAM+CF	
Rubiaceae	<i>Paederia</i>	Climber			MM 8770														
Rubiaceae	<i>Pavetta</i>	Liane	CEDF		MM 8726							1		1			1		
Rubiaceae	<i>Pavetta</i>	S	Forest			1		1	1										
Rubiaceae	<i>Pentas lanceolata</i>	Herb	CEDF		MM 8729							1	1				1	1	WS
Rubiaceae	<i>Pentas zanzibarica</i>	H	Forest				1			1	1								AFR
Rubiaceae	<i>Polysphaeria multiflora</i>	Tree	CEDF		MM 8730							1	1	1	1	1	1	1	WS
Rubiaceae	<i>Polysphaeria parvifolia</i>	T	Forest			1		1		1	1								AFR
Rubiaceae	<i>Psychotria</i>	T	Forest	MM7666		1		1	1										
Rubiaceae	<i>Psychotria</i>	T	Forest		MM 8703	1		1	1			1					1	1	
Rubiaceae	<i>Psychotria</i>	S	Forest	MM7555	MM 8713	1						1		1					
Rubiaceae	<i>Psychotria</i>	S	Forest	MM7650		1		1	1	1									
Rubiaceae	<i>Psydrax micans</i>	T	Forest	MM7643		1		1	1	1									CF
Rubiaceae	<i>Rhodopentas bussei</i>	S	Forest			1			1										AFR
Rubiaceae	<i>Rhodopentas parvifolia</i>	Herb	CWF		MM 8810							1		1			1	1	AFR
Rubiaceae	<i>Rothmannia macrosiphon</i>	T	Forest			1		1	1										EAM+CF
Rubiaceae	<i>Rothmannia manganjae</i>	Tree	CEDF		MM 8720							1					1	1	AFR
Rubiaceae	<i>Rutidea</i>	L	Forest			1		1	1	1									
Rubiaceae	<i>Rutidea fuscescens</i> subsp. <i>fuscescens</i>	Liane	CWF		MM 8752							1	1		1	1	1	1	AFR
Rubiaceae	<i>Rytigynia</i>	Tree	CWF		MM 8751							1	1					1	
Rubiaceae	<i>Rytigynia</i>	T	Forest	MM7571		1	1			1									
Rubiaceae	<i>Rytigynia binata</i>	Tree	CEDF		MM 8702							1			1			1	EAM+CF
Rubiaceae	<i>Rytigynia celastroides</i>	Shrub	CWF		MM 8761							1			1	1	1	1	AFR
Rubiaceae	<i>Sericanthe</i>	Shrub	CEDF		MM 8866									1				1	
Rubiaceae	<i>Sericanthe</i>	Tree	CEDF		MM 8838							1	1						
Rubiaceae	<i>Spermacoce</i>	Herb	CWF		MM 8884							1	1		1			1	
Rubiaceae	<i>Spermacoce</i>	Herb	CEDF		MM 8740							1	1				1	1	
Rubiaceae	<i>Triainolepis</i>	Tree	CWF		MM 8744							1	1	1				1	
Rubiaceae	<i>Triainolepis africana</i>	S	Forest	MM7569		1	1			1									WS
Rubiaceae	<i>Tricalysia</i>	T	Forest	MM7539		1		1	1	1									
Rubiaceae	<i>Tricalysia pallens</i>	T	Forest		MM 8723							1		1			1	1	AFR
Rubiaceae	<i>Vanqueria infausta</i>	T	Woodland				1				1								AFR
Rutaceae	<i>Clausena anisata</i>	T	Forest	MM7601		1		1	1										AFR
Rutaceae	<i>Vepris eugeniifolia</i>	T	Forest	MM7602		1		1	1										AFR
Rutaceae	<i>Vepris lanceolata</i>	Tree	CEDF		Rec.							1		1				1	WS
Rutaceae	<i>Zanthoxylum</i>	T	Forest			1		1	1										

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Rutaceae	<i>Zanthoxylum deremense</i>	T	Forest	MM7646		1				1								AFR
Rutaceae	<i>Zanthoxylum holtzianum</i>	T	Woodland	MM7582	Rec.	1		1		1		1	1	1			1	AFR
Rutaceae	<i>Zanthoxylum holtzianum</i>	Tree	CEDF		MM 8817							1		1			1	AFR
Rutaceae	<i>Zanthoxylum leprieurii</i>	T	Forest		MM 7577													AFR
Rutaceae	<i>Zanthoxylum lindense</i>	T	Forest			1												CF
Sapindaceae	<i>Allophylus</i>	Tree	CEDF		MM 8701							1	1				1	
Sapindaceae	<i>Allophylus africanus</i>	T	Forest			1		1	1									AFR
Sapindaceae	<i>Blighia unijugata</i>	T	Forest		Rec.	1		1	1		1	1		1		1	1	AFR
Sapindaceae	<i>Deinbolia borbonica</i>	T	Forest		Rec.	1	1	1	1	1	1	1	1	1	1	1	1	WS
Sapindaceae	<i>Dodonaea viscosa var. angustifolia</i>	T	Woodland		MM 8802				1	1	1	1				1	1	WS
Sapotaceae		T	Forest	MM7553		1		1	1									
Sapotaceae	<i>Chrysophyllum</i>	Tree	CEDF		Rec.							1						
Sapotaceae	<i>Englerophytum magalismontanum</i>	Tree	CWF		MM 8808							1	1					AFR
Sapotaceae	<i>Englerophytum magalismontanum</i>	T	Forest			1		1	1	1								AFR
Sapotaceae	<i>Englerophytum magalismontanum</i>	T	Forest	MM7599		1	1	1	1									AFR
Sapotaceae	<i>Mimusops</i>	T	Forest	MM7565		1			1									
Sapotaceae	<i>Pouteria alnifolia</i>	T	Forest			1				1								AFR
Sapotaceae	<i>Synsepalum</i>	T	Forest			1			1									
Sapotaceae	<i>Synsepalum</i>	T	Forest	MM7556		1		1	1									
Sapotaceae	<i>Synsepalum</i>	Tree	CEDF		Rec.							1	1		1			
Sapotaceae	<i>Synsepalum brevipes</i>	T	Forest			1		1	1									AFR
Simaroubaceae	<i>Harrisonia abyssinica</i>	T	Forest		Rec.	1	1	1	1	1	1	1		1			1	AFR
Smilacaceae	<i>Smilax anceps</i>	C	Forest			1	1	1	1	1	1	1		1		1	1	WS
Solanaceae	<i>Solanum anguivi</i>	S	Forest			1		1	1									WS
Solanaceae	<i>Solanum anguivi</i>	Shrub	CEDF		MM 8732							1				1		WS
Solanaceae	<i>Solanum zanzibarense</i>	Shrub	CEDF		MM 8728							1		1	1	1	1	EAM+CF
Solanaceae	<i>Solanum zanzibarense</i>	C	Fallow	MM7660		1		1	1	1								EAM+CF
Sterculiaceae	<i>Cola</i>	T	Forest			1		1	1									
Sterculiaceae	<i>Cola greenwayi</i>	T	Forest			1		1	1									AFR
Sterculiaceae	<i>Dombeya</i>	T	Woodland			1				1								
Sterculiaceae	<i>Dombeya acutangula</i>	Tree	CWF		MM 8902											1	1	WS
Sterculiaceae	<i>Dombeya kirkii</i>	Tree	CEDF		Rec.							1		1			1	AFR
Sterculiaceae	<i>Dombeya mupangae</i>	T	Forest			1			1	1	1							AFR
Sterculiaceae	<i>Sterculia appendiculata</i>	T	Forest			1		1	1									AFR
Tiliaceae	<i>Grewia</i>	Tree	CWF		MM 8786							1				1	1	
Tiliaceae	<i>Grewia conocarpa</i>	T	Forest		MM 8737	1	1	1	1	1	1	1	1	1	1	1	1	CF
Tiliaceae	<i>Grewia forbesii</i>	Liane	CWF		Rec.							1	1	1	1		1	AFR
Tiliaceae	<i>Triumfetta</i>	Liane	CWF		MM 8903												1	

Family	Scientific name	Habit	Habitat	Coll. No 2012	Coll. No 2013	Survey site 2012						Survey site 2013						Distribution
						1	2	3	4	5	6	1	2	3	4	5	6	
Tiliaceae	<i>Triumfetta rhomboidea</i>	H	Forest		Rec.	1			1			1				1	WS	
Ulmaceae	<i>Celtis gomphophylla</i>	Tree	CEDF		Rec.							1				1	WS	
Ulmaceae	<i>Trema orientalis</i>	T	Forest		Rec	1			1	1		1	1	1	1	1	WS	
Verbenaceae	<i>Lippia javanica</i>	S	Woodland		MM 8781	1					1					1	1	AFR
Verbenaceae	<i>Premna</i>	Liane	CEDF		MM 8727							1						
Verbenaceae	<i>Premna senensis</i>	S	Woodland	MM7653		1		1	1									AFR
Verbenaceae	<i>Premna tanganyikensis</i>	Liane	CWF		MM 8886											1	WC	
Verbenaceae	<i>Rotheca myricoides</i>	S	Forest			1		1	1									AFR
Verbenaceae	<i>Tectona grandis</i>	Tree	CEDF		Rec							1						cultivated
Verbenaceae	<i>Vitex</i>	T	Forest			1			1									
Verbenaceae	<i>Vitex</i>	T	Woodland			1					1							
Verbenaceae	<i>Vitex buchananii</i>	L/S	Forest	MM7613		1		1	1		1							AFR
Verbenaceae	<i>Vitex buchananii</i>	T	Woodland	MM7613		1		1	1									AFR
Verbenaceae	<i>Vitex ferruginea</i>	Tree	CEDF		MM 8694							1	1	1				AFR
Verbenaceae	<i>Vitex ferruginea</i>	Shrub	CWF		Rec.							1	1				1	AFR
Verbenaceae	<i>Vitex payos</i>	T	Woodland		Rec		1		1				1	1			1	AFR
Violaceae	<i>Rinorea</i>	T	Forest			1		1	1									
Violaceae	<i>Rinorea</i>	T	Forest	MM7545		1		1	1	1								
Violaceae	<i>Rinorea ferruginea</i>	T	Forest		MM 8699	1		1	1			1	1			1	1	AFR
Violaceae	<i>Rinorea ferruginea</i>	T	Forest	MM7636		1		1	1									AFR
Violaceae	<i>Rinorea ilicifolia</i>	T	Forest			1			1									WS
Viscaceae	<i>Viscum</i>	P	Woodland			1			1									
Viscaceae	<i>Viscum</i>	P	Forest	MM7631		1			1									
Viscaceae	<i>Viscum</i>	parasit e	CEDF		MM 8852									1				
Viscaceae	<i>Viscum</i>	parasit e	CEDF		MM 8890							1		1				1
Vitaceae	<i>Cissus</i>	Liane	CWF		MM 8788							1	1			1	1	
Vitaceae	<i>Cissus</i>	H	Forest	MM7619		1		1										
Vitaceae	<i>Cyphostemma</i>	Liane	CEDF		MM 8888							1		1	1			1
Vitaceae	<i>Rhoicissus</i>	H	Forest			1		1	1									
Zingiberaceae		H	Forest			1			1		1							
SPECIES RICHNESS						24	10	15	22	9	8	23	10	14	9	10	22	
						0	1	7	0	5	0	3	0	5	0	5	5	

**Appendix 2.** List of plants collected for further identification in 2012.

Family	Scientific name	Habit	Habitat	Site						Coll. No	Endemism
				1	2	3	4	5	6		
Acanthaceae		H	Forest	1			1			MM7630	
Acanthaceae	<i>Justicia fittonioides</i>	H	Woodland	1		1		1		MM7658	Endemic to Eastern Arc and Coastal Forests region
Acanthaceae	<i>Streptosiphon hirsutus</i>	S	Forest	1		1	1			MM7629	Endemic to Coastal Forest zone
Acanthaceae	<i>Thunbergia heterochondros</i>	C	Forest	1		1	1			MM7625	Endemic to Eastern Arc and Coastal Forests region
Acanthaceae	<i>Whitfieldia orientalis</i>	T	T	1		1	1			MM7603	Endemic to Eastern Arc and Coastal Forests region
Annonaceae	<i>Mkilua fragrans</i>	T	Forest							MM7652A	Endemic to Eastern Arc and Coastal Forests region
Annonaceae	<i>Monanthes buchananii</i>	T	Forest							MM7584	
Annonaceae	<i>Monanthes buchananii</i>	L	Forest	1		1	1		1	MM7623	
Annonaceae	<i>Monodora</i>	T	Forest	1		1	1			MM7600	
Annonaceae	<i>Uvaria</i>	T	Forest	1		1		1		MM7665	
Annonaceae	<i>Uvaria</i>	T	Forest	1		1	1			MM7651	
Annonaceae	<i>Uvaria acuminata</i>	L	F/Woodland	1	1	1	1			MM7609	Endemic to Eastern Arc and Coastal Forests region
Annonaceae	<i>Xylopi collina</i>	L	F/woodland	1	1	1	1	1	1	MM7597	Endemic to Coastal Forest zone
Annonaceae	<i>Xylopi collina</i>	T	Fallow	1			1	1		MM7663	Endemic to Coastal Forest zone
Apocynaceae	<i>Carvalhoa campanulata</i>	S	Forest	1		1		1	1	MM7542	
Apocynaceae	<i>Holarrhena pubescens</i>	T	F/woodland	1	1	1	1	1	1	MM7587	
Apocynaceae	<i>Secamone</i>	L	Forest	1				1		MM7551	
Araceae	<i>Culcasia orientalis</i>	C	F							MM7566	
Asteraceae	<i>Brachylaena huillensis</i>	T	Forest	1			1			MM7659	
Asteraceae	<i>Brachylaena huillensis</i>	T	Fallow	1		1		1		MM7659	
Asteraceae	<i>Vernonia zanzibarensis</i>	S	Forest	1		1				MM7610	Endemic to Eastern Arc and Coastal Forests region
Burseraceae	<i>Commiphora eminii</i> subsp. <i>zimmermannii</i>	T	Forest	1		1	1			MM7563	
Capparaceae	<i>Cladostemon kirkii</i>	T	Forest	1		1	1			MM7594	
Capparaceae	<i>Maerua edulis</i>	T	Forest	1				1		MM7644	
Capparaceae	<i>Maerua schliebenii</i>	T	Forest	1				1		MM7649	Endemic to Coastal Forest zone
Capparaceae	<i>Maerua schliebenii</i>	T	Forest	1		1	1			MM7649	Endemic to Coastal Forest zone
Celastraceae	<i>Reissantia</i>	L	F/woodland	1	1	1	1	1	1	MM7583	
Clusiaceae	<i>Garcinia</i>	T	Forest	1		1	1			MM7558	
Combretaceae	<i>Combretum</i>	L	Forest	1		1	1		1	MM7634	
Combretaceae	<i>Combretum celastroides</i> subsp. <i>orientale</i>	L	Forest	1		1	1			MM7624	
Connaraceae	<i>Rinorea coccinea</i> subsp. <i>boiviniana</i>	T	woodland	1	1		1			MM7547	
Connaraceae	<i>Rourea</i>	T	Forest							MM7574	
Connaraceae	<i>Vismianthus punctatus</i>	T	Forest							MM7548	Endemic to Coastal Forest zone
Convolvulaceae	<i>Convolvulus</i>	C	Forest	1			1		1	MM7622	
Cucurbitaceae		H	Forest	1				1		MM7650A	
Cyperaceae	<i>Cyperus</i>	Sedge	woodland	1				1	1	MM7652	



Family	Scientific name	Habit	Habitat	Site						Coll. No	Endemism
				1	2	3	4	5	6		
Cyperaceae	<i>Cyperus distans</i>	Sedge	woodland		1			1	1	MM7611	
Dichapetalaceae	<i>Dichapetalum braunii</i>	L	Forest	1		1	1			MM7605	Endemic to Coastal Forest zone
Dioscoreaceae	<i>Dioscorea</i>			1	1		1	1	1	MM7612	
Dioscoreaceae	<i>Dioscorea</i>	C	Forest							MM7573	
Dioscoreaceae	<i>Dioscorea dumetorum</i>	C	Forest							MM7572	
Ebenaceae	<i>Diospyros</i>	T	Forest							MM7564	
Ebenaceae	<i>Diospyros</i>	T	Fallow	1				1	1	MM7662	
Erythroxylaceae	<i>Erythroxylum emarginatum</i>	T	Forest	1			1			MM7598	
Euphorbiaceae	<i>Acalypha fruticosa</i>	S	Forest	1		1	1	1		MM7628	
Euphorbiaceae	<i>Acalypha fruticosa</i>	S	Forest	1		1	1			MM7628	
Euphorbiaceae	<i>Alchornea laxiflora</i>	T	Forest	1		1	1			MM7561	
Euphorbiaceae	<i>Bridelia</i>	T	woodland		1	1			1	MM7608	
Euphorbiaceae	<i>Erythrococca kirkii</i>	S	Forest	1			1			MM7618	
Euphorbiaceae	<i>Hymenocardia acida</i> var. <i>mollis</i>	T	Forest			1				MM7581	
Euphorbiaceae	<i>Phyllanthus</i>	T	Forest	1		1	1			MM7616	
Euphorbiaceae	<i>Phyllanthus</i>	L	Forest	1		1		1		MM7661	
Euphorbiaceae	<i>Phyllanthus</i>	L	Fallow	1		1	1	1		MM7661	
Euphorbiaceae	<i>Phyllanthus glaucophyllus</i>	T	woodland						1	MM7592	
Euphorbiaceae	<i>Phyllanthus glaucophyllus</i>	L/S	woodland	1					1	MM7592	
Euphorbiaceae	<i>Suregada</i>	T	Forest	1		1	1			MM7604	
Fabaceae	<i>Brachystegia</i>	T	Forest		1					MM7549	
Fabaceae	<i>Crotalaria</i>	S	F/woodland	1	1	1	1	1	1	MM7626A	
Fabaceae	<i>Crotalaria goodiiiformis</i>	H	Forest	1			1			MM7606	
Fabaceae	<i>Dalbergia boehmii</i> subsp. <i>boehmii</i>	L	Forest							MM7578	
Fabaceae	<i>Gigasiphon macrosiphon</i>	T	Forest	1		1	1			MM7554	Endemic to Eastern Arc and Coastal Forests region
Fabaceae	<i>Indigofera emarginella</i>	S	Forest		1			1	1	MM7617	
Fabaceae	<i>Millettia</i>	T	Forest	1		1	1	1	1	MM7637	
Fabaceae	<i>Scorodophloeus fischeri</i>	T	woodland	1					1	MM7586	Endemic to Eastern Arc and Coastal Forests region
Flacourtiaceae		T	woodland		1		1			MM7647	
Flacourtiaceae	<i>Bivinia jalbertii</i>	T	Forest	1		1	1	1		MM7550	
Flacourtiaceae	<i>Casearia gladiiformis</i>	T	Forest	1	1	1	1			MM7559	
Hugoniaceae	<i>Hugonia</i>	L	woodland	1		1	1			MM7655	
Hypericaceae	<i>Psorospermum febrifugum</i> var. <i>ferrugineum</i>	T	woodland							MM7579	
Hypericaceae	<i>Vismia orientalis</i>	T	Forest	1	1		1			MM7626	
Iridaceae	<i>Crocoshmia aurea</i> subsp. <i>aurea</i>	H	Forest	1		1	1			MM7596	
Loganiaceae	<i>Mostuea</i>	S	woodland	1	1		1			MM7633	
Loranthaceae	<i>Agelanthus subulatus</i>	P	Forest	1			1			MM7645	

Family	Scientific name	Habit	Habitat	Site						Coll. No	Endemism
				1	2	3	4	5	6		
Melastomataceae	<i>Memecylon</i>	T	Forest	1		1	1			MM7638	
Melastomataceae	<i>Memecylon</i>	S	F							MM7657	
Melastomataceae	<i>Warneckea</i>	T	Forest				1			MM7557	
Melastomataceae	<i>Warneckea</i>	T	Forest	1		1	1			MM7557	
Melastomataceae	<i>Warneckea</i>	T	Forest	1		1	1			MM7620	
Meliaceae	<i>Turraea</i>	T	Forest	1		1	1			MM7544	
Menispermaceae	<i>Cissampelos pareira</i>	C	woodland	1					1	MM7590	
Menispermaceae	<i>Tinospora caffra</i>	L	Forest	1		1	1			MM7595	
Ochnaceae	<i>Ochna</i>	T	Forest		1			1		MM7580	
Ochnaceae	<i>Ochna</i>	T	Forest		1	1		1		MM7588	
Ochnaceae	<i>Ochna</i>	T	Forest	1		1	1			MM7635	
Olacaceae	<i>Olax dissitiflora</i>	C	Woodland	1					1	MM7589	
Oleaceae	<i>Jasminum</i>	C	Forest							MM7575	
Opiliaceae	<i>Opilia</i>	L	woodland	1					1	MM7591	
Papilionaceae	<i>Dalbergia armata</i>	T	Forest		1		1	1		MM7656	
Passifloraceae	<i>Adenia kirkii</i>	c	woodland	1		1	1			MM7654	
Passifloraceae	<i>Paropsia</i>	L	Forest	1		1	1			MM7642	
Polypodiaceae		FERN	Forest	1			1			MM7641	
Rhamnaceae	<i>Helinus</i>	L	F/woodland	1	1	1	1	1	1	MM7552	
Rubiaceae		T	Forest	1					1	MM7546	
Rubiaceae	<i>Afrocanthium parasiebenlistii</i>	T	Forest	1		1	1			MM7593	
Rubiaceae	<i>Canthium</i>		Forest	1			1			MM7640	
Rubiaceae	<i>Canthium</i>	T	Forest	1		1	1			MM7640	
Rubiaceae	<i>Chassalia</i>	S	woodland	1	1	1	1	1	1	MM7607	
Rubiaceae	<i>Coffea</i>	T	Forest	1		1	1			MM7627	
Rubiaceae	<i>Didymosalpinx norae</i>	T	Forest	1	1					MM7568	
Rubiaceae	<i>Gardenia transvenulosa</i>	T	woodland		1		1	1	1	MM7639	Endemic to Coastal Forest zone
Rubiaceae	<i>Geophila obvallata</i>	t	Forest	1		1	1			MM7621	
Rubiaceae	<i>Heinsia bussei</i>	S	F							MM7567	Endemic to Coastal Forest zone
Rubiaceae	<i>Heinsia bussei</i>	S	Forest	1	1	1	1	1	1	MM7632	Endemic to Coastal Forest zone
Rubiaceae	<i>Leptactina</i>	T	Forest	1			1			MM7614	
Rubiaceae	<i>Leptactina</i>	T	Forest	1		1	1	1	1	MM7615	
Rubiaceae	<i>Leptactina papyrophloea</i>	T	Forest	1			1			MM7648	Endemic to Coastal Forest zone
Rubiaceae	<i>Leptactina papyrophloea</i>	T	Forest	1		1	1	1		MM7648	Endemic to Coastal Forest zone
Rubiaceae	<i>Margaritopsis abrupta</i>	S	Forest	1		1	1	1		MM7540	
Rubiaceae	<i>Margaritopsis abrupta</i>	S	S	1	1	1	1	1		MM7541	
Rubiaceae	<i>Mussaenda</i>	T	Forest	1			1			MM7560	

Family	Scientific name	Habit	Habitat	Site						Coll. No	Endemism
				1	2	3	4	5	6		
Rubiaceae	<i>Oxyanthus pyriformis</i> subsp. <i>tanganyikensis</i>	T	Forest	1		1	1	1		MM7543	Endemic to Eastern Arc and Coastal Forests region
Rubiaceae	<i>Psychotria</i>	S	Forest	1						MM7555	
Rubiaceae	<i>Psychotria</i>	S	Forest	1		1	1	1		MM7650	
Rubiaceae	<i>Psychotria</i>	T	Forest	1		1	1			MM7666	
Rubiaceae	<i>Psydrax micans</i>	T	Forest	1		1	1	1		MM7643	Endemic to Coastal Forest zone
Rubiaceae	<i>Rytigynia</i>	T	Forest	1	1			1		MM7571	
Rubiaceae	<i>Trainolepis africana</i>	S	Forest	1	1			1		MM7569	
Rubiaceae	<i>Tricalysia</i>	T	Forest	1		1	1	1		MM7539	
Rutaceae	<i>Clausena anisata</i>	T	Forest	1		1	1			MM7601	
Rutaceae	<i>Vepris eugeniifolia</i>	T	Forest	1		1	1			MM7602	
Rutaceae	<i>Zanthoxylum deremense</i>	T	Forest	1				1		MM7646	
Rutaceae	<i>Zanthoxylum holtzianum</i>	T	woodland	1		1		1		MM7582	
Rutaceae	<i>Zanthoxylum leprieurii</i>	T	Forest							MM7577	
Rutaceae	<i>Vepris</i>	T	Forest	1		1	1			MM7664	
Sapindaceae	<i>Allophylus</i>	T	Forest							MM7562	
Sapindaceae	<i>Allophylus</i>	T	Forest							MM7576	
Sapotaceae		T	Forest	1		1	1			MM7553	
Sapotaceae	<i>Englerophytum magalimontanum</i>	T	Forest	1	1	1	1			MM7599	
Sapotaceae	<i>Mimusops</i>	T	Forest	1			1			MM7565	
Sapotaceae	<i>Synsepalum</i>	T	Forest	1		1	1			MM7556	
Solanaceae	<i>Solanum</i>	S	Forest							MM7585	
Solanaceae	<i>Solanum zanzibarense</i>	S	Forest							MM7660	Endemic to Eastern Arc and Coastal Forests region
Solanaceae	<i>Solanum zanzibarense</i>	C	Fallow	1		1	1	1		MM7660	Endemic to Eastern Arc and Coastal Forests region
Tiliaceae	<i>Grewia</i>	T	Forest							MM7570	
Verbenaceae	<i>Premna senensis</i>	S	woodland	1		1	1			MM7653	
Verbenaceae	<i>Vitex buchananii</i>	T	woodland	1		1	1			MM7613	
Verbenaceae	<i>Vitex buchananii</i>	L/S	Forest	1		1	1		1	MM7613	
Violaceae	<i>Rinorea</i>	T	Forest	1		1	1	1		MM7545	
Violaceae	<i>Rinorea ferruginea</i>	T	Forest	1		1	1			MM7636	
Viscaceae	<i>Viscum</i>	P	Forest	1			1			MM7631	
Vitaceae	<i>Cissus</i>	H	Forest	1		1				MM7619	

### Appendix 3. List of plants collected for further identification in 2013

Family	Scientific name	H	HT	Coll.No	Survey site						R
					1	2	3	4	5	6	
Acanthaceae	<i>Crossandra</i>	Herb	CWF	MM 8896	1			1		1	WC
Acanthaceae	<i>Isoglossa</i>	Herb	CEDF	MM 8707	1			1		1	WC&EA
Acanthaceae	<i>Justicia</i>	Herb	CWF	MM 8898						1	WC
Acanthaceae	<i>Justicia fittonioides</i>	Herb	CEDF	MM 8841	1				1		WC
Acanthaceae	<i>Justicia striata</i>	Herb	CEDF	MM 8718	1		1		1		WC
Acanthaceae	<i>Sclerochiton tanzaniensis</i>	Liane	CWF	MM 8762	1			1		1	WC
Acanthaceae	<i>Sclerochiton vogelii</i>	Shrub	CEDF	MM 8725	1		1		1		WC
Acanthaceae	<i>Thunbergia stelligera</i>	Liane	CEDF	MM 8695		1	1	1			WC
Amaranthaceae	<i>Celosia</i>	Herb	CEDF	MM 8700	1				1	1	WC&EA
Amaranthaceae	<i>Cyathula</i>	Herb	CEDF	MM 8865	1		1			1	WC&EA
Annonaceae	<i>Artabotrys</i>	Liane	CEDF	MM 8842	1			1		1	WC&EA
Annonaceae	<i>Artabotrys</i>	Liane	CEDF	MM 8891	1		1			1	WC
Annonaceae	<i>Monanthes taxis</i>	Liane	CEDF	MM 8832			1				WC&EA
Annonaceae	<i>Monodora minor</i>	Tree	CEDF	MM 8853	1		1		1	1	E.C
Annonaceae	<i>Uvaria</i>	Liane	CEDF	MM 8855				1		1	WC
Annonaceae	<i>Xylopia collina</i>	Tree	CWF	MM 8757	1			1			WC
Annonaceae	<i>Xylopia collina</i>	Tree		MM 8837							
Annonaceae	<i>Xylopia sp</i>	Liane	CWF	MM 8759	1			1		1	WC
Apocynaceae	<i>Dictyophleba lucida</i>	Tree	CEDF	MM 8705	1		1	1	1	1	WC&EA
Apocynaceae	<i>Holarrhena pubescens</i>	Tree	CWF	MM 8765	1	1	1	1	1	1	WC&EA
Apocynaceae	<i>Landlophia parvifolia</i>	Liane	CWF	MM 8791	1			1			WC&EA
Apocynaceae	<i>Rauvolfia mombasiana</i>	Tree	CEDF	MM 8836		1	1			1	WC&EA
Apocynaceae	<i>Secamone</i>	Liane	CWF	MM 8883	1	1	1	1	1		WC
Apocynaceae	<i>Secamone parvifolia</i>	Liane	CEDF	MM 8861	1	1		1		1	WC
Apocynaceae	<i>Tabernaemontana elegans</i>	Tree	CEDF	MM 8825	1		1		1		WC&EA
Apocynaceae	<i>Tabernaemontana ventricosa</i>	Tree	CEDF	MM 8712	1						WC&EA
Aspleniaceae	<i>Asplenium</i>	Fern	CEDF	MM 8742	1	1		1		1	WC&EA
Asteraceae	<i>Aspilia kotschy</i>	Herb	CWF	MM 8794	1		1			1	WC
Asteraceae	<i>Blepharispermum zanguibaricum</i>	Liane	CEDF	MM 8846			1			1	WC
Asteraceae	<i>Hypericophyllum elatum</i>	Herb	CWF	MM 8758						1	WC
Asteraceae	<i>Vernonia</i>	Shrub	CEDF	MM 8735	1				1	1	WC
Asteraceae	<i>Vernonia</i>	Shrub	CWF	MM 8780	1				1	1	WC&EA
Asteraceae	<i>Vernonia</i>	herb	CWF	MM 8893	1		1	1	1	1	WC&EA
Asteraceae	<i>Vernonia colorata</i>	Shrub	CEDF	MM 8829	1				1		WC&EA
Asteraceae	<i>Vernonia poskeana</i>	Herb	CWF	MM 8871	1		1			1	WC
Boraginaceae	<i>Cordia goetzei</i>	Tree	CWF	MM 8771	1	1				1	WC
Boraginaceae	<i>Cordia goetzei</i>	Tree		MM 8771							
Burseraceae	<i>Commiphora</i>	Tree	CEDF	MM 8709	1					1	WC
Burseraceae	<i>Commiphora</i>	Tree	CWF	MM 8869	1		1			1	WC
Caesalpiniaceae	<i>Brachystegia spiciformis</i>	Tree	CEDF	MM 8867	1					1	WC&EA
Capparaceae	<i>Capparis erythrocarpos var. rosea</i>	Liane	CEDF	MM 8743	1	1	1		1	1	WC
Capparaceae	<i>Cladostemon kirkii</i>	Tree	CWF	MM 8776	1		1			1	WC
Celastraceae	<i>Pristimera</i>	Liane		MM 8766							
Celastraceae	<i>Pristimera graciliflora</i>	Liane	CWF	MM 8872	1	1	1	1	1	1	WC

Family	Scientific name	H	HT	Coll.No	Survey site						R
					1	2	3	4	5	6	
Celastraceae	<i>Salacia elegans</i>	Liane	CEDF	MM 8710	1	1	1			1	WC
Celastraceae	<i>Salacia madagascariensis</i>	Liane	CEDF	MM 8736	1	1	1	1	1	1	WC&EA
Clusiaceae	<i>Garcinia</i>	Tree	CEDF	MM 8818	1				1	1	WC
Clusiaceae	<i>Harungana madascariensis</i>	Tree	CWF	MM 8874	1		1		1	1	WC
Clusiaceae	<i>Psorospermum febrifugum</i> var. <i>febrifugum</i>	Tree	CWF	MM 8784	1		1	1		1	WC&EA
Clusiaceae	<i>Vismia orientalis</i>	Tree	CEDF	MM 8704	1	1	1	1	1	1	WC
Combretaceae	<i>Combretum pentagon</i>	Liane	CWF	MM 8870	1		1			1	WC
Combretaceae	<i>Pteleopsis myrtifolia</i>	Tree	CEDF	MM 8734	1	1			1	1	WC
Commelinaceae	<i>Anellema aequinoctiale</i>	Herb	CEDF	MM 8827	1		1			1	WC&EA
Connaraceae	<i>Vismianthus punctatus</i>	Tree	CEDF	MM 8839	1		1		1		WC
Convolvulaceae	<i>Bonamia mossambicensis</i>	Liane	CWF	MM 8777	1	1	1	1	1	1	WC
Convolvulaceae	<i>Ipomoea</i>	Liane	CEDF	MM 8831	1				1		WC&EA
Convolvulaceae	<i>Ipomoea eriocarpa</i>	Liane	CWF	MM 8804	1		1			1	WC&EA
Convolvulaceae	<i>Ipomoea shupangensis</i>	Liane	CWF	MM 8877	1		1	1		1	WC
Cucurbitaceae	<i>Lagenaria</i>	Liane	CWF	MM 8878	1		1		1	1	WC&EA
Cucurbitaceae	<i>Zehneria thwaitesii</i>	Liane	CWF	MM 8904			1			1	WC&EA
Cyperaceae	<i>Cyperus</i>	Sedge	CWF	MM 8881	1		1		1		WC&EA
Cyperaceae	<i>Cyperus amabilis</i>	Sedge	CWF	MM 8811		1			1	1	WC&EA
Cyperaceae	<i>Cyperus cyperoides</i>	Sedge	CEDF	MM 8833	1		1			1	WC
Cyperaceae	<i>Kyllinga crassipes</i>	Sedge	CEDF	MM 8862	1			1		1	WC&EA
Cyperaceae	<i>Pycreus macrostachyos</i>	Sedge	CWF	MM 8790	1				1		WC&EA
Cyperaceae	<i>Pycreus macrostachyos</i>	Sedge	CEDF	MM 8854				1		1	WC&EA
Dichapetalaceae	<i>Dichapetalum</i>	Tree	CEDF	MM 8892						1	WC
Dilleniaceae	<i>Tetracera boiviniana</i>	Tree	CWF	MM 8769	1		1			1	WC&EA
Dioscoraceae	<i>Diocorea dumetorum</i>	Liane	CWF	MM 8755	1	1	1	1	1	1	WC&EA
Dioscoraceae	<i>Dioscorea quartiniana</i>	Liane	CWF	MM 8806	1	1	1	1	1	1	WC&EA
Dioscoraceae	<i>Dioscorea hylophila</i>	Liane	CWF	MM 8767	1	1				1	WC
Ebenaceae	<i>Diospyros</i>	Tree	CEDF	MM 8733	1			1		1	WC&EA
Ebenaceae	<i>Diospyros verrucosa</i>	Tree	CEDF	MM 8856	1		1	1		1	WC&EA
Erythroxylaceae	<i>Erythroxylum emarginatum</i>	Tree	CEDF	MM 8821	1				1	1	WC&EA
Euphorbiaceae	<i>Acalypha ornata</i>	Shrub	CWF	MM 8798	1		1			1	WC&EA
Euphorbiaceae	<i>Acalypha ornata</i>	Shrub		MM 8813							
Euphorbiaceae	<i>Antidesma membranaceum</i>	tree	CEDF	MM 8711	1		1			1	WC&EA
Euphorbiaceae	<i>Bridelia</i>	Tree	CEDF	MM 8851	1		1		1		WC&EA
Euphorbiaceae	<i>Bridelia atroviridis</i>	Tree	CEDF	MM 8697	1			1		1	WC
Euphorbiaceae	<i>Dalechampia scandens</i>	Liane	CWF	MM 8873	1	1		1		1	WC&EA
Euphorbiaceae	<i>Drypetes</i>	Tree	CEDF	MM 8724	1		1		1	1	WC&EA
Euphorbiaceae	<i>Hymenocardia acida</i> var. <i>acida</i>	Tree	CWF	MM 8772	1	1	1	1	1	1	WC
Euphorbiaceae	<i>Hymenocardia ulmoides</i>	Tree	CWF	MM 8795	1		1			1	WC
Euphorbiaceae	<i>Phyllanthus</i>	Tree	CEDF	MM 8820	1		1			1	WC&EA
Euphorbiaceae	<i>Phyllanthus</i>	Shrub	CEDF	MM 8859	1		1			1	WC
Euphorbiaceae	<i>Phyllanthus</i>	Herb	CWF	MM 8899						1	WC
Euphorbiaceae	<i>Phyllanthus ovalifolius</i>	Shrub	CWF	MM 8876	1	1		1		1	WC&EA
Euphorbiaceae	<i>Phyllanthus welwitschianus</i>	Shrub	CWF	MM 8895	1					1	WC
Euphorbiaceae	<i>Phyllanthus welwitschianus</i>	Shrub	CWF	MM 8897						1	WC

Family	Scientific name	H	HT	Coll.No	Survey site						R
					1	2	3	4	5	6	
Euphorbiaceae	<i>Shirakiopsis</i>	Tree	CWF	MM 8875	1		1	1		1	WC&EA
Euphorbiaceae	<i>Suregada zanzibariensis</i>	Tree	CEDF	MM 8850						1	WC&EA
Euphorbiaceae	<i>Tragia</i>	Herb	CWF	MM 8882			1		1		WC
Fabaceae	<i>Abrus</i>	Shrub	CWF	MM 8763						1	WC
Fabaceae	<i>Abrus precatorius</i>	Liane	CWF	MM 8785		1		1		1	WC&EA
Fabaceae	<i>Acacia latistipulata</i>	Tree	CEDF	MM 8828	1						WC
Fabaceae	<i>Amblygonocarpus andongensis</i>	Tree	CWF	MM 8805	1	1		1		1	WC
Fabaceae	<i>Bauhinia loeseneriana</i>	Tree	CEDF	MM 8696	1						WC
Fabaceae	<i>Chamaecrista absus</i>	Liane	CWF	MM 8789	1			1	1		WC&EA
Fabaceae	<i>Chamaecrista mimosoides</i>	Herb	CEDF	MM 8815		1	1				WC&EA
Fabaceae	<i>Clitoria ternatea</i>	Liane	CWF	MM 8809		1	1				WC&EA
Fabaceae	<i>Crotalaria goodiformis</i>	Herb	CEDF	MM 8845	1		1			1	WC
Fabaceae	<i>Crotalaria lanceolata</i>	Herb	CWF	MM 8782	1	1					WC&EA
Fabaceae	<i>Dalbergia bracteolata</i>	Liane	CWF	MM 8747	1	1		1	1	1	WC
Fabaceae	<i>Desmodium barbatum</i>	Herb	CWF	MM 8803	1		1		1	1	WC
Fabaceae	<i>Desmodium velutinum</i>	Shrub	CEDF	MM 8739	1		1	1	1	1	WC&EA
Fabaceae	<i>Eriosema psoraloides</i>	Shrub	CWF	MM 8745	1	1	1			1	WC
Fabaceae	<i>Hymenaea verrucosa</i>	Tree	CEDF	MM 8825	1				1	1	WC
Fabaceae	<i>Indigofera</i>	Shrub	CWF	MM 8800	1				1	1	WC
Fabaceae	<i>Indigofera nummulariifolia</i>	Herb	CEDF	MM 8864	1			1		1	WC
Fabaceae	<i>Mimosa busseana</i>	Liane	CWF	MM 8807		1	1				WC&EA
Fabaceae	<i>Mucuna poggei</i> var. <i>pesa</i>	Liane	CWF	MM 8748	1	1	1	1	1	1	WC
Fabaceae	<i>Newtonia buchananii</i>	Tree	CEDF	MM 8835	1	1					WC&EA
Fabaceae	<i>Senna petersiana</i>	Tree	CWF	MM 8779	1	1				1	WC
Fabaceae	<i>Tephrosia</i>	Shrub	CWF	MM 8799	1		1		1		WC&EA
Fabaceae	<i>Teramnus labialis</i>	Liane	CWF	MM 8797	1		1			1	WC
Flacourtiaceae	<i>Bivinia jalbertii</i>	Tree	CWF	MM 8750	1					1	WC&EA
Flacourtiaceae	<i>Flacourtia indica</i>	Tree	CEDF	MM 8722	1		1		1	1	WC&EA
Iridaceae	<i>Crocoshia aurea</i> subsp. <i>aurea</i>	Herb	CEDF	MM 8693	1	1	1			1	WC
Lamiaceae	<i>Plectranthus</i>	Herb	CEDF	MM 8822	1				1	1	WC&EA
Lamiaceae	<i>Plectranthus pauciflorus</i>	Herb	CWF	MM 8768	1			1		1	WC&EA
Lamiaceae	<i>Tinnea aethiopica</i> subsp. <i>stolzii</i>	Herb	CEDF	MM 8719	1	1	1		1	1	WC
Loganiaceae	<i>Mostuea brunonis</i> var. <i>brunonis</i>	Shrub	CEDF	MM 8860			1		1	1	WC&EA
Loranthaceae		parasite	CEDF	MM 8716	1		1				WC&EA
Loranthaceae		parasite	CEDF	MM 8717	1		1			1	WC&EA
Loranthaceae	<i>Erianthemum</i>	parasite	CWF	MM 8749	1	1	1		1	1	WC&EA
Loranthaceae	<i>Helixanthera kirkii</i>	parasite	CWF	MM 8746	1	1	1	1		1	WC
Malpighiaceae	<i>Acridocarpus</i>	Tree	CWF	MM 8773	1			1	1		WC
Malvaceae	<i>Hibiscus</i>	herb	CWF	MM 8793	1		1		1	1	WC&EA
Malvaceae	<i>Hibiscus surattensis</i>	Herb	CEDF	MM 8858	1			1		1	WC&EA
Melastomataceae	<i>Dissotis</i>	Tree	CEDF	MM 8741	1	1		1		1	E.C&EA
Melastomataceae	<i>Heterotis rotundifolia</i>	herb	CWF	MM 8792		1	1				WC
Meliaceae	<i>Pseudobersama mossambicensis</i>	Tree	CWF	MM 8885	1	1			1	1	WC&EA
Meliaceae	<i>Turraea</i>	Tree	CWF	MM 8764	1			1		1	WC&EA
Meliaceae	<i>Turraea robusta</i>	Tree	CEDF	MM 8731	1				1	1	WC&EA

Family	Scientific name	H	HT	Coll.No	Survey site						R
					1	2	3	4	5	6	
Menispermaceae		Liane	CEDF	MM 8715			1		1	1	WC&EA
Menispermaceae	<i>Cissampelos</i>	Liane	CEDF	MM 8698	1	1	1	1	1	1	WC&EA
Ochnaceae	<i>Gomphia lutambensis</i>	Tree	CEDF	MM 8840	1						WC
Oleaceae	<i>Schrebera trichoclada</i>	Tree	CWF	MM 8801		1	1				WC&EA
Orchidaceae	<i>Habenaria</i>	Herb	CWF	MM 8756	1					1	WC&EA
Orchidaceae	<i>Habenaria</i>	Herb		MM 8889							
Oxalidaceae	<i>Biophytum umbraculum</i>	Herb	CEDF	MM 8863	1		1				WC&EA
Papilionaceae	<i>Indigofera ormocarpoides</i>	Shrub	CWF	MM 8901	1	1			1	1	WC
Passifloraceae	<i>Adenia</i>	Climber		MM 8830							
Passifloraceae	<i>Adenia kirkii</i>	Liane	CWF	MM 8796	1		1				WC&EA
Pedaliaceae	<i>Sesamum angustifolium</i>	Herb	CWF	MM 8787			1			1	WC
Poaceae		Grass	CWF	MM 8812	1	1					WC
Poaceae	<i>Eragrostis</i>	Grass	CWF	MM 8814	1		1				WC
Poaceae	<i>Panicum adenophorum</i>	Grass	CEDF	MM 8823				1	1	1	WC
Polygalaceae	<i>Securidaca longipedunculata</i>	Tree	CWF	MM 8775			1			1	WC&EA
Polypodiaceae	<i>Microgramma lycopodioides</i>	Fern	CEDF	MM 8844	1					1	WC&EA
Proteaceae	<i>Faurea saligna</i>	Tree	CWF	MM 8894						1	WC&EA
Rhamnaceae	<i>Helinus integrifolius</i>	Liane	CWF	MM 8754	1		1	1	1		WC&EA
Rubiaceae		Tree	CEDF	MM 8708	1					1	WC
Rubiaceae	<i>Aorantho penduliflora</i>	Tree	CEDF	MM 8721	1	1					E.C&EA
Rubiaceae	<i>Canthium</i>	Tree	CEDF	MM 8848	1					1	WC
Rubiaceae	<i>Chassalia umbraticola</i>	Shrub	CWF	MM 8900			1			1	WC
Rubiaceae	<i>Coptosperma</i>	Tree	CEDF	MM 8887	1					1	WC
Rubiaceae	<i>Didymosalpinx norae</i>	L/Shrub	CEDF	MM 8816	1				1		WC&EA
Rubiaceae	<i>Gardenia ternifolia</i> subsp. <i>jovis-tonantis</i>	Tree	CWF	MM 8774		1					WC&EA
Rubiaceae	<i>Gardenia transvenulosa</i>	Tree	CEDF	MM 8849	1		1		1		WC
Rubiaceae	<i>Geophila obvallata</i>	Herb	CEDF	MM 8826	1		1			1	WC&EA
Rubiaceae	<i>Heinsia bussei</i>	Shrub	CEDF	MM 8738	1		1			1	E.C
Rubiaceae	<i>Keetia zanzibarica</i>	Liane	CWF	MM 8783	1		1	1		1	WC
Rubiaceae	<i>Leptactina oxyloba</i> K.Schum.	Tree	CEDF	MM 8819	1		1			1	E.C
Rubiaceae	<i>Leptactina papyrophloea</i>	Tree	CEDF	MM 8847	1		1				E.C
Rubiaceae	<i>Margaritopsis abrupta</i>	Shrub	CEDF	MM 8843	1		1			1	WC&EA
Rubiaceae	<i>Margaritopsis abrupta</i>	Shrub	CWF	MM 8760	1				1	1	WC&EA
Rubiaceae	<i>Margaritopsis abrupta</i>	Shrub	CEDF	MM 8714	1		1		1	1	WC&EA
Rubiaceae	<i>Oldenlandia</i>	Herb	CWF	MM 8880	1	1	1	1	1	1	WC
Rubiaceae	<i>Oldenlandia affinis</i>	Herb	CEDF	MM 8706	1			1	1	1	WC
Rubiaceae	<i>Oxyanthus pyriformis</i>	Tree	CEDF	MM 8834	1		1			1	WC&EA
Rubiaceae	<i>Paederia</i>	Climber		MM 8770							
Rubiaceae	<i>Pavetta</i>	Liane	CEDF	MM 8726	1		1			1	WC
Rubiaceae	<i>Pentas lanceolata</i>	Herb	CEDF	MM 8729	1	1			1	1	WC&EA
Rubiaceae	<i>Polysphaeria multiflora</i>	Tree	CEDF	MM 8730	1	1	1	1	1	1	WC&EA
Rubiaceae	<i>Psychotria</i>	Tree	CEDF	MM 8703	1				1	1	WC&EA
Rubiaceae	<i>Psychotria</i>	Shrub	CEDF	MM 8713	1		1				WC&EA
Rubiaceae	<i>Rhodopentas parvifolia</i>	Herb	CWF	MM 8810	1		1		1	1	WC
Rubiaceae	<i>Rothmannia manganjae</i>	Tree	CEDF	MM 8720	1				1	1	WC

Family	Scientific name	H	HT	Coll.No	Survey site						R
					1	2	3	4	5	6	
Rubiaceae	<i>Rutidea fuscescens</i> subsp. <i>fuscescens</i>	Liane	CWF	MM 8752	1	1		1	1	1	WC&EA
Rubiaceae	<i>Rytigynia</i>	Tree	CWF	MM 8751	1	1				1	WC&EA
Rubiaceae	<i>Rytigynia</i>	Tree	CEDF	MM 8868	1		1			1	WC&EA
Rubiaceae	<i>Rytigynia celastroides</i>	Shrub	CWF	MM 8761	1			1	1	1	WC
Rubiaceae	<i>Rytigynia binata</i>	Tree	CEDF	MM 8702	1			1		1	WC&EA
Rubiaceae	<i>Sericanthe</i>	Tree	CEDF	MM 8838	1	1					WC&EA
Rubiaceae	<i>Sericanthe</i>	Shrub	CEDF	MM 8866			1			1	WC&EA
Rubiaceae	<i>Spermacoce</i>	Herb	CEDF	MM 8740	1	1			1	1	WC&EA
Rubiaceae	<i>Spermacoce</i>	Herb	CWF	MM 8884	1	1		1		1	WC&EA
Rubiaceae	<i>Triainolepis</i>	Tree	CWF	MM 8744	1	1	1			1	WC
Rubiaceae	<i>Tricalysia pallens</i>	Tree	CEDF	MM 8723	1		1		1	1	WC&EA
Rutaceae	<i>Zanthoxylum holtzianum</i>	Tree		MM 8753							
Rutaceae	<i>Zanthoxylum holtzianum</i>	Tree	CEDF	MM 8817	1		1			1	WC
Sapindaceae	<i>Allophylus</i>	Tree	CEDF	MM 8701	1	1				1	WC
Sapindaceae	<i>Dodonaea viscosa</i> var. <i>angustifolia</i>	Tree	CWF	MM 8802	1				1	1	WC&EA
Sapotaceae	<i>Englerophytum magalismsontanum</i>	Tree	CWF	mm 8808	1	1					WC
Solanaceae	<i>Solanum zanzibarense</i>	Shrub	CEDF	MM 8728	1		1	1	1	1	WC
Solanaceae	<i>Solanum anguivi</i>	Shrub	CEDF	MM 8732	1				1		WC&EA
Solanaceae	<i>Solanum zanzibarense</i>	Shrub		MM 8857							
Solanaceae	<i>Solanum zanzibarense</i>	Shrub		MM 8879							
Sterculiaceae	<i>Dombeya acutangula</i>	Tree	CWF	MM 8902					1	1	WC&EA
Tiliaceae	<i>Grewia</i>	Tree	CWF	MM 8786	1				1	1	WC
Tiliaceae	<i>Grewia conocarpa</i>	Tree	CEDF	MM 8737	1	1	1	1	1	1	WC
Tiliaceae	<i>Grewia conocarpa</i>	Tree		MM 8778							
Tiliaceae	<i>Triumfetta</i>	Liane	CWF	MM 8903						1	WC
Verbenaceae	<i>Lippia javanica</i>	Shrub	CWF	MM 8781					1	1	WC&EA
Verbenaceae	<i>Premna</i>	Liane	CEDF	MM 8727	1						Un
Verbenaceae	<i>Premna tanganyikensis</i>	Liane	CWF	MM 8886						1	WC
Verbenaceae	<i>Vitex ferruginea</i>	Tree	CEDF	MM 8694	1	1	1				WC&EA
Violaceae	<i>Rinorea ferruginea</i>	Tree	CEDF	MM 8699	1	1			1	1	WC&EA
Viscaceae	<i>Viscum</i>	parasite	CEDF	MM 8852			1				WC
Viscaceae	<i>Viscum</i>	parasite	CEDF	MM 8890	1		1			1	WC&EA
Vitaceae	<i>Cissus</i>	Liane	CWF	MM 8788	1	1			1	1	WC&EA
Vitaceae	<i>Cyphostemma</i>	Liane	CEDF	MM 8888	1		1	1		1	WC&EA



Appendix 4. Bird checklist recorded in Rondo Forest in 2012 & 2013

Family	Scientific name	Common name	Author	H	RL	R	Survey site 2012						Survey site 2013				
							1	2	3	4	5	6	1	2	3	4	6
ACCIPITRIDAE	<i>Terathopius ecaudatus</i>	Bateleur	Daudin 1800	O	NT	W	1	1	0	1	0	0					
ACCIPITRIDAE	<i>Stephanoaetus coronatus</i>	Crowned Hawk-Eagle	Linnaeus 1766	F	NT	W	0	0	0	1	0	0					
ACCIPITRIDAE	<i>Lophaetus occipitalis</i>	Long-crested Eagle	Daudin 1800	O	LC	W	0	0	0	0	0	1					
ACCIPITRIDAE	<i>Accipiter minullus</i>	Little sparrow Hawk	Daudin 1800		LC	W	0	0	0	1	0	0					
ACCIPITRIDAE	<i>Accipiter tachiro</i>	African Goshawk	Daudin 1800	F	LC	W								1			1
APODIDAE	<i>Apus affinis</i>	Little Swift	Gray 1830	O	LC	W	0	0	0	1	0	0					
APODIDAE	<i>Apus caffer</i>	White-rumped Swift	Lichtenstein 1823	O	LC	W	0	0	0	0	0	0					
BUCEROTIDAE	<i>Tockus alboterminatus</i>	Crowned Hornbill	Buttkofer 1889	F	LC	W	0	0	0	0	1	0					
BUCEROTIDAE	<i>Bycanistes buccinator</i>	Trumpeter Hornbill	Temminck 1824	F	LC	W	1	1	0	1	1	0	1	1			
CAPRIMULGIDAE	<i>Caprimulgus europaeus</i>	Eurasian Nightjar	Linnaeus, 1758	F	LC		0	1	0	1	0	0					
CAPRIMULGIDAE	<i>Caprimulgus pectoralis</i>	Fiery-necked Nightjar	Cuvier 1817	O	LC	W	0	0	0	1	0	0		1			
CISTICOLIDAE	<i>Apalis flavida</i>	Yellow-breasted Apalis	Strickland 1852	F	LC	W	0	0	1	1	1	0	1	1			
CISTICOLIDAE	<i>Prinia erythroptera</i>	Red-winged Warbler	Jardine 1849	O	LC	W	0	0	1	0	1	0					
CISTICOLIDAE	<i>Cisticola chinianus</i>	Rattling Cisticola	Smith 1843	O	LC	W	0	1	0	0	0	0					
CISTICOLIDAE	<i>Prinia subflava</i>	Tawny-flanked Prinia	Gmelin 1789	O	LC	W	0	1	1	1	0	1	1	1			1
CISTICOLIDAE	<i>Cisticola brachypterus</i>	Siffling Cisticola	Sharpe, 1870				0	0	0	0	1	0					
CISTICOLIDAE	<i>Camaroptera brachyura</i>	Grey-backed Camaroptera	Vieillot 1820	F	LC	W	0	1	1	1	1	0	1	1	1	1	1
CISTICOLIDAE	<i>Apalis melanocephala</i>	Black – headed Apalis	Fischer & Reichenow, 1884	FF	LC	W							1	1	1	1	
COLUMBIDAE	<i>Streptopelia capicola</i>	Ring-necked Dove	Sundevall 1857	O	LC	W	0	0	0	1	0	0					
COLUMBIDAE	<i>Streptopelia semitorquata</i>	Red-eyed Dove	Ruppell 1837	F	LC	W	0	0	1	0	1	1					
COLUMBIDAE	<i>Turtur chalcospilos</i>	Emerald-spotted wood-Dove	Wagler 1827	O	LC	W	0	1	1	1	1	1					
COLUMBIDAE	<i>Turtur afer</i>	Blue-spotted wood-Dove	Linnaeus 1766	O	LC	W	0	0	0	0	0	0					
COLUMBIDAE	<i>Turtur tympanistria</i>	Tambourine Dove	Temminck 1809	F	LC	W	1	1	1	1	1	0	1	1	1		
COLUMBIDAE	<i>Treron calvus</i>	African green Pigeon	Temminck 1808	F	LC	W	0	0	1	1	0	0	1	1			
COLIIDAE	<i>Colius striatus</i>	Speckled Mousebird	Gmelin 1789	O	LC	W							1	1			1
CORACIIDAE	<i>Coracis caudata</i>	Lilac-breasted Roller	Linnaeus 1766	O	NL	W	0	0	0	1	0	0					
CORACIIDAE	<i>Eurystomus glaucurus</i>	Broad-billed Roller	Muller 1776	O	LC	W	0	0	0	1	0	0					1
CORVIDAE	<i>Corvus albus</i>	Pied crow	Muller 1776	O	LC	W	0	0	0	1	0	0					

Family	Scientific name	Common name	Author	H	RL	R	Survey site 2012						Survey site 2013				
							1	2	3	4	5	6	1	2	3	4	6
<b>CORVIDAE</b>	<i>Corvus albicollis</i>	White-necked Raven	Latham 1790	F	LC	W	0	0	0	0	1	0	1			1	1
<b>CUCULIDAE</b>	<i>Cuculus solitarius</i>	Red-chested Cuckoo	Stephens 1815	F	LC	W	0	1	1	0	1	0					
<b>CUCULIDAE</b>	<i>Cuculus clamosus</i>	Black Cuckoo	Latham 1801	F	LC	W	0	0	0	0	1	1					
<b>CUCULIDAE</b>	<i>Chrysococcyx klaas</i>	Klaas' Cuckoo	Stephens 1815	O	LC	W	0	0	1	0	0	0					
<b>CUCULIDAE</b>	<i>Chrysococcyx caprius</i>	Diederick Cuckoo	Boddaert 1783	O	LC	W	0	0	1	1	1	1					
<b>CUCULIDAE</b>	<i>Centropus superciliosus</i>	White-browed coucal(Buchell's coucal)	Hemprich and Ehrenberg 1833	O	LC	W	0	0	0	1	1	0	1			1	
<b>CUCULIDAE</b>	<i>Ceuthmochares aereus</i>	Yellowbill	Vieillot 1817	F	LC	W	0	0	0	1	1	1	1		1		
<b>DICRURIDAE</b>	<i>Dicrurus ludwigii</i>	Square-tailed Drongo	Smith 1834	F	LC	W	1	1	1	1	1	1	1	1	1	1	1
<b>DICRURIDAE</b>	<i>Dicrurus adsimilis</i>	Fork-tailed Drongo	Bechstein 1794	O	LC	W	0	0	0	1	1	0				1	
<b>ESTRILDIDAE</b>	<i>Hypargos niveoguttatus</i>	Peters's Twinspot	Peters, W. 1868	O	LC	W	0	1	1	1	1	1	1	1	1	1	1
<b>ESTRILDIDAE</b>	<i>Pytilia melba</i>	Green-winged Pytilia	Linnaeus 1758	O	LC	W	0	0	0	1	0	0					
<b>ESTRILDIDAE</b>	<i>Estrilda astrild</i>	Common waxbill	Linnaeus 1758	O	LC	W	0	0	0	1	0	1					
<b>ESTRILDIDAE</b>	<i>Lonchura cucullata</i>	Bronze Munia	Swainson 1837	O	LC	W	0	0	0	1	1	1					
<b>ESTRILDIDAE</b>	<i>Lagonosticta rubricata</i>	African fire finch	Lichtenstein 1823		LC	W	0	0	1	1	0	1					
<b>ESTRILDIDAE</b>	<i>Lonchura bicolor</i>	Black- and white- Manikin	fraser 1843	F	LC	W								1		1	
<b>EURLAIMIDAE</b>	<i>Smithornis capensis</i>	African Broadbill	Smith 1840	F	LC	W	1	1	0	0	0	0	1		1		1
<b>FRINGILLIDAE</b>	<i>Serinus mozambicus</i>	Yellow-fronted Canary	Muller 1776	O	LC	W	0	0	0	0	0	1					
<b>FRINGILLIDAE</b>	<i>Vidua codringtoni</i>	Twinspot Indigobird	Neave, 1907	O	LC	W							1			1	
<b>HIRUNDINIDAE</b>	<i>Hirundo smithii</i>	Wire-tailed Swallow	Leach 1818		LC	W	0	1	0	0	0	0					
<b>HIRUNDINIDAE</b>	<i>Hirundo abyssinica</i>	Lesser striped – Swallow	Guerin Meneville184	O	LC	W								1		1	
<b>HIRUNDINIDAE</b>	<i>Psalidoprocne holomelas</i>	Black Saw – wing	Ruppell 1840	F	LC	W							1		1		1
<b>HIRUNDINIDAE</b>	<i>Phyllastrephus flavostriatus</i>	Yellow – streaked Greenbul	Sharpe 1876	FF	LC	W							1	1	1	1	
<b>HIRUNDINIDAE</b>	<i>Phyllastrephus debilis</i>	Tiny Greenbul	Sclater 1899	FF	LC	W							1	1	1		
<b>INDICATORIDAE</b>	<i>Indicator variegatus</i>	Scaly-throated Honeyguide	Lesson 1830	O	LC	W	1	1	1	0	0	0	1				
<b>MALACONOTIDAE</b>	<i>Telophorus viridis</i>	Perrin's Bush-Shrike	Cassin, 1851		LC		0	1	1	1	0	1					
<b>MALACONOTIDAE</b>	<i>Telophorus sulfureopectus</i>	Sulphur breasted bush-Shrike	Lesson 1831	O	LC	W	0	0	1	1	0	0	1		1		1
<b>MALACONOTIDAE</b>	<i>Prionops retzii</i>	Retz's helmet-Shrike	Wahlberg 1856	O	LC	W	0	1	1	0	0	0	1			1	
<b>MALACONOTIDAE</b>	<i>Prionops scopifrons</i>	Chestnut-fronted helmet-Shrike	Peters, 1854	O	LC	NE	0	1	0	0	0	0					
<b>MALACONOTIDAE</b>	<i>Laniarius aethiopicus</i>	Tropical Boubou	Gmelin 1788	O	LC	W	1	0	0	0	0	0	1		1		

Family	Scientific name	Common name	Author	H	RL	R	Survey site 2012						Survey site 2013				
							1	2	3	4	5	6	1	2	3	4	6
<b>MALACONOTIDAE</b>	<i>Dryoscopus cubla</i>	Black-backed Puffback	Shaw 1809	F	LC	W	1	1	1	1	1	0					
<b>MALACONOTIDAE</b>	<i>Tchagra senegala</i>	Black-crowned Tchagra	Linnaeus 1766	O	LC	W	0	0	0	1	0	0	1	1		1	
<b>MALACONOTIDAE</b>	<i>Tchagra australis</i>	Brown-crowned Tchagra	Smith, 1836	O	LC	W	0	1	0	0	0	0					
<b>MALACONOTIDAE</b>	<i>Malaconotus quadricolor</i>	Four- coloured bush-Shrike	Cassin, 1851	O	LC	W							1	1	1	1	
<b>MEROPIDAE</b>	<i>Merops pusillus</i>	Little Bee-eater	Muller 1776	O	LC	W	0	1	0	1	0	0		1		1	
<b>MEROPIDAE</b>	<i>Merops persicus</i>	Blue -checked Bee-eater	Pallas, 1773	O	LC	W	0	0	0	0	0	1					
<b>MEROPIDAE</b>	<i>Merops apiaster</i>	European bee-eater	Linnaeus 1758	O	LC	W	0	0	0	0	0	1					
<b>MEROPIDAE</b>	<i>Merops hirundineus</i>	Swallow-tailed Bee-eater	Lichtenstein 1793	O	LC	W	0	0	0	1	0	0					
<b>MONARCHIDAE</b>	<i>Erythrocerus livingstonei</i>	Livingstone's Flycatcher	Gray 1870	F	LC	W	0	1	1	1	0	0					
<b>MONARCHIDAE</b>	<i>Trochocercus cyanomelas</i>	Blue-mantled Flycatcher	Vieillot 1818	F	LC	W	0	0	1	1	0	0	1		1		
<b>MONARCHIDAE</b>	<i>Terpsiphone viridis</i>	Paradise Flycatcher	Statius muller 1776	F	LC	W							1	1			
<b>MUSCICAPIDAE</b>	<i>Muscicapa striata</i>	Spotted Flycatcher	Pallas 1764	O	LC	W	0	1	0	0	1	0					
<b>MUSCICAPIDAE</b>	<i>Myioparus plumbeus</i>	Lead-coloured Flycatcher	Hartlaub, 1858		LC	W	0	0	0	0	1	0					
<b>MUSCICAPIDAE</b>	<i>Cossypha natalensis</i>	Red-capped Robin-Chat	Smith 1840	F	LC		0	0	1	0	1	0	1	1		1	
<b>MUSCICAPIDAE</b>	<i>Sheppardia gunningi</i>	East coast Akalat	Haagner 1909		NT	NE	0	1	1	1	1	1	1	1	1	1	1
<b>MUSCICAPIDAE</b>	<i>Erythropygia quadrivirgata</i>	Eastern Bearded Scrub Robin	Reichenow, 1879		LC		0	0	0	1	0	0	1	1		1	
<b>MUSCICAPIDAE</b>	<i>Zoothera guttata</i>	Spotted Ground Thrush	Vigors, 1831	FF	EN								1				
<b>MUSCICAPIDAE</b>	<i>Cossypha heuglini</i>	White browed Robin chat	Hartlaub 1866	O	LC	W											
<b>MUSOPHAGIDAE</b>	<i>Tauraco livingstonii</i>	Livingstone's Turaco	Gray, GR 1864	F	LC	W	1	1	1	0	0	0	1	1		1	
<b>MUSOPHAGIDAE</b>	<i>Poicephalus robustus</i>	Brown-necked Parrot	Gmelin, 1788	F	LC	W	0	0	1	0	0	0					
<b>MUSOPHAGIDAE</b>	<i>Musophaga porphyreolopha</i>	Purple-crested Turaco	Vigors 1831	F	NL	W	0	0	1	1	0	0					
<b>NECTARINIIDAE</b>	<i>Anthreptes neglectus</i>	Uluguru violet-backed Sunbird	Neumann, 1922	FF	LC	NE	1	0	1	0	0	0	1			1	
<b>NECTARINIIDAE</b>	<i>Hedydipna collaris</i>	Collared Sunbird	Vieillot 1819	F	LC	W	1	1	1	1	0	1					
<b>NECTARINIIDAE</b>	<i>Cyanomitra veroxii</i>	Mouse-colored Sunbird	Smith, A 1831,		LC		0	0	0	1	0	0					
<b>NECTARINIIDAE</b>	<i>Nectarinia senegalensis</i>	Scarlet-chested Sunbird	Linnaeus 1766	O	LC	W	0	0	1	0	0	0					
<b>NECTARINIIDAE</b>	<i>Cyanomitra olivacea</i>	Olive Sunbird	Smith, A 1840	F	LC	W	1	1	0	1	0	1	1	1	1	1	1
<b>NECTARINIIDAE</b>	<i>Anthreptes reichenowi</i>	Plain backed Sunbird	Gunning 1909		NT	NE	0	1	0	1	1	0	1	1	1	1	1
<b>NECTARINIIDAE</b>	<i>Nectarinia moreaui</i>	Amethyst Sunbird	Shaw 1812	O	LC	W							1		1	1	
<b>NUMIDIDAE</b>	<i>Guttera pucherani</i>	Crested Guinea fowl	Hartlaub 1861	FF	LC	W	0	1	1	1	1	1		1		1	
<b>PHOENICULIDAE</b>	<i>Phoeniculus purpureus</i>	Green wood-Hoopoe	Miller 1784	O	LC	W	0	0	1	1	1	0	1	1		1	

Family	Scientific name	Common name	Author	H	RL	R	Survey site 2012						Survey site 2013				
							1	2	3	4	5	6	1	2	3	4	6
PICIDAE	<i>Campethera cailliautii</i>	Green-backed Woodpecker	Malherbe, 1849		LC		0	0	0	0	1	0					
PICIDAE	<i>Dendropicos fuscescens</i>	Cardinal Woodpecker	Vieillot 1818	O	LC	W	0	1	1	1	1	0	1	1	1	1	
PICIDAE	<i>Dendropicos stierlingi</i>	Stierling's Woodpecker	Reichenow 1901		LC		0	0	0	1	0	0					
PITTIDAE	<i>Pitta angolensis</i>	African Pitta	Vieillot 1818		LC	W	0	1	0	1	1	0					
PLATYSTEIRIDAE	<i>Batis capensis</i>	Cape Batis	Linnaeus 1766	F	LC		1	1	1	1	0	1	1	1	1	1	
PLATYSTEIRIDAE	<i>Platysteira peltata</i>	Black-throated Wattle-eye	Sundevall 1850		LC		0	0	1	0	0	0					
PLATYSTEIRIDAE	<i>Batis soror</i>	Pale Batis	Reichenow 1903	O	LC	W	0	1	1	1	1	0					
PLOCEIDAE	<i>Ploceus bicolor</i>	Dark-backed Weaver	Vieillot, 1819	O	LC	W	1	1	1	0	1	1					
PLOCEIDAE	<i>Anaplectes rubriceps</i>	Red-headed Weaver	Sundevall 1850	O	LC	W	0	0	0	0	1	1					
PLOCEIDAE	<i>Ploceus bicolor</i>	Forest Weaver	Vieillot 1819	F	LC	W							1		1	1	
PLOCEIDAE	<i>Euplectes capensis</i>	Yellow Bishop	Linnaeus 1766	O	LC	W									1		1
PYCNONOTIDAE	<i>Andropadus importunus</i>	Sombre Greenbul	Vieillot 1818	FF	LC	W	1	1	1	1	0	1					
PYCNONOTIDAE	<i>Andropadus virens</i>	Little Greenbul	Cassin 1858	FF	LC	W	1	0	0	0	1	0					
PYCNONOTIDAE	<i>Phyllastrephus flavostriatus</i>	Yellow-streaked Greenbul	Sharpe 1876	FF	LC	W	1	1	1	0	1	0					
PYCNONOTIDAE	<i>Phyllasterphus debilis</i>	Tiny Greenbul	Sclater 1899	FF	LC	NE	1		0	0	0	0					
PYCNONOTIDAE	<i>Nicator gularis</i>	Eastern Nicator	Hartlaub and Finsch 1870	F	LC	W	1	1	0	1	0	0	1	1			1
PYCNONOTIDAE	<i>Pycnonotus barbatus</i>	Common Bulbul	Desfontaines 1789	O	LC	W	0	1	1	1	1	0	1	1	1	1	1
PYCNONOTIDAE	<i>Chlorocichla flaviventris</i>	Yellow-bellied Greenbul	Smith 1834		LC		1	1	0	1	0	0	1	1			1
RAMPHASTIDAE	<i>Stactolaema olivacea</i>	Green Barbet	Shelley 1880	FF	LC	W	1	1	1	1	0	0	1	1	1	1	1
RAMPHASTIDAE	<i>Pogoniulus simplex</i>	Eastern green Tinkerbird	Fischer & Reichenow, 1884		LC	NE	0	0	0	1	0	0	1	1			1
RAMPHASTIDAE	<i>Pogoniulus bilineatus</i>	Yellow-rumped Tinkerbird	Sundevall 1850	F	LC	W	1	1	1	1	1	0	1	1	1		
RAMPHASTIDAE	<i>Lybius torquatus</i>	Black – collared Barbet	Dumont, 1816	O	LC	W							1		1	1	
STRIGIDAE	<i>Strix woodfordii</i>	African wood Owl	Smith, A 1834	F	LC	W	0	0	0	1	0	0	1				1
STRIGIDAE	<i>Glaucidium capense</i>	African Barred Owlet	Smith, 1834	F	LC	W	0	0	0	1	0	0					
STURNIDAE	<i>Cinnyricinclus leucogaster</i>	Violet-backed Starling	Boddaert 1783	O	LC	W	0	0	0	1	0	1	1				1
STURNIDAE	<i>Lamprotornis elisabeth</i>	Southern Blue-eared Glossy-Starling	Stresemann, 1924		LC		1	0	0	1	0	0					
STURNIDAE	<i>Onychognatus morio</i>	Red – winged Starling	Linnaeus 1766	O	LC	W								1			1
SYLVIIDAE	<i>Macrosphenus kretschmeri</i>	Kretschmer's Longbill	Reichenow & Friedmann 1895	F	LC	NE	0	0	1	1	0	0	1	1	1	1	1

Family	Scientific name	Common name	Author	H	RL	R	Survey site 2012						Survey site 2013				
							1	2	3	4	5	6	1	2	3	4	6
SYLVIIDAE	<i>Hyliota flavigaster</i>	Yellow-bellied Hyliota	Swainson 1837		LC		0	0	0	1	0	0					
SYLVIIDAE	<i>Sylvietta whytii</i>	Red-faced Crombec	Shelley 1894	O	LC	W	0	1	0	1	0	0					
SYLVIIDAE	<i>Melocichla mentalis</i>	African moustached Warbler	Fraser 1843	O	LC	W	0	0	0	0	1	1		1		1	
SYLVIIDAE	<i>Heliolais erythropterus</i>	Red – winged warbler	Jardine 1849	O		W									1		
SYLVIIDAE	<i>Phylloscopus ruficapilla</i>	Yellow – throated Woodland	Sundevall 1850	FF	LC	W							1		1		1
TROGONIDAE	<i>Apaloderma narina</i>	Narina Trogon	Stephens 1815	F	LC	W	1	1	0	1	1	1		1		1	
TURDIDAE	<i>Neocossyphus rufus</i>	Red-tailed ant Thrush	Fischer and Reichenow 1884	FF	LC	W	0	0	0	1	0	0	1		1		1
TURDIDAE	<i>Cossypha natalensis</i>	Red-capped robin-Chat	Smith, 1840	FF	LC	W	1	1	1	1	0	0					
TURDIDAE	<i>Zoothera guttata</i>	Spotted ground-Thrush	Vigors, 1831	FF	EN		0	0	1	0	0	0					
TURDIDAE	<i>Alethe fuelleborni</i>	White – chested Alethe	Reichenow 1900	FF	LC	W											
UPUPIDAE	<i>Upupa africana</i>	African Hoopoe	Bechstein 1811	O	NL	W	0	1	0	1	0	0	1				
VIDUIDAE	<i>Vidua macroura</i>	Pin-tailed Whydah	Pallas 1764	O	LC	W							1	1	1		
<b>SPECIES RICHNESS</b>							<b>25</b>	<b>44</b>	<b>44</b>	<b>67</b>	<b>39</b>	<b>27</b>	<b>53</b>	<b>41</b>	<b>31</b>	<b>41</b>	<b>18</b>