

2021

# Fox's Weaver Survey Report

A report submitted to the African Bird Club

20<sup>th</sup> December 2021



By Jonathan Onongo

## About the Author



Jonathan Onongo is an ornithologist working with NatureUganda the BirdLife International Partner in Uganda as a Projects Officer – Conservation & Projects. Jonathan developed a keen interest in documenting the ecology and distribution of the Fox’s Weaver Uganda’s only endemic bird during a NatureUganda Expedition in 2018 that documented the species for the first time in over 20 years. Since then he has continued to document key habitats for this little known species in North-eastern Uganda.

### **Contacts**

Email: [jonathan.onongo@natureuganda.org](mailto:jonathan.onongo@natureuganda.org) / [jonathanonongo@gmail.com](mailto:jonathanonongo@gmail.com)

Research Gate: <https://www.researchgate.net/profile/Jonathan-Onongo-2>

LinkedIn: <https://www.linkedin.com/in/onongo-jonathan-43671b163/>

Facebook: <https://www.facebook.com/onongo.jonathan/>

Twitter: [https://twitter.com/onongo\\_jonathan](https://twitter.com/onongo_jonathan)

## Acknowledgement

Special thanks go out to the African Bird Club who provided funding that ensured that these surveys to document the Fox's Weaver in North-eastern Uganda were conducted. I am also thankful to the Uganda Wildlife Authority for giving us free access and staff to support the surveys in Pian-Upe Wildlife Reserve and Bokora – Matheniko Wildlife Reserve; not to mention the Wardens at Bokora – Matheniko Wildlife Reserves, Mr. Francis Mbowa and Pian-Upe Wildlife Reserve, Mr. Christopher Masaba who availed committed rangers to help with the field work.

A number of individuals were key to the success of this project especially the Fox's Weaver Survey Team Micheal Kibuule, Ssozi Andrew, Jacob Lotee, Daniel Kutosi, Robert Ochom, Jombela Salmah, Daniel Logono, Henry Lopiko, Basire Andrew, Dr. Dianah Nalwanga, Isabella Ayaa, Rogers Kakura, Okello Muhammad who took part in the surveys to document the Fox's Weaver. The project supervisors Achilles Byaruhanga, Dr. Simon Valle and Prof. Derek Pomeroy provided key inputs to survey design and final text. Finally, Geoffrey Akule and Mark Ndimu who ensured that the survey teams were fully facilitated during the surveys.

“Maps throughout this book were created using ArcGIS® software by Esri. ArcGIS® and ArcMap™ are the intellectual property of Esri and are used herein under license. Copyright © Esri. All rights reserved. For more information about Esri® software, please visit [www.esri.com](http://www.esri.com).”

Unless stated otherwise, all photos are by Jonathan Onongo.

# Table of Contents

## Contents

About the Author .....	i
Acknowledgement.....	ii
Table of Contents.....	iii
List of Figures .....	v
List of Tables .....	vii
List of Appendices.....	viii
Abstract.....	ix
Background.....	1
Introduction .....	2
Species Profile & Ecology.....	3
Project Aims.....	5
Justification .....	5
Methods .....	6
Study Areas.....	6
Pian-Upe Wildlife Reserve .....	6
Bokora - Matheniko Wildlife Reserves.....	7
Iriiri-Napak .....	7
Soroti .....	7
Survey Effort.....	9
Data collection methods .....	10
Fox's Weaver Records.....	10
Fox's Weaver Nest Records.....	10
Vegetation & Habitat Attributes .....	10
Dominant Vegetation .....	10

Height of Vegetation .....	10
Vegetation Cover .....	10
Soil Colour .....	11
Data Analysis .....	11
Results.....	12
Fox's Weaver Sightings.....	12
Fox's Weaver Activity .....	17
Fox's Weaver Nest Records .....	18
Other Bird species .....	21
Karamoja Apalis Sightings .....	22
Vegetation & Habitat Attributes.....	24
Dominant Vegetation Type.....	24
Dominant herbaceous vegetation type .....	27
Altitude.....	29
Soil Colour .....	31
Fox's Weaver Habitat Preference.....	33
Fox's Weaver Distribution Vs Vegetation Type.....	33
Vegetation Height .....	35
Fox's Weaver Distribution Vs Altitude .....	36
Fox's Weaver Distribution Vs Soil Colour .....	37
Discussion .....	38
Conclusion .....	40
References .....	41
Appendices.....	43

## List of Figures

Figure 1: A male Fox's Weaver from Chepskunya, Kween District. ....	3
Figure 2: A female Fox's Weaver from Chepskunya, Kween District. ....	4
Figure 3: The location of survey transects in Pian-Upe Wildlife Reserve. ....	8
Figure 4: A simple Soil Colour Classification Chart (Source: <a href="http://vro.agriculture.vic.gov.au/">http://vro.agriculture.vic.gov.au/</a> ). .....	11
Figure 5: A male Fox's Weaver from Chepskunya. ....	12
Figure 6: The number and sex of Fox's Weaver individuals recorded from the transects surveyed. ....	13
Figure 7: The Fox's Weaver Survey Team in Pian-Upe Wildlife Reserve. ....	13
Figure 8: The locations of Fox's Weaver sightings recorded from North-eastern Uganda. ..	14
Figure 9: Fox's Weaver sightings recorded during surveys in the breeding season.....	15
Figure 10: Fox's Weaver sightings recorded during surveys in the non-breeding season....	15
Figure 11: Fox's Weaver records from the Okudud Transect during the breeding and non- breeding season. ....	16
Figure 12: Fox's Weaver records from Chepskunya during the breeding and non-breeding season. ....	16
Figure 13: Fox's Weaver perched on Sorghum near Okudud Village. ....	17
Figure 14: The Activity of Fox's Weaver sightings. ....	17
Figure 15: A Fox's Weaver nest constructed on Whistling-thorn Acacia. ....	18
Figure 16: A male Fox's Weaver constructs a nest in Chepskunya. ....	19
Figure 17: A Fox's Weaver nesting site in Chepskunya.....	19
Figure 18: The location of Fox's Weaver nests recorded during the survey.....	20
Figure 19: The Rüppell's Vulture from Pian-Upe Wildlife Reserve. ....	21
Figure 20: One of the 1 <sup>st</sup> sightings of the Karamoja Apalis from Chepskunya.....	22
Figure 21: Karamoja Apalis sightings in Pian-Upe WR and Kween District. ....	23
Figure 22: The distribution of sampling points across habitats surveyed. ....	24
Figure 23: The dominant woody species recorded from the sampling points in grasslands. 25	
Figure 24: The dominant woody species recorded from the sampling points in shrublands. 25	
Figure 25: A section of Pian-Upe Wildlife Reserve with long grass measuring up to 2 metres high.....	27
Figure 26: The Herbaceous vegetation type recorded from the habitat sampling points. ....	28

Figure 27: The plains of Pian-Upe Wildlife Reserve overlooked by the Kadam ranges.....	29
Figure 28: Black coloured soils from Pian-Upe Wildlife Reserve. ....	31
Figure 29: Soil Colour recorded at the habitat sampling points.....	32
Figure 30: The proportion of sampling points with and without Acacia drepanolobium recorded from transects with absence and presence records for the Fox's Weaver. ....	34
Figure 31: The height of Acacia drepanolobium in transects with presence and absence records.....	35
Figure 32: The proportion of sampling points with and without Black Soil recorded from transects with absence and presence records for the Fox's Weaver. ....	37

## List of Tables

Table 1: The number of nests recorded during the survey. ....	18
Table 2: The average height of dominant woody species recorded from the sampling points. .....	26
Table 3: The average height of major herbaceous species recorded from the habitat sampling points. ....	28
Table 4: The average altitude of the transects surveyed. ....	30
Table 5: Habitat descriptions for the Transects surveyed. ....	33
Table 6: The proportion of sampling points with and without <i>Acacia drepanolobium</i> recorded with absence and presence recorded for the Fox's Weaver. ....	34
Table 7: The number of sampling points with and without Black Soil recorded from transects with absence and presence records for the Fox's Weaver. ....	37



## List of Appendices

Appendix 1: The Fox's Weaver survey team. ....	43
Appendix 2: Fox's Weaver sightings along transects.....	44
Appendix 3: Opportunistic Fox's Weaver sightings.....	45
Appendix 4: Nesting tree characteristics. ....	46
Appendix 5: Karamoja Apalis sightings. ....	47
Appendix 6: List of Birds recorded during the survey .....	48
Appendix 7: Woody species sampling point data. ....	55
Appendix 8: Herbaceous species sampling point data. ....	58

## Abstract

The distribution and range of the Fox's Weaver *Ploceus spekeoides*, Uganda's only endemic bird are not properly understood, although the species is known to occur in North-eastern Uganda, its ecology within this area is not known. We conducted three surveys in North-eastern Uganda between May 2020 and May 2021 using nineteen randomly established 2-km line transects to document the distribution of the Fox's Weaver in North-eastern Uganda, understand the factors that influence the distribution of the species and map key areas for the conservation of the species in Uganda.

A total of 16 individuals of the Fox's Weaver were recorded from the Whistling-thorn Acacia grasslands of Pian-Upe Wildlife reserve and Chepskunya, Kween District. Key breeding habitats were documented from Chepskunya, Kween District and Okudud Village near Pian-Upe Wildlife Reserve. The study found that the distribution of the Fox's Weaver is restricted to Whistling-thorn Acacia grasslands because it feeds on the ants that are symbiotic with the Acacia and also breeds on the Whistling-thorn Acacia. The conservation of the species therefore depends on the protection of the Whistling-thorn Acacia especially within the key breeding habitats in Katakwi and areas around Pian-Upe Wildlife Reserve.

## Background

The distribution and range of the Fox's Weaver, Uganda's only endemic bird are not properly understood. For a long time, the basis of our understanding of the distribution of this rare range-restricted species has been that the species has only been recorded from the North-eastern part of Uganda, rather than a sound understanding of the habitat requirements and the factors that influence its distribution. Moreover, for a period spanning more than two decades, attempts to document the status and distribution of the Fox's Weaver in Uganda were futile, studies such as a 2015 African Bird Club (ABC) funded survey of the Fox's Weaver in North-eastern Uganda by Nature Uganda found no evidence of the species concluding that *"we may be witnessing the disappearance of Uganda's only endemic species"*. Fortunately, the species was rediscovered in 2018, when a small breeding population of the species was recently documented from Magoro in Katakwi (Nature Uganda, 2018).

Following the rediscovery of the Fox's Weaver in North-eastern Uganda, Nature Uganda has since conducted three surveys of the species aimed at documenting the current distribution of the Fox's Weaver in North-eastern Uganda. These surveys have so far documented the Fox's Weaver within the seasonally flooded wooded grasslands of the districts of Katakwi, Amuria, Soroti and Napak in North-eastern Uganda. However, no studies have been conducted to understand the habitat preference of the Fox's Weaver and explain why the species is restricted to North-eastern Uganda.

Nature Uganda with funding from the African Bird Club (ABC) conducted surveys aimed at mapping key areas for Fox's weaver *Ploceus spekeoides* Conservation in Uganda and understanding the factors that influence the distribution of the species so as to not only generate a comprehensive distribution map for the species in Uganda but also understand why the species is restricted to North-eastern Uganda.

## Introduction

The Fox's Weaver *Ploceus spekeoides* is Uganda's only endemic bird species (Byaruhanga et al, 2001, and Carswell et al, 2005). The species is named after Harold Munro Fox an English Zoologist who first collected the species in 1913 at Usuk and Ngarium, Katakwi district during July and August. Fox collected two specimens of the Fox's Weaver, a male on 30<sup>th</sup> July 1913 at Ngarium, and a female on 14<sup>th</sup> August 1913 at Usuk. The specimens were presented to the British Museum in 1923 where they remained until 1947 when Capt. C. H. B. Grant and C. W. Mackworth-Praed recognized the specimens as a new species (Grant & Mackworth-Praed, 1947).

The Fox's Weaver is restricted to North-eastern Uganda where it has been recorded a handful of times over the years in the parts of North-eastern Uganda, most of the records are from Katakwi. Capt. C. R. S. Pitman collected a number of Fox's Weavers at Usuk, Ngarium and Katakwi in North-eastern Uganda (Pitman, 1948 as cited in Collar & Stuart, 1985). Clive F. Mann found it fairly common in the north-eastern sector (Katakwi) of the then Teso district during the rainy season (Mann, 1976). There is also a sight record of the Fox's Weaver 10 km East of Chepskunya, Kween District (East African Bird Report for 1983 as cited in Carswell et al, 2005). Recently, the Fox's Weaver has also been recorded from Four (4) districts, Katakwi, Napak, Amuria, and Soroti in North-eastern Uganda (Nature Uganda, 2018, 2019, & 2020).

The Fox's Weaver is globally and regionally Near-threatened, the species is restricted in range to an area of about 33,300 km<sup>2</sup> within the seasonally flooded wooded grassland areas of North-eastern Uganda (BirdLife International, 2021). The Fox's Weaver is classified as Endangered on the National Red list (WCS, 2016) due to habitat destruction and modification especially tree cutting for charcoal burning. The neighboring Iteso and Karimojong peoples graze over 20,000 heads of cattle each dry season within the seasonally-flooded grasslands in search of water and pasture; a factor degrading wooded grasslands upon which the species is dependent for breeding (Byaruhanga et al, 2001).

## Species Profile & Ecology



Figure 1: A male Fox's Weaver from Chepskunya, Kween District.

The Fox's Weaver has a large head, heavy bill and short tail, the male has a reddish eye, dark back, yellow rump, and a black mask that ends in a point on the breast (Figure 1). The female Fox's Weaver is dull, with yellow rump and underparts, and with heavy dark streaks on the crown and back (Figure 2). The species bears a close resemblance to the Speke's Weaver *Ploceus spekei*, although the Speke's Weaver has a pale eye and a different range. The Heuglin's Masked Weaver *Ploceus heuglini*, on the other hand, has small bill, pale eye, and plain green back. The Vitelline Masked Weaver *Ploceus vitellinus* has a characteristic chestnut crown and a black mask that is rounded on the throat while the Lesser Masked Weaver *Ploceus intermedius* has a white eye and black fore-crown (Fry and Keith, 2004).



*Figure 2: A female Fox's Weaver from Chepskunya, Kween District.*

The feeding ecology of the species is not well understood, however, the species is known to feed on ants and seeds. The Fox's Weaver breeds in the rainy season (April – August). Breeding ecology of the bird is relatively well understood and is thought to occur between May and August during the rainy season (Collar and Stuart, 1985).

Fox's Weaver nests are constructed using grass material, nest size is 140mm long and 80mm high, entrance 45mm by 50mm with no entrance tunnel (Fry and Keith, 2004). Nests are constructed on trees in areas associated with water (Pitman, 1950 as cited in Carswell et al, 2005). The Fox's Weaver has recently been recorded nesting on Whistling-thorn acacia trees (NatureUganda, 2018 and 2019).

## Project Aims

The study aimed at identifying key habitats and habitat requirements of the Fox's Weaver *Ploceus spekeoides* in North-eastern Uganda. Surveys were conducted to;

1. Map the distribution and relative abundance of the Fox's Weaver during the breeding season and the non-breeding season.
2. Identify biotic and abiotic habitat characteristics key for the survival of the Fox's Weaver i.e. soil, altitude, and vegetation characteristics.

## Justification

The lack of an understanding of the ecology and distribution of the Fox's Weaver in North-eastern Uganda makes it impossible to identify priority areas for the conservation of the species. This project aimed at bridging the knowledge gap concerning not only the distribution of the Fox's Weaver in North-eastern Uganda but also comparing habitat characteristics as a way of identifying habitat use and preference of the species so as to map key habitats for the species in the un-surveyed parts of North-eastern Uganda.

## Methods

### Study Areas

The study covered grassland areas of North-eastern Uganda in Pian-Upe Wildlife Reserve, Bokora-Matheniko Wildlife Reserves, Iriiri - Napak and Soroti districts.

#### Pian-Upe Wildlife Reserve

Pian-Upe Wildlife Reserve is the largest Wildlife Reserve and the second largest Protected Area in Uganda (after Murchison Falls National Park) measuring 2000 km<sup>2</sup>. It covers part of the districts of Nakapiripirit, Nabilatuk and Amudat, and is bordered by the districts of Napak to the North, the districts of Katakwi, Kumi and Bukedea to the west, and to the south the districts of Kween and Bulambuli.

Most of the reserve is a flat and low-lying plain between 1046m to 1100m rising eastwards towards Mt. Kadam (3,070m) and northwards towards Mt. Napak. (2,537m). Grasslands and wooded grasslands, most of which are seasonally flooded cover the plains of the reserve. The open grasslands are dominated by *Hyparrhenia spp* and *Setaria spp* while the wooded grasslands are dominated by *Acacia spp* occurring in pure or mixed stands with *Balanites aegyptiaca*, dry Combretum grasslands also occur in some parts of the reserve. Numerous seasonal rivers flow from the east towards the Lake Opeta in the southwest, River Girik that flows into Lake Opeta, is the only permanent river in the area forming the southern boundary of the reserve with Bulambuli, and Kween District.

Pian-Upe Wildlife Reserve experiences Tropical Savanna/Dry Climate like most parts of the country. Rainfall over most of the reserve is between 1,000 and 1,250mm. The mean annual minimum temperature is between 15.0 and 17.5°C, and the mean annual maximum is over 30°C (Lubwama, 1994). Soils are mostly vertisols, with eutrophic soils on volcanic ash around Napak and Kadam, and hydromorphic soils around Lake Opeta. (Department of Lands & Surveys, 1967).



## **Bokora - Matheniko Wildlife Reserves**

Bokora – Matheniko Wildlife Reserves are part of the Karamoja Protected area network comprising of the two Wildlife Reserves Bokora Wildlife Reserve 2056 km<sup>2</sup> and Matheniko Wildlife Reserve 1,520 km<sup>2</sup>. The reserves are contiguous with Pian-Upe Wildlife Reserve. Bokora Wildlife Reserve, located between Matheniko Game Reserve and Pian-Upe Wildlife Reserve was gazetted in 1964 to ensure freedom of movement for game during migration between the Matheniko plains and Pian-Upe Game Reserve. The two reserves are essentially plateau rising eastward lying between 1059 – 1832m above sea level, dominated by Dry Combretum wooded grasslands, Acacia wooded grasslands and Somalia-Masai Acacia-Commiphora deciduous bushland and thicket. Like Pian-Upe Wildlife Reserve and most of the Karamoja region, the soils are mostly Vertisols although Lithosols, Ferruginous Tropical Soils and Hydromorphic Soils also occur in some parts (Department of Lands & Surveys, 1967). Bokora – Matheniko Wildlife Reserve experiences both Tropical Savannah/Dry Climate and Semi-Arid Climate.

## **Iriiri-Napak**

Iriiri is an area of grassland located in Napak district north of Pian-Upe Wildlife Reserve. The grasslands of Iriiri surround Mount Napak lying between 1060 – 1500m above sea level. They are contiguous with the grasslands of the Pian-Upe and Bokora Wildlife Reserves. The vegetation of the Iriiri area comprises of wooded grasslands dominated by *Combretum spp*, and *Acacia spp*. Like Pian-Upe Wildlife Reserve and Bokora-Matheniko Wildlife Reserve the soils in this area are mostly Vertisols, however some parts are made up of Hydromorphic soils (Department of Lands & Surveys, 1967). Iriiri, Napak experiences Tropical Savanna/Dry Climate like most parts of the country.

## **Soroti**

The modified Borrassus Palm grasslands of the Soroti City Suburbs in North-eastern Uganda were also surveyed for the Fox's Weaver. This area lies to the west of Pian-Upe and Bokora-Matheniko Wildlife Reserves between 1022m to 1192m above sea level and represents a unique grassland type dominated by *Borassus aethiopum* different from other wooded grasslands in North-eastern Uganda. The soils of Soroti comprise of Ferralitic soils (Department of Lands & Surveys, 1967). Soroti experiences Tropical/Savanna Dry Climate, rainfall in the area normally ranges from 1000mm to 1500mm coming in two seasons; March–July and September – November. Soroti district generally records a mean annual maximum temperature of around 31.3 °C and a mean minimum of around 18°C.

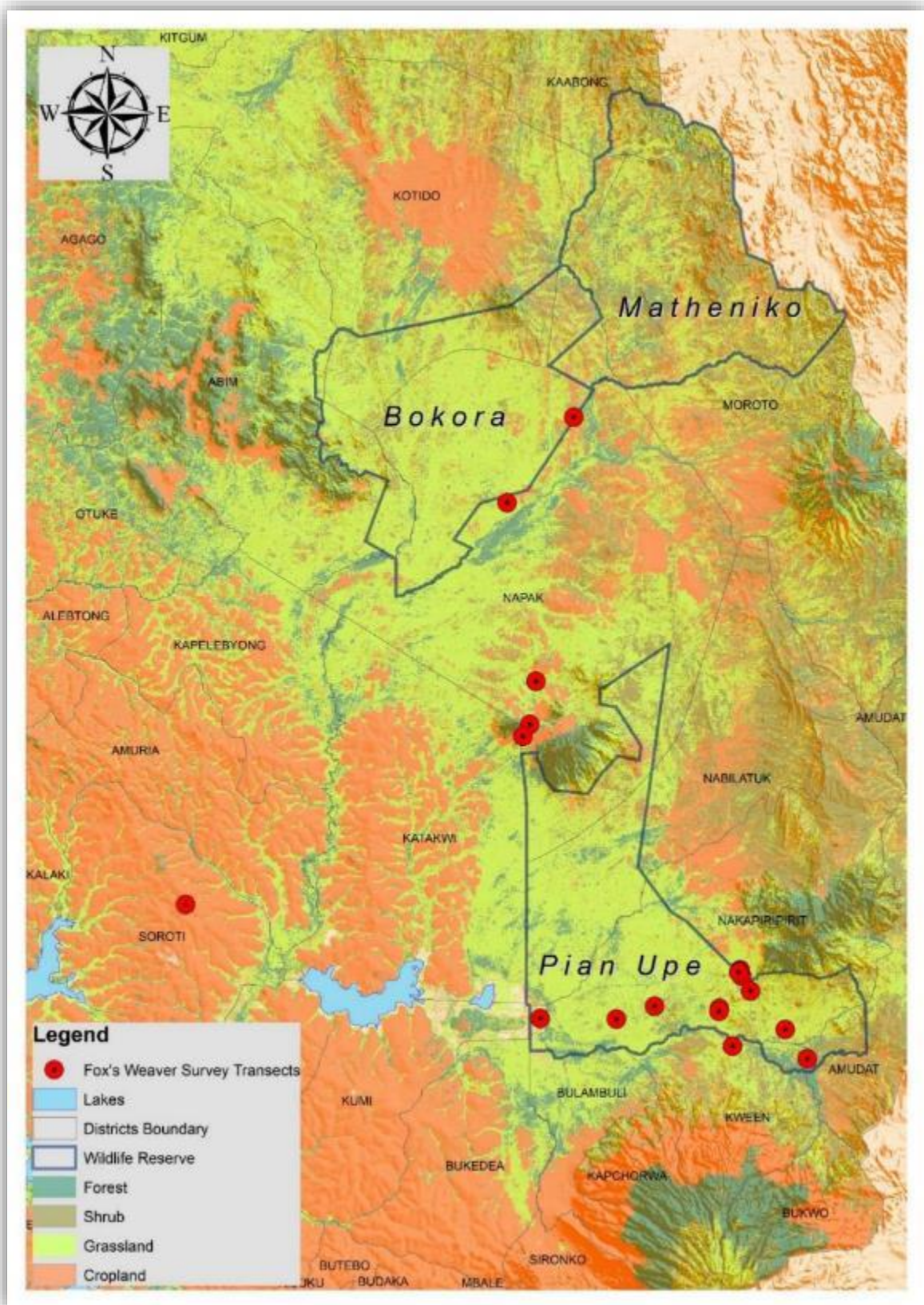


Figure 3: The location of survey transects in Pian-Upe Wildlife Reserve.

## Survey Effort

Nineteen 2-km line transects were randomly established within the four major study areas between May 2020 and May 2021 using Stratified Random Sampling (Figure 3). Most of the survey effort 60% (12 transects) was placed in Pian-Upe Wildlife Reserve, 16% of the survey effort (3 transects) was placed in Iriiri-Napak District, 11% of the survey effort (2 transects) was placed in Bokora – Matheniko Wildlife Reserve, 5% (1 transect) was placed in Chepskunya, Kween District while 5% (1 transect) was placed in Soroti District. Most of the survey effort was placed in Pian-Upe Wildlife Reserve because the current distribution map for the Fox's Weaver (BirdLife International, 2021) predicts that the species occurs in the reserve, and yet there are no records of the Fox's Weaver from Pian-Upe Wildlife Reserve.

The timing of the surveys was designed to coincide with the breeding season and the non-breeding season of the Fox's Weaver as a way of comparing the distribution and relative abundance of the Fox's Weaver in North-eastern Uganda during the breeding season and the non-breeding season. Ten of the nineteen transects were established during the breeding season of the Fox's Weaver (August 2020 and April 2021) while nine of the nineteen transects established coincided with the non-breeding season (February 2021).

In order to ascertain whether the species changes its range during the breeding and non-breeding season, one of the transects (The Okudud Village Transect) was replicated during the breeding and non-breeding season.

## Data collection methods

### Fox's Weaver Records

Along each transect, GPS recordings, activity of the bird, and sex of all sightings of the Fox's Weaver were recorded along. Every other bird species encountered along the established line transects were also recorded.

### Fox's Weaver Nest Records

The GPS locations of all Fox's Weaver nests, nesting tree attributes (species name and tree height) both opportunistic and along established transects during the study were recorded.

### Vegetation & Habitat Attributes

To identify key biotic and abiotic habitat characteristics for the survival of the Fox's Weaver i.e. soil, altitude, and vegetation characteristics. A total of seventy-six sampling points were established (four along each transect at intervals of 500m) to collect data on vegetation attributes (height & type of dominant tree species and herbaceous vegetation) and environmental attributes (altitude and soil colour).

### Dominant Vegetation

At each sampling point, the most abundant tree species and herbaceous vegetation within a 50-meter radius were recorded to determine the dominant vegetation. The tree species and herbaceous vegetation were identified to species level.

### Height of Vegetation

The height of dominant vegetation (trees and grasses) was estimated at each 500m sampling point. Each estimate was made by the same person to minimize variability and improve accuracy.

### Vegetation Cover

The percentage cover of herbaceous vegetation on the ground was also estimated as a percentage over an area of 1m<sup>2</sup>.

## Soil Colour

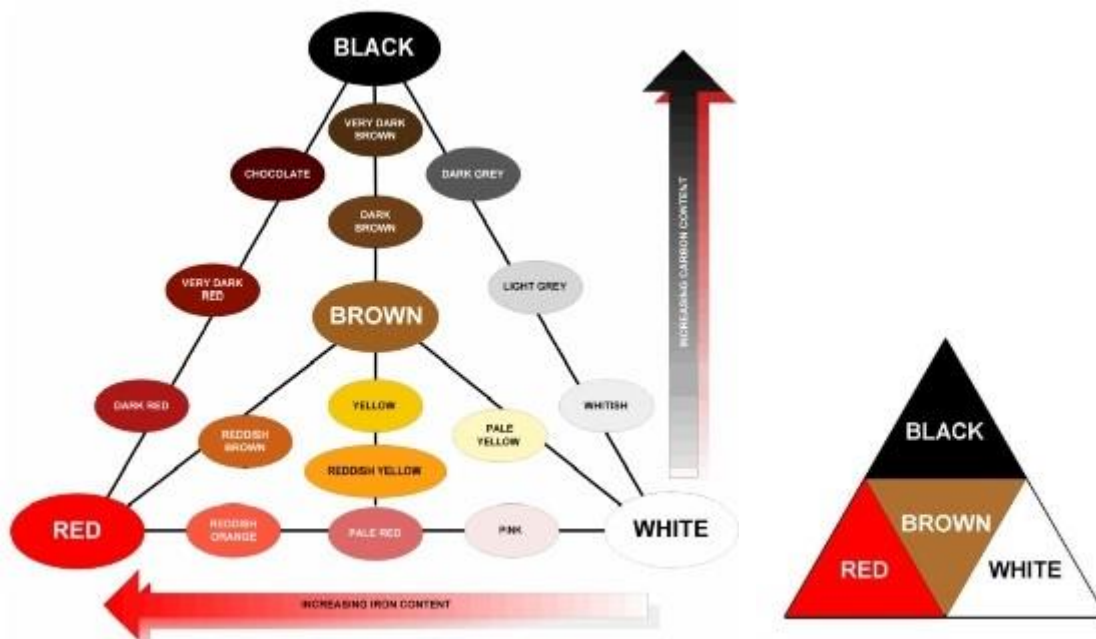


Figure 4: A simple Soil Colour Classification Chart (Source: <http://vro.agriculture.vic.gov.au/>).

Soil colour was categorized using a simple chart into the four major colours; Black, Brown, Red and White (Figure 4); Black Soils formed due to high content of organic matter (peats) or Vertisols (cracking clay soils), Brown Soils associated with moderate organic matter level and Iron Oxides, Red Soils formed due to high content of Iron Oxides and White Soils due to predominance of silica (quartz), or the presence of salts.

## Data Analysis

The vegetation, altitude and soil attributes of transects where the Fox's Weaver was recorded and that of transects where the Fox's Weaver was not sighted were compared using GraphPad Prism version 7.04 for Windows, GraphPad Software, San Diego California USA, [www.graphpad.com](http://www.graphpad.com) to determine habitat preference of the Fox's Weaver.



## Results

### Fox's Weaver Sightings



*Figure 5: A male Fox's Weaver from Chepskunya.*

A total of sixteen individuals of the Fox's Weaver were recorded from eight of the nineteen transects established in North-eastern Uganda. Most of these, four were recorded from the Okudud Village Transect in Pian-Upe Wildlife Reserve, three individuals were recorded from the Chepskunya Transect in Kween District, two individuals were recorded from of the Mukalati Camp Transect in Pian-Upe Wildlife Reserve, Okudud Village III Transect in Pian-Upe Wildlife Reserve, and the Nakakwon Transect in Pian-Upe Wildlife Reserve while one individual was recorded from the Kopenek Transect, Morua'lkaleei Transect and the Okudud III Transect in Pian-Upe Wildlife Reserve (Figure 6).

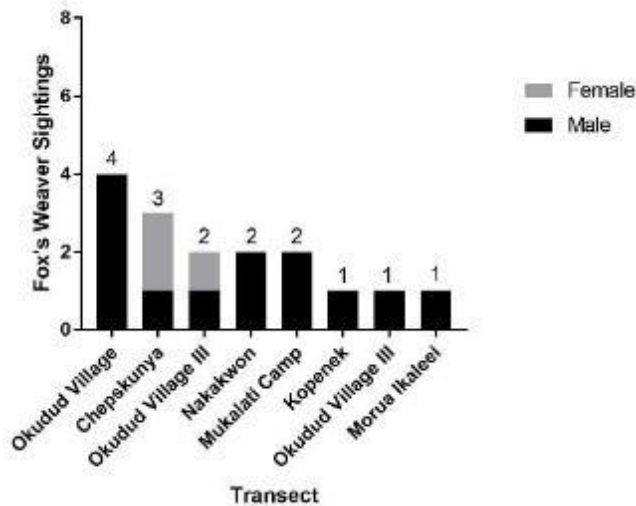


Figure 6: The number and sex of Fox's Weaver individuals recorded from the transects surveyed.

In addition to the sixteen individuals recorded from the transects, a total of eight opportunistic sightings of the Fox's Weaver were recorded from Chepskunya, Kween District. All Fox's Weaver sightings were made from Pian-Upe Wildlife Reserve and Chepskunya, Kween District (Figure 8). No Fox's Weaver sightings were recorded from Bokora-Matheniko Wildlife Reserves, Iriiri, Napak and Soroti.



Figure 7: The Fox's Weaver Survey Team in Pian-Upe Wildlife Reserve.

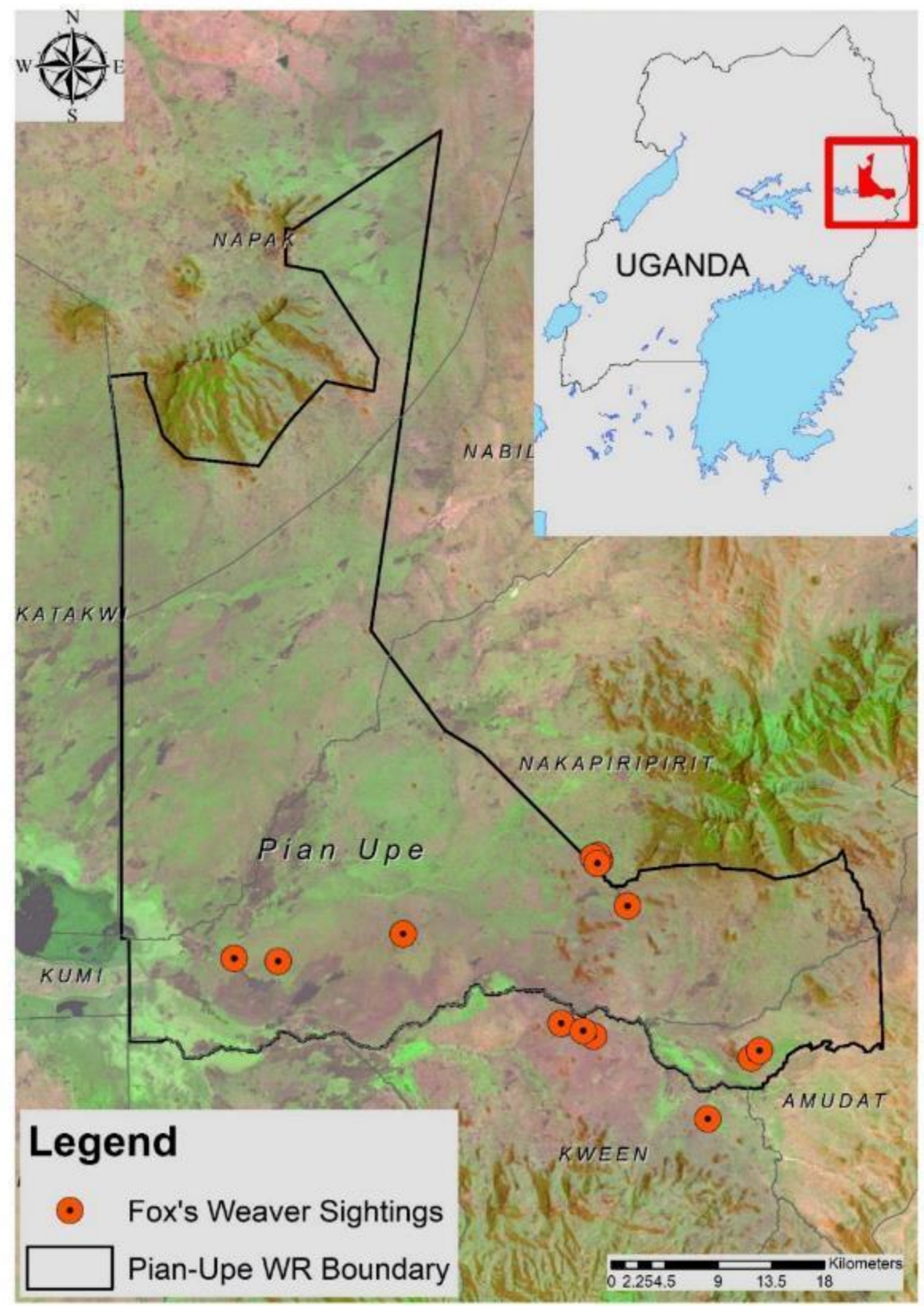


Figure 8: The locations of Fox's Weaver sightings recorded from North-eastern Uganda.



Thirteen out of the sixteen Fox's Weaver sightings recorded along transects were male while three were female. The male individuals were recorded from all the eight transects while the females were recorded from only two transects, the Okudud III Transect in Pian-Upe Wildlife Reserve and Chepskunya Transect in Kween District (Figure 6).

### Sightings in the breeding season

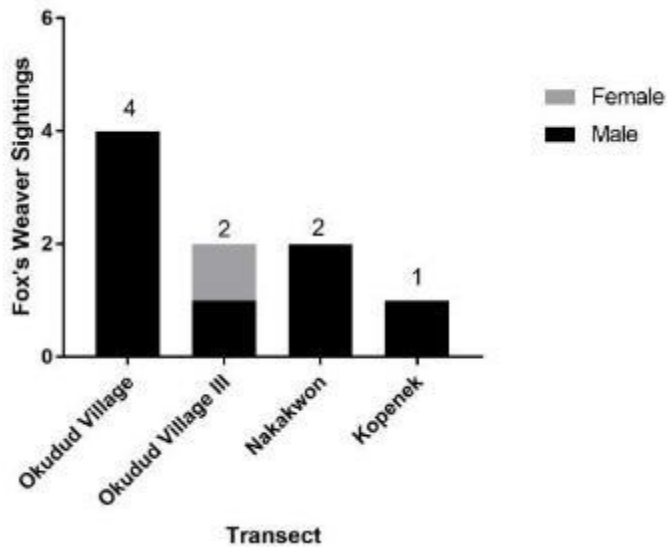


Figure 9: Fox's Weaver sightings recorded during surveys in the breeding season.

Nine individuals of the Fox's Weaver were recorded during the breeding season from four out of the ten transects established during the breeding season (Figure 9).

### Sightings in the non-breeding season

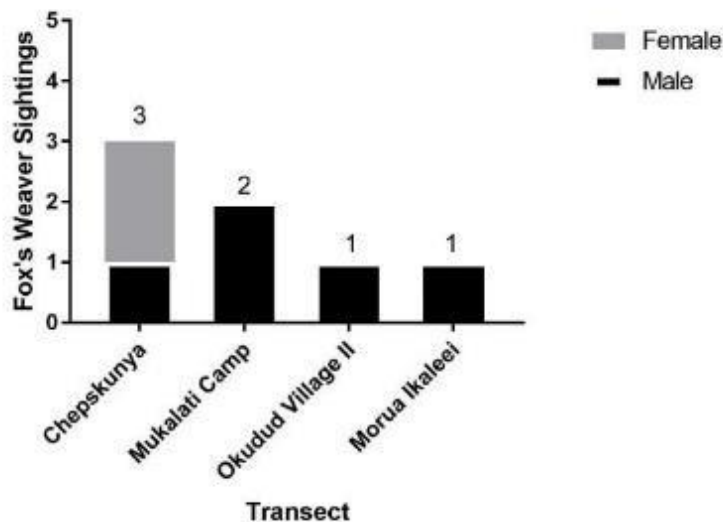


Figure 10: Fox's Weaver sightings recorded during surveys in the non-breeding season.

Seven individuals of the Fox's Weaver were recorded during the breeding season from four out of the nine transects established during the non-breeding season (Figure 10).

The Fox's Weaver was recorded during the breeding and non-breeding season from the Okudud Village Transect that was replicated during the breeding and non-breeding season (Figure 11).

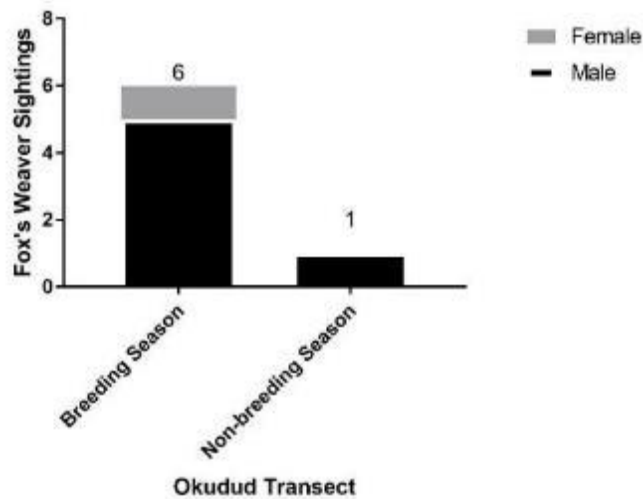


Figure 11: Fox's Weaver records from the Okudud Transect during the breeding and non-breeding season.

The Fox's Weaver was also recorded from the Chepskunya, Kween District during the breeding and non-breeding season area. These records comprised of eight opportunistic sightings during the breeding season and three sightings from the Chepskunya Transect during the non-breeding season (Figure 12).

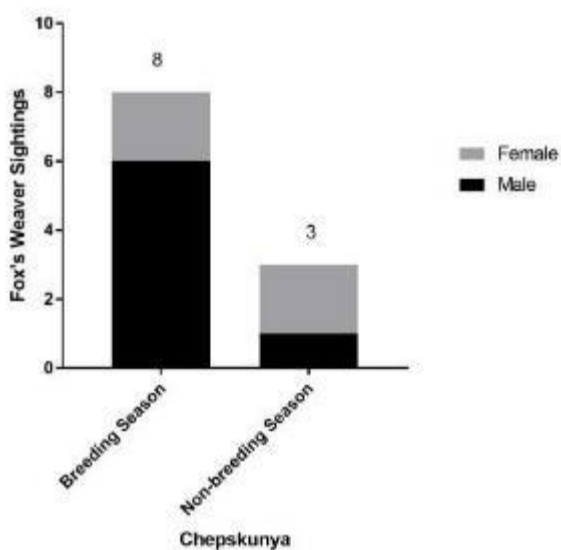


Figure 12: Fox's Weaver records from Chepskunya during the breeding and non-breeding season.

## Fox's Weaver Activity



Figure 13: Fox's Weaver perched on Sorghum near Okudud Village.

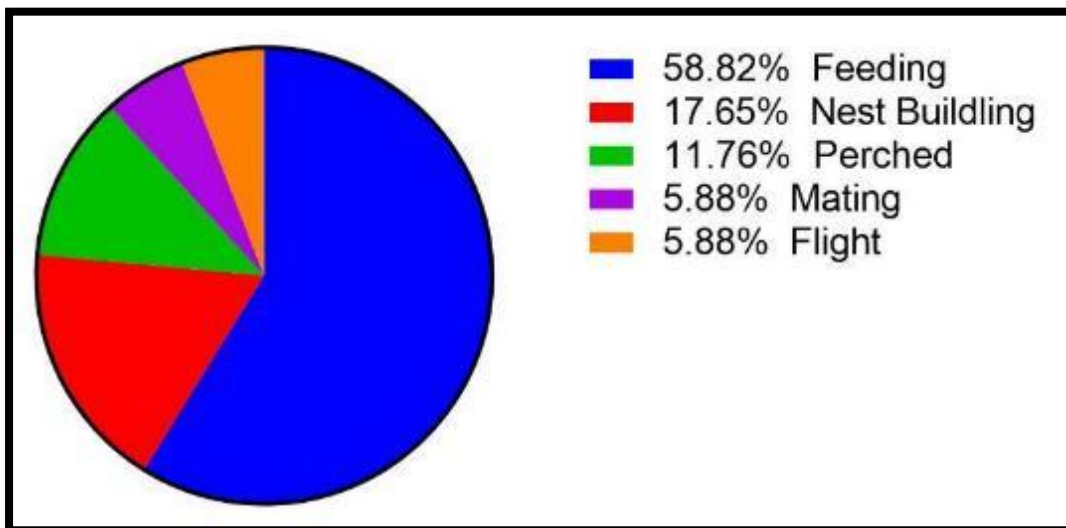


Figure 14: The Activity of Fox's Weaver sightings.

Most of the birds 59% were recorded feeding especially on ants from the Whistling-thorn Acacia, 18% were nest building, 12% were perched, while 6% were mating and in flight as shown in Figure 14 above.

## Fox's Weaver Nest Records



Figure 15: A Fox's Weaver nest constructed on Whistling-thorn Acacia.

A total of 14 Fox's Weaver nests were recorded in the areas adjacent to Pian-Upe Wildlife Reserve in Namalu, Nakapiripirit and Chepskunya, Kween District. Majority of the nests (11) were recorded from Chepskunya, Kween District while three nests were recorded from Namalu, Nakapiripirit (Table 1).

Table 1: The number of nests recorded during the survey.

Area	Number of Nests	Nest Tree Species	Nesting Tree Height (m)	Altitude (m)	Date
Chepskunya	5	Acacia drepanolobium	4.3	1109	09/08/2020
Chepskunya	5	Acacia drepanolobium	3.5	1111	08/08/2020
Okudud Village	2	Acacia drepanolobium	4.2	1106	10/08/2020
Chepskunya	1	Acacia drepanolobium	1	1104	08/08/2020
Okudud Village	1	Acacia drepanolobium	4.5	1125	10/08/2020
	Average = 2.8		Average = 3.5	Average = 1111	

All nests were constructed on the Whistling-thorn Acacia (*Acacia drepanolobium*) Trees ranging from 1 metre to 4.5 metres in height, the altitude of the nesting sites ranged between 1104 – 1125 metres above sea level (Table 1).





*Figure 16: A male Fox's Weaver constructs a nest in Chepskunya.*



*Figure 17: A Fox's Weaver nesting site in Chepskunya.*



Figure 18: The location of Fox's Weaver nests recorded during the survey.



## Other Bird species



*Figure 19: The Rüppell's Vulture from Pian-Upe Wildlife Reserve.*

A total of 194 bird species from 52 bird families were recorded during the surveys, most of these 163 were recorded from Pian-Upe Wildlife Reserve, 76 bird species were recorded from Iriiri, Napak District, 53 bird species were recorded from Bokora – Matheniko Wildlife Reserve, 42 bird species were recorded from Kween District while 18 bird species were recorded from Soroti District.

These geo-referenced bird sightings have supported NatureUganda's Teso – Karamoja Checklist Project that is working to document the avi-fauna of the Teso and Karamoja Region as a way of promoting Eco-tourism in the area. (Download full checklist here: [http://www.natureuganda.org/downloads/NU\\_checklist\\_FINAL\\_lite.pdf](http://www.natureuganda.org/downloads/NU_checklist_FINAL_lite.pdf) ). The full list is attached in the

Appendix 6.

## Karamoja Apalis Sightings



*Figure 20: One of the 1<sup>st</sup> sightings of the Karamoja Apalis from Chepskunya.*

The surveys in North-eastern Uganda provided the team an important opportunity to document the Karamoja Apalis an East African endemic bird species restricted to North-eastern Uganda. The Karamoja Apalis was recorded from Seven major sites, two sites from Kween District (Chepskunya and Ngorina), and five sites from Pian-Upe Wildlife Reserve (Napedet, Mukalati Camp, Nakakwon, Kopenek, and Loporokocho). Twenty-one individuals of the Karamoja Apalis were recorded from the 2km transect set up at Nakakwon in Pian-Upe Wildlife Reserve perhaps the highest count of the species per square kilometer. Seven individuals of the Karamoja Apalis were recorded from Kopenek, Pian-Upe Wildlife Reserve, Four individuals were recorded from the Mukalati Camp Transect, Pian-Upe Wildlife Reserve, two individuals were recorded from Loporokocho, Pian-Upe Wildlife Reserve and Ngorina, Kween District, while the least number of individuals one was recorded from Napedet, Pian-Upe Wildlife Reserve and Chepskunya, Kween District.



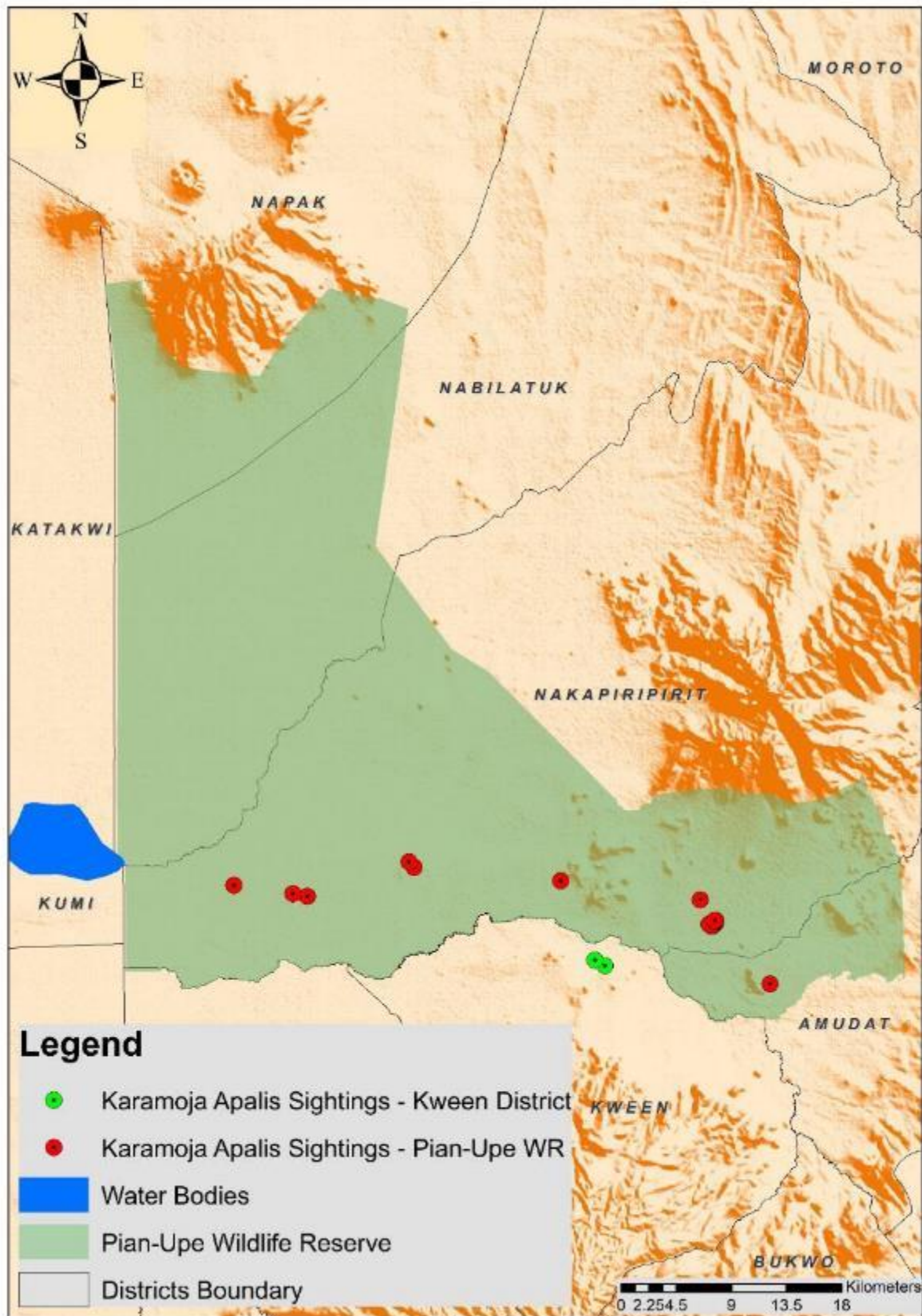


Figure 21: Karamoja Apalis sightings in Pian-Upe WR and Kween District.

## Vegetation & Habitat Attributes

### Dominant Vegetation Type

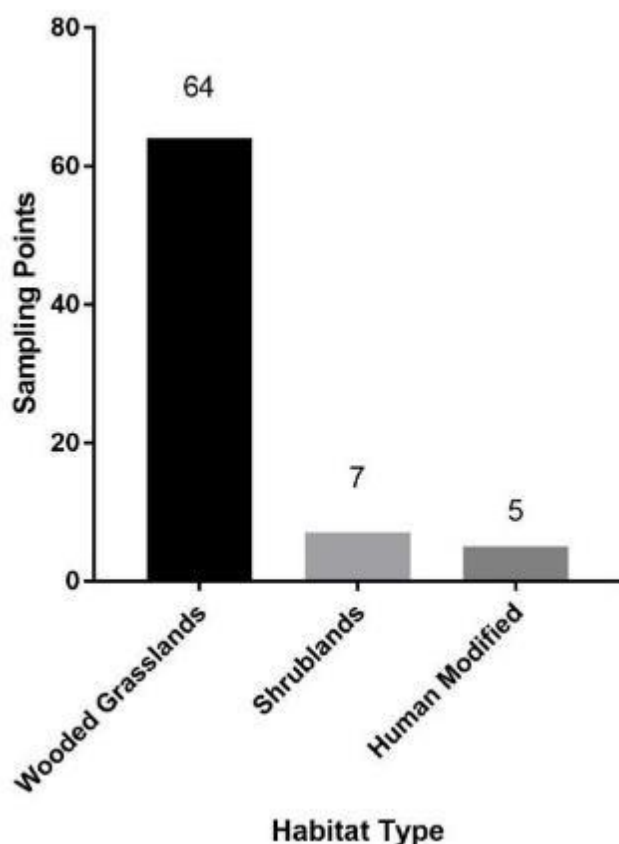


Figure 22: The distribution of sampling points across habitats surveyed.

Majority of the vegetation sampling points 84%, fell within wooded grasslands, 9% of the vegetation sampling points fell within shrublands, and 7% of the vegetation sampling points fell within human modified habitats (one sampling point fell within a school lawn while four sampling points fell within cultivated areas) Figure 22.

Five woody species, *Acacia drepanolobium*, *Balanites aegyptica*, *Combretum spp*, *Acacia seyal*, *Ficus glumosa* and mixed thicket were recorded as dominant species from the sixty-four sampling points that fell within the wooded grasslands. The Whistling-thorn Acacia (*Acacia drepanolobium*) was the most recorded species from the sampling points that fell within wooded grasslands, it was recorded from thirty-nine out of sixty-four sampling points, *Acacia seyal* was recorded from eight out of sixty-four sampling points, *Balanites aegyptica* was recorded from five out of sixty-four sampling points, *Ficus glumosa*. Mixed thickets and *Combretum spp* were recorded from four out of sixty-four sampling points Figure 23.

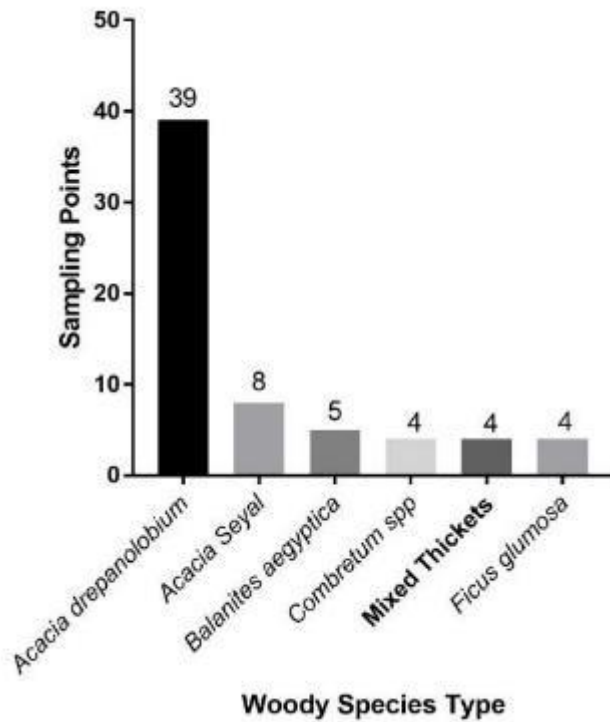


Figure 23: The dominant woody species recorded from the sampling points in grasslands.

Shrublands sampled were dominated by Acacia-Commiphora Thickets recorded from four out of the seven sampling points, *Lantana camara* was the dominant species at two sampling points, and one sampling point fell within a mixed shrub Figure 24.

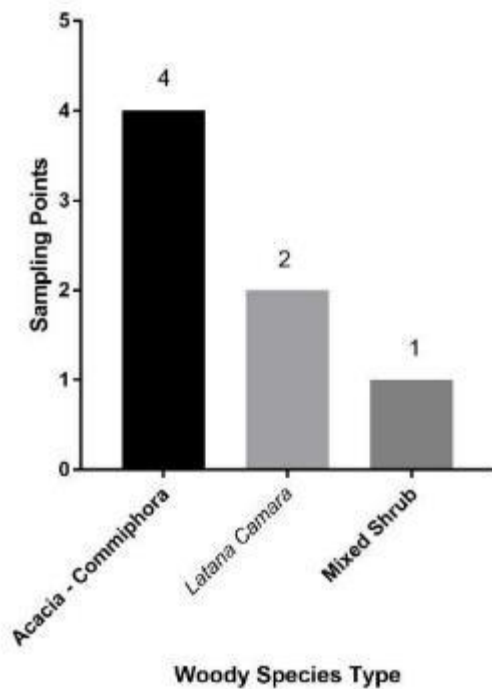


Figure 24: The dominant woody species recorded from the sampling points in shrublands.

The height of *Balanites aegyptica* trees in wooded grasslands ranged from 8m to 10m with an average height of 8.5m across all sites. The height of *Ficus glumosa* trees in wooded grasslands ranged from 5m to 7m with an average height of 5.8m across all sites. The height of *Combretum* trees in wooded grasslands ranged from 3.5m to 8m with an average height of 5.4m across all sites. The height of *Acacia drepanolobium* trees in wooded grasslands ranged from 1.3m to 10m with an average height of 4.1m across all sites. The height of *Acacia seyal* trees in wooded grasslands ranged from 2.5m to 7m with an average of 3.9m across sites. The height of Mixed Thicket in wooded grasslands was 3m.

The height of Acacia – Commiphora thickets ranged from 2.3m to 3m with an average height of 2.6m across all sites. The height of mixed Shrub was estimated at 2m, while the height of *Lantana camara* shrub was 1m.

The height of dominant woody species recorded from the sampling points established is summarized below in Table 2 below.

Table 2: The average height of dominant woody species recorded from the sampling points.

S/no	Dominant Woody Species	Average Height (m)
1.	<i>Balanites aegyptica</i>	8.5
2.	<i>Ficus glumosa</i>	5.8
3.	<i>Combretum spp</i>	5.4
4.	<i>Acacia drepanolobium</i>	4.1
5.	<i>Acacia Seyal</i>	3.9
6.	Mixed Thickets	3.0
7.	Acacia – Commiphora	2.5
8.	Mixed Shrub	2.0
9.	<i>Latana Camara</i>	1.0



## Dominant herbaceous vegetation type



Figure 25: A section of Pian-Upe Wildlife Reserve with long grass measuring up to 2 metres high.

*Hyparrhenia rufa* was the most dominant herbaceous species recorded from fifty-seven out of seventy-six sampling points, dominating all wooded grassland types and Thickets except the *Lantana camara* shrubland. The height of *Hyparrhenia rufa* ranged from 0.01m to 2m averaging 0.9m. Percentage ground cover of *Hyparrhenia rufa* ranged from 30% to 100% averaging 77%.

Seven out of seventy-six sampling points occurred in cultivated areas in Okudud Village (5) and Soroti (1). The height of vegetation and cover in cultivated areas was not estimated.

*Setaria sphacelata* was recorded as dominant from four out of seventy-six sampling points in *Acacia drepanolobium*, *Combretum* and *Balanites aegyptica* wooded grassland types. The height of *Setaria sphacelata* ranged from 1.5m to 2.5m averaging 1.9m. This was recorded only in the breeding season (August 2020). Percentage ground cover of *Setaria sphacelata* was 100%.

*Digitaria abyssinica* was recorded as dominant only from four out of seventy-six sampling points in *Acacia drepanolobium* and *Acacia seyal* grassland of the Nakakwon transect Pian-Upe Wildlife Reserve. The height of *Digitaria abyssinica* ranged from 0.25m to 0.3m averaging 0.3m. This was recorded only in the breeding season (April 2021). Percentage ground cover of *Digitaria abyssinica* ranged from 70% to 80% averaging 78%.

Three out of seventy-six sampling areas occurred in bare areas under *Lantana camara* in Soroti Railway while one sampling point from the Soroti Railway transect occurred in a lawn consisting of *Paspalum* spp. The height of vegetation and cover in bare areas and modified habitats was not estimated Figure 26.

Table 3: The average height of major herbaceous species recorded from the habitat sampling points.

S/no	Herbaceous species	Average Height (m)
1	<i>Setaria sphacelata</i>	1.9
2	<i>Hyparrhenia rufa</i>	0.9
3	<i>Digitaria abyssinica</i>	0.3

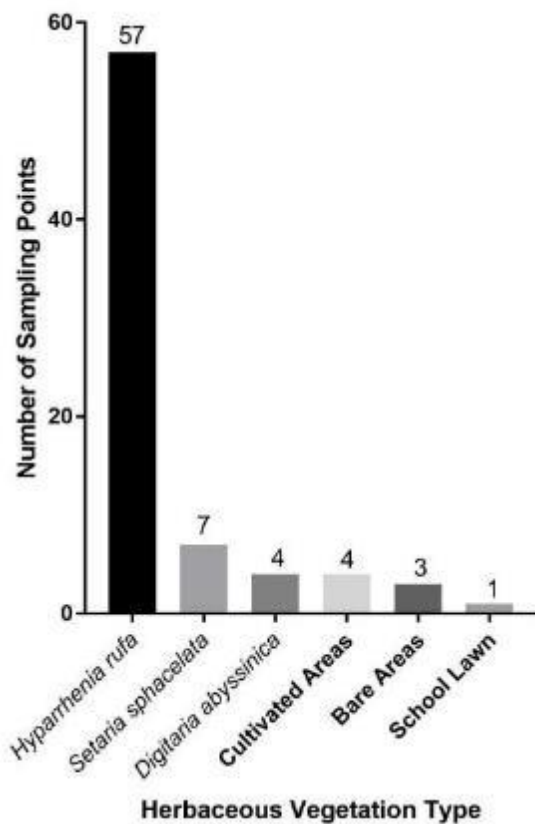


Figure 26: The Herbaceous vegetation type recorded from the habitat sampling points.

## Altitude

The Altitude of the seventy-six sampling points established along the nineteen transects ranged from 1047 to 1256 metres above sea level with an average 1134m across all sites.

The Lake Opeta Swamp transect had the lowest average altitude above sea level 1049m while the Iriiri Combretum transect had the highest average altitude above sea level 1237m

Table 4.



*Figure 27: The plains of Pian-Upe Wildlife Reserve overlooked by the Kadam ranges.*

Table 4: The average altitude of the transects surveyed.

S/no	Transect name	Location	Average Altitude of transect (m)
1	Napedet	Pian-Upe Wildlife Reserve	1099
2	Kopenek	Pian-Upe Wildlife Reserve	1083
3	Roan Track	Pian-Upe Wildlife Reserve	1138
4	Okudud Village	Pian-Upe Wildlife Reserve	1129
5	Napedet South	Pian-Upe Wildlife Reserve	1104
6	Okudud Village II	Pian-Upe Wildlife Reserve	1134
7	Mukalati Camp	Pian-Upe Wildlife Reserve	1064
8	Lake Opeta Swamp	Pian-Upe Wildlife Reserve	1049
9	Chepskunya	Kween District	1104
10	Morua'lkaleei	Pian-Upe Wildlife Reserve	1161
11	Iriiri Acacia	Napak District	1227
12	Iriiri Combretum	Napak District	1237
13	Iriiri Impeded Drainage	Napak District	1160
14	Soroti Railway	Soroti District	1121
15	Okudud Village III	Pian-Upe Wildlife Reserve	1131
16	Loporokocho	Pian-Upe Wildlife Reserve	1156
17	Nakakwon	Pian-Upe Wildlife Reserve	1132
18	Turutuku	Bokora Wildlife Reserve	1138
19	Sinyu Ranger Post	Matheniko Wildlife Reserve	1186



## Soil Colour



*Figure 28: Black coloured soils from Pian-Upe Wildlife Reserve.*

Sixty-five out of the seventy-six sampling points setup along the nineteen transects was black. These sixty-five sampling points were spread across seventeen transects in Pian-Upe Wildlife Reserve, Bokora Wildlife Reserve, as well as Kween and Napak District Figure 29. Four out of the seventy-six sampling points occurred on red soils. These were recorded from the Sinyu transect in Matheniko Wildlife Reserve and from the Soroti Transect Figure 29. Four out of the seventy-six sampling points occurred on white sandy soils. These were recorded from the Sinyu transect in Matheniko Wildlife Reserve and from the Soroti Transect Figure 29.

Three out of the seventy-six sampling points occurred on brown soils and these were spread across three transects Kopenek in Pian-Upe Wildlife Reserve, Sinyu in Matheniko Wildlife Reserve, and Iriiri Acacia in Napak Figure 29.

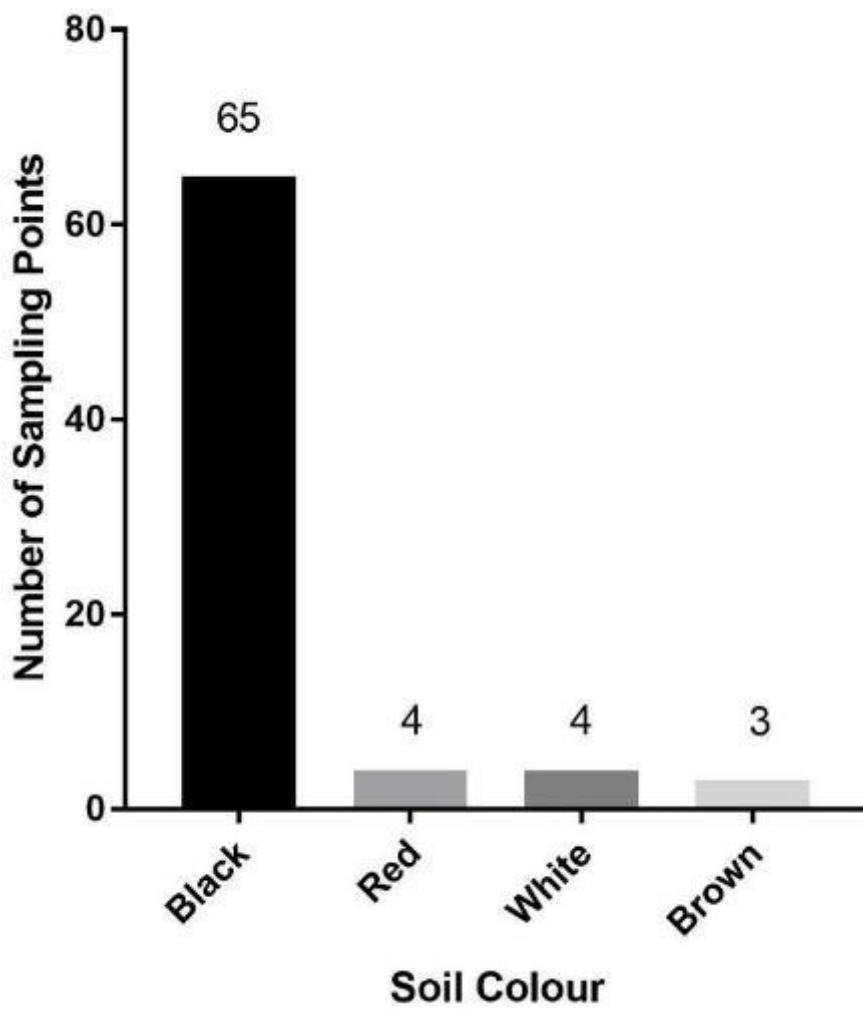


Figure 29: Soil Colour recorded at the habitat sampling points.

## Fox's Weaver Habitat Preference

The vegetation, altitude and soil attributes of transects where the Fox's Weaver was recorded and that of transects where the Fox's Weaver was not sighted were compared to determine habitat selection and preference.

## Fox's Weaver Distribution Vs Vegetation Type

All the eight transects where the Fox's Weaver were recorded were completely or partially dominated by *Acacia drepanolobium* based on the dominant species recorded at the four 500m sampling points (Table 5).

Table 5: Habitat descriptions for the Transects surveyed.

S/no	Transect name	Dominant Woody Species	Dominant Grass species	FW Sightings
1	Okudud Village	<i>Acacia drepanolobium</i> grassland & Farmland	<i>H. rufa</i>	4
2	Chepskunya	Mixed <i>Acacia seyal</i> - <i>Acacia drepanolobium</i> grassland	<i>H. rufa</i>	3
3	Mukalati Camp	<i>Acacia drepanolobium</i> grassland	<i>H. rufa</i>	2
4	Okudud Village III	<i>Acacia drepanolobium</i> grassland & Farmland	<i>H. rufa</i>	2
5	Nakakwon	Mixed <i>Acacia seyal</i> - <i>Acacia drepanolobium</i> grassland	<i>D. abyssinica</i>	2
6	Kopenek	<i>Acacia drepanolobium</i> grassland	<i>H. rufa</i>	1
7	Okudud Village II	<i>Acacia drepanolobium</i> grassland & Farmland	<i>H. rufa</i>	1
8	Morua'lkaleei	Mixed <i>Acacia drepanolobium</i> - <i>Balanites aegyptica</i> – Combretum grassland	<i>H. rufa</i>	1
9	Napedet	Mixed <i>Balanites aegyptica</i> & <i>Acacia drepanolobium</i> grassland	<i>H. rufa</i>	0
10	Roan Track	Mixed Combretum - <i>Acacia drepanolobium</i> - <i>Balanites aegyptica</i> grassland	<i>S. sphacelata</i>	0
11	Napedet South	<i>Acacia drepanolobium</i> grassland	<i>H. rufa</i>	0
12	Lake Opeta Swamp	Grassland dominated by mixed thickets	<i>H. rufa</i>	0
13	Iriiri Acacia	Mixed <i>Acacia seyal</i> - <i>Ficus glumosa</i> grasslands	<i>H. rufa</i>	0
14	Iriiri Combretum	Mixed <i>Ficus glumosa</i> – Combretum grassland	<i>H. rufa</i>	0
15	Iriiri Impeded Drainage	Mixed <i>Acacia seyal</i> - <i>Acacia drepanolobium</i> grassland	<i>H. rufa</i>	0
16	Soroti Railway	Human Settlements	N/A	0
17	Loporokocho	Mixed <i>Acacia drepanolobium</i> – <i>Balanites aegyptica</i> grassland	<i>H. rufa</i>	0
18	Turutuku	<i>Acacia drepanolobium</i> grassland	<i>H. rufa</i>	0
19	Sinyu Ranger Post	<i>Acacia</i> - <i>Commiphora</i> Thickets	<i>H. rufa</i>	0

No sightings were made from *Acacia* – *Commiphora* Thickets, Mixed *Lantana camara* shrub - Farmland – Lawn, Mixed *Ficus glumosa* - Combretum - Mixed Shrub, Mixed *Acacia seyal* & *Ficus glumosa*, Mixed Thickets and Mixed *Balanites aegyptica* & *Acacia drepanolobium*.

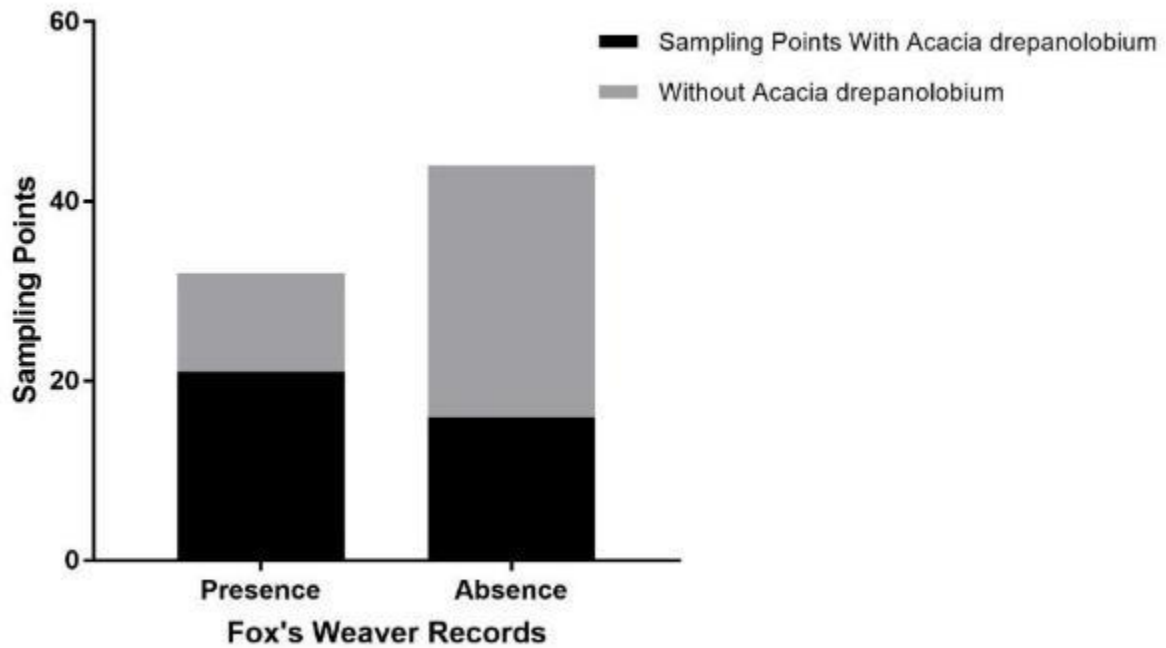


Figure 30: The proportion of sampling points with and without *Acacia drepanolobium* recorded from transects with absence and presence records for the Fox's Weaver.

The proportion of sampling points with *Acacia drepanolobium* and sampling points without *Acacia drepanolobium* in transects where the Fox's Weaver had been sighted was compared with those in transects where the Fox's Weaver had not been sighted. The percentage of sampling points with *Acacia drepanolobium* that were recorded from transects with Fox's Weaver sightings 56% (21 out of 37), was higher than the percentage of sampling points without *Acacia drepanolobium* recorded from transects with Fox's Weaver sightings 28% (11 out of 39). (Table 6).

Table 6: The proportion of sampling points with and without *Acacia drepanolobium* recorded with absence and presence recorded for the Fox's Weaver.

	Sampling Points with <i>Acacia drepanolobium</i>	Sampling Points without <i>Acacia drepanolobium</i>	Total
Presence	21	11	32
Absence	16	28	44
Total	37	39	76

Fisher's exact test analysis found that the proportion of sampling points with *Acacia drepanolobium* was significantly higher than the proportion of sampling points without *Acacia drepanolobium* in transects with Fox's Weaver records ( $p < 0.05$ ).

## Vegetation Height

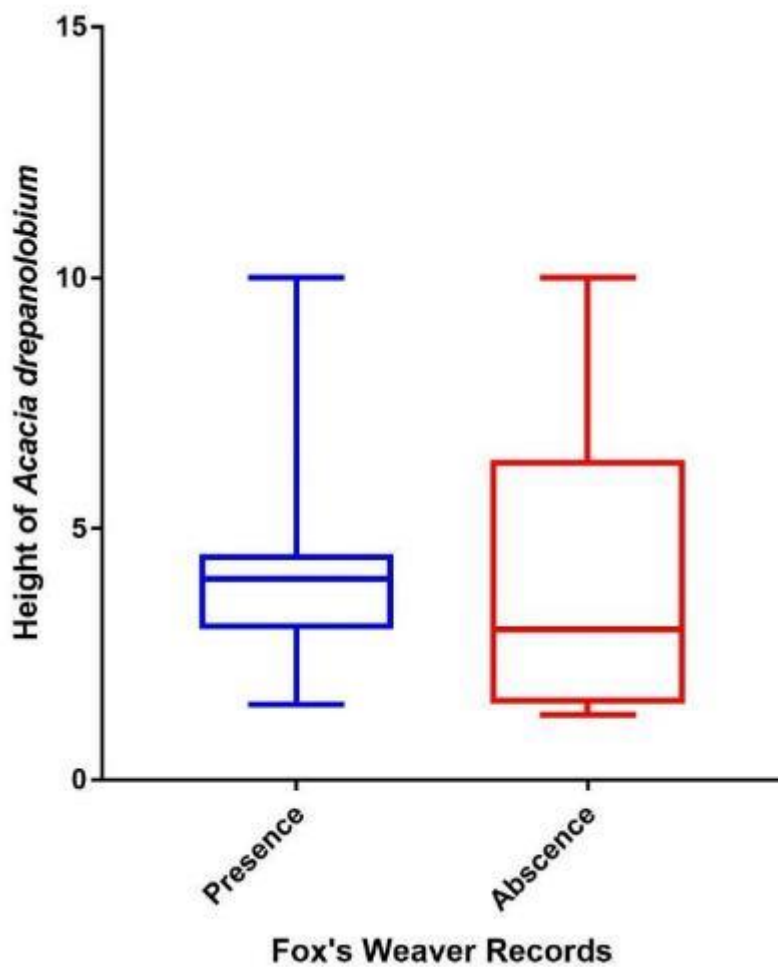
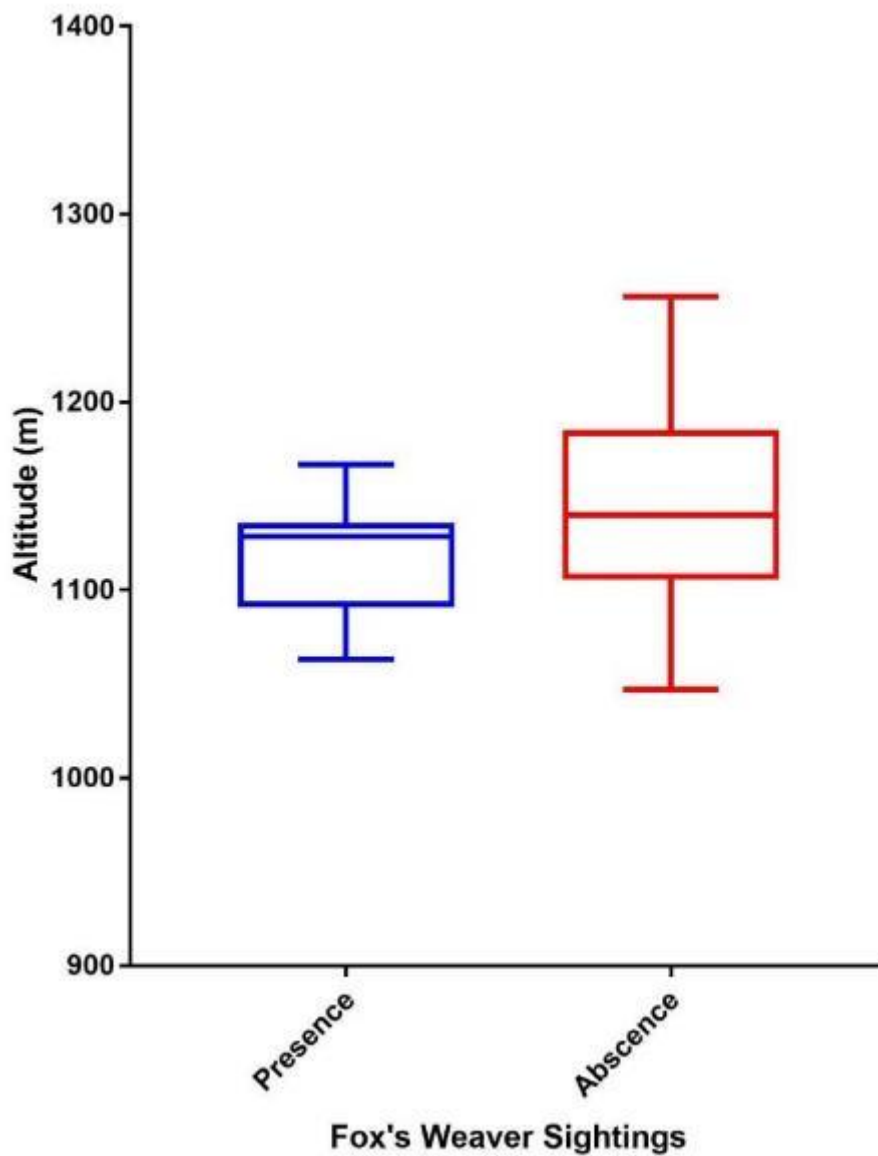


Figure 31: The height of *Acacia drepanolobium* in transects with presence and absence records.

The average height of *Acacia drepanolobium* trees in transects where the Fox's Weaver was recorded ( $\mu \pm se = 4.3 \pm 2.2$ ,  $n = 23$ ) were higher than the average height of those where the Fox's Weaver was not recorded ( $\mu \pm se = 3.8 \pm 2.6$ ,  $n = 16$ ). There was no significant difference between the average height of *Acacia drepanolobium* trees in transects where the Fox's Weaver was recorded and the *Acacia drepanolobium* trees in transects where the Fox's Weaver was not recorded ( $t = 0.7$ ,  $df = 37$  and  $p = 0.52$ ).

## Fox's Weaver Distribution Vs Altitude



The average altitude of transects where the Fox's Weaver was sighted ( $\mu \pm se = 1117 \pm 5.3$ ,  $n = 32$ ) was lower than the average altitude of transects where the Fox's Weaver was not sighted ( $\mu \pm se = 1147 \pm 8.1$ ,  $n = 44$ ). There was a significant difference between the average altitude of transects where the Fox's Weaver was sighted and the average altitude of transects where the Fox's Weaver was not sighted ( $t = 2.8$ ,  $df = 74$  and  $p < 0.01$ ).



## Fox's Weaver Distribution Vs Soil Colour

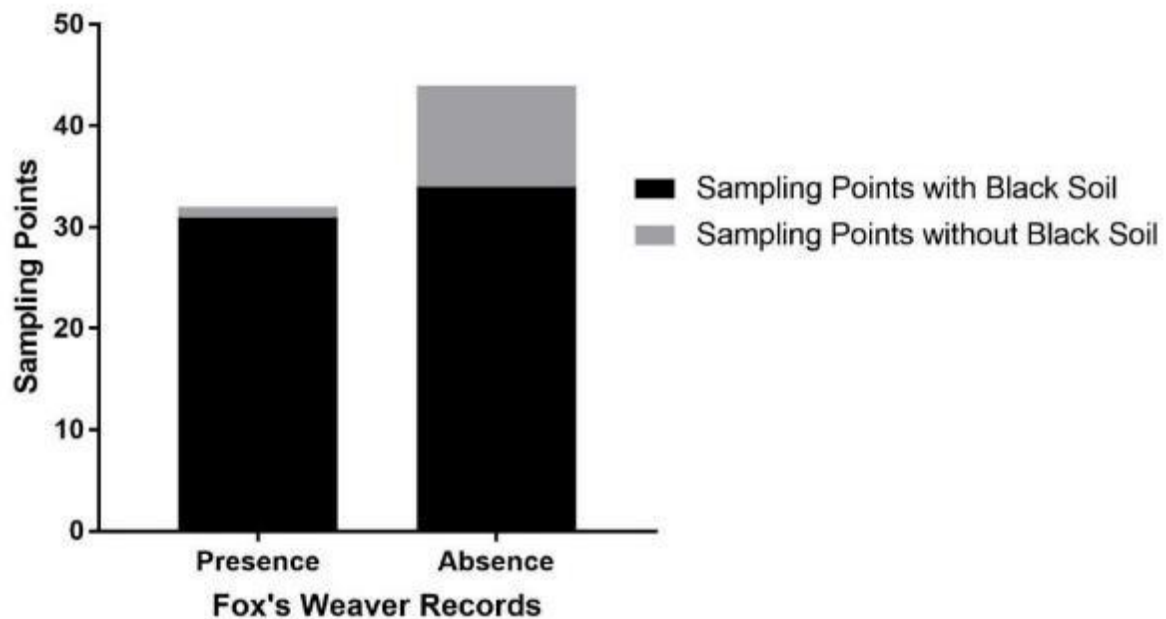


Figure 32: The proportion of sampling points with and without Black Soil recorded from transects with absence and presence records for the Fox's Weaver.

The proportion of sampling points with Black Soil and sampling points without Black Soil in transects where the Fox's Weaver had been sighted was compared with those in transects where the Fox's Weaver had not been sighted.

The percentage of sampling points with Black Soil that were recorded from transects with Fox's Weaver sightings 48% (31 out of 65), was higher than the percentage of sampling points without Black Soil recorded from transects with Fox's Weaver sightings 9% (1 out of 11). (Table 6).

Table 7: The number of sampling points with and without Black Soil recorded from transects with absence and presence records for the Fox's Weaver.

	Sampling Points with Black Soil	Sampling Points without Black Soil	Total
Presence	31	1	32
Absence	34	10	44
Total	65	11	76

Fisher's exact test analysis found that the proportion of sampling points with Black Soil was significantly higher than the proportion of sampling points without Black Soil in transects with Fox's Weaver records ( $p < 0.05$ ).

## Discussion

Our surveys in North-eastern Uganda recorded the first documented records of the Fox's Weaver from the Whistling-thorn Acacia grasslands of Pian-Upe Wildlife Reserve and Chepskunya, Kween District in North-eastern Uganda both in the breeding and non-breeding season. Vegetation, altitude and soil colour had a great influence on the distribution of the Fox's Weaver. Species sightings were highly associated with Whistling-thorn Acacia grasslands growing on Vertisols (Black Soils) (Oginosako et al, 2005); the altitude of sightings ranged from 1052m to 1173m with an average of 1119m above sea-level. Nesting sites for the species were also recorded from the Whistling-thorn Acacia grasslands adjacent to Pian-Upe Wildlife Reserve in Okudud Village in Namalu, Nakapiripirit and Chepskunya, Kween District, no nest sites were recorded from the grasslands of Pian-Upe Wildlife Reserve.

The altitudinal range of Fox's Weaver sightings 1052m – 1173m is common throughout most of Central Uganda, but the vegetation in the North-east that occurs in this same altitudinal range is different from that in other parts of Uganda with similar altitude. The low-lying plains of Pian-Upe Wildlife Reserve, and most of North-eastern contain Vertisols. These dark coloured soils with a high content of clay minerals formed in areas of topographic depressions that collect these elements leached from uplands are common in North-eastern Uganda. It is therefore clear that the topography of North-eastern Uganda enables the formation of Vertisols that support the growth of the Whistling-thorn Acacia.

The Whistling-thorn Acacia is endemic to East Africa, in Uganda the species is mostly restricted to North-eastern Uganda with a few records from Western Uganda near Lake Albert and the Albert Nile (GBIF, 2021). In Kenya, the species grows on Vertisols sometimes referred to as "Black Cotton Soils" (Kenfack et al, 2021), this also seems to be the case in Uganda because Vertisols are also restricted to mostly North-eastern Uganda, and parts of North-western Uganda (Department of Lands & Surveys, 1967). Given that the distribution of the Whistling-thorn Acacia is constrained by the distribution of Vertisols, the distribution of the Fox's Weaver is therefore likely to be limited in range to Whistling-thorn Acacia grasslands that grow on the Vertisols. The Fox's Weaver records during the survey coincided with those of the Karamoja Apalis, an East African Endemic restricted to Whistling-thorn Acacia grasslands of North-eastern Uganda, Northern Tanzania and Southern Kenya.



The Fox's Weaver depends on the Whistling-thorn Acacia for breeding, all Fox's Weaver nests were constructed on only Whistling-thorn Acacia even though these were not the only *Acacia spp.* Nest tree selection observed during this study was also consistent with observations made during previous surveys at Fox's Weaver breeding sites in Magoro, Katakwi (Nature Uganda 2018 and 2019). Aside from the fact that the Whistling-thorn Acacia is fairly abundant in North-eastern Uganda, it is highly likely that the presence of symbiotic ants on the Whistling-thorn Acacia might be a determining factor for the weavers' presence, because the ants provide food for the weaver, majority of the Fox's Weaver recorded were observed feeding on the ants that inhabit the galls of the Whistling-thorn Acacia, but most importantly the ants have been shown to provide protection to the Whistling-thorn Acacia against herbivory in exchange for food( Young et al, 1996), protection that benefits the Fox's Weaver. While the species is sparsely distributed within the Whistling-thorn Acacia grasslands during the non-breeding season (dry season), it is more abundant at nesting sites in the breeding season.

## Conclusion

Factors such as climate and biotic interactions notwithstanding the Fox's Weaver is endemic to North-eastern Uganda because it is restricted to the Whistling-thorn Acacia grasslands that grow on Vertisols the most abundant soil type in North-eastern Uganda. Incorporating abiotic factors especially climate will be important in determining the range of the Fox's Weaver within the Whistling-thorn Acacia grasslands of North-eastern Uganda and understanding why the species is restricted to North-eastern Uganda and does not occur in other parts of East Africa with Whistling-thorn Acacia. Current and Future efforts to conserve the Fox's Weaver should focus on protecting the Whistling-thorn, a tree on which it depends for food and breeding. Future studies should focus on determining the population of the species within the Whistling-thorn Acacia grasslands of North-eastern Uganda as well as understanding the breeding biology of the species.

## References

- Acacia drepanolobium* Harms ex Y.Sjöstedt in GBIF Secretariat (2021). GBIF Backbone Taxonomy. Checklist dataset <https://doi.org/10.15468/39omei>  
Accessed on 2021-11-24.
- Byaruhanga, A., Kasoma, P. and Pomeroy, D. (2001). *Important Bird Areas in Uganda*. East Africa Natural History Society. Kampala, Uganda.
- BirdLife International (2021) Species factsheet: *Ploceus spekeoides*. Downloaded from <http://www.birdlife.org> on 26/10/2021.
- Carswell, M., Pomeroy, D., Reynolds, J. and Tushabe, H. (2005). *The Bird Atlas of Uganda*. British Ornithologists Club and British Ornithologists Union, UK.
- Department of Lands and Surveys. (1967). World 1:1,000,000 maps, Uganda. Government of Uganda, Kampala, Uganda.
- Fry, C. H. and Keith, S. (Eds) (2004). *The Birds of Africa Vol. V*. Christopher Helm, London.
- Kenfack, D., Arellano, G., Kibet, S., Kimuyu, D., & Musili, P. (2021). Understanding the monodominance of *Acacia drepanolobium* in East African savannas: insights from demographic data. *Trees* **35**, 1439–1450 (2021).  
<https://doi.org/10.1007/s00468-02102127-6>
- Nature Uganda. (2018). Fox's Weaver Report. East Africa Natural History Society.  
Retrieved from [www.natureuganda.com](http://www.natureuganda.com).
- Nature Uganda. (2019). Fox's Weaver Survey Report. East Africa Natural History Society. Kampala, Uganda.
- Nature Uganda. (2020). Fox's Weaver Survey Report. East Africa Natural History Society. Kampala, Uganda.

Oginosako, Z., Kindt, R., and Mathenge, S. G. (2005). An ecological analysis and  
Characterization of species in Kenya. DOI: <https://doi.org/10.3759/tropics.14.357>

Pitman, C. R. S. (1948). *in litt.* To C. H. B. Grant (letter held in BMNH).

Pitman, C. R. S. (1950). Annual report of the Game Department for 1948: 22 – 8.  
Government Printer, Entebbe, Uganda.

WCS. (2016) Nationally Threatened Species for Uganda. Wildlife Conservation Society.  
Kampala, Uganda.

Young, T., Stubblefield, C. & Isbell, L. (1996). Ants on swollen-thorn acacias: species  
coexistence in a simple system. *Oecologia* 109, 98–107 (1996).  
<https://doi.org/10.1007/s004420050063>

## Appendices

*Appendix 1: The Fox's Weaver survey team.*

S/no.	Name	Role	Organization	Survey I	Survey II	Survey III
1.	Jonathan Onongo	Team Leader	NatureUganda			
2.	Micheal Kibuule	Ornithologist	NatureUganda			
3.	Ssozi Andrew	Logistics	NatureUganda			
4.	Jacob Lotee	Ranger Guide	Uganda Wildlife Authority			
5.	Daniel Kutosi	Ranger Guide	Uganda Wildlife Authority			
6.	Robert Ochom	Volunteer	Bird Guide			
7.	Jombela Salmah	Volunteer	NatureUganda			
8.	Daniel Logono	Ranger Guide	Uganda Wildlife Authority			
9.	Henry Lopiko	Ranger Guide	Uganda Wildlife Authority			
10.	Basire Andrew	Driver	NatureUganda			
11.	Dr. Dianah Nalwanga	Ornithologist	NatureUganda			
12.	Isabella Ayaa	Volunteer	NatureUganda			
13.	Rogers Kakura	Driver	NatureUganda			
14.	Okello Muhammad	Ranger Guide	Uganda Wildlife Authority			

Appendix 2: Fox's Weaver sightings along transects.

S/no	Transect name	Location	Survey I (Aug 2020)	Survey II (Feb 2021)	Survey III (Apr 2021)	Activity	M	F	Total
1	Napedet	Pian-Upe Wildlife Reserve	0						0
2	Kopenek	Pian-Upe Wildlife Reserve	1			F	1		1
3	Roan Track	Pian-Upe Wildlife Reserve	0						0
4	Okudud Village	Pian-Upe Wildlife Reserve	1			F	1		1
5	Okudud Village	Pian-Upe Wildlife Reserve	1			P	1		1
6	Okudud Village	Pian-Upe Wildlife Reserve	2			F	2		2
7	Napedet South	Pian-Upe Wildlife Reserve	0						0
8	Okudud Village II	Pian-Upe Wildlife Reserve		1		F	1		1
9	Mukalati Camp	Pian-Upe Wildlife Reserve		1		F	1		1
10	Mukalati Camp	Pian-Upe Wildlife Reserve		1		F	1		1
11	Lake Opeta Swamp	Pian-Upe Wildlife Reserve		0					0
12	Chepskunya	Kween District		3		F	1	2	3
13	Morua'lkaleei	Pian-Upe Wildlife Reserve		1		F	1		1
14	Iriiri Acacia	Napak District		0					0
15	Iriiri Combretum	Napak District		0					0
16	Iriiri Impeded Drainage	Napak District		0					0
17	Soroti Railway	Soroti District		0					0
18	Okudud Village III	Pian-Upe Wildlife Reserve			2	NB	1	1	2
19	Loporokocho	Pian-Upe Wildlife Reserve			0				0
20	Nakakwon	Pian-Upe Wildlife Reserve			1	F	1		1
21	Nakakwon	Pian-Upe Wildlife Reserve			1	P	1		1
22	Turutuku	Bokora Wildlife Reserve			0				0
23	Sinyu Ranger Post	Matheniko Wildlife Reserve			0				0
<b>Total</b>			<b>5</b>	<b>7</b>	<b>4</b>		<b>13</b>	<b>3</b>	<b>16</b>

*Appendix 3: Opportunistic Fox's Weaver sightings.*

S/no	Transect name	Location	Altitude (m)	Activity	M	F	Total
1	Chepskunya	Kween District	1109	NB	1		1
	Chepskunya	Kween District	1109	Mating	1	1	2
3	Chepskunya	Kween District	1119	Flight	1		1
4	Chepskunya	Kween District	1116	NB	3	1	4
Total			Av = 1113		6	2	8



*Appendix 4: Nesting tree characteristics.*

s/no	Area	Number of Nests	Nest Tree Species	Tree Height (m)	Habitat Type	Altitude (m)	Date
1	Okudud Village	2	Acacia drepanolobium	4.2	Mixed Acacia drepanolobium Grassland - Cultivated Area	1106	10/08/2020
2	Okudud Village	1	Acacia drepanolobium	4.5	Acacia drepanolobium wooded grassland	1125	10/08/2020
3	Chepskunya	5	Acacia drepanolobium	4.3	Acacia drepanolobium wooded grassland	1109	09/08/2020
5	Chepskunya	1	Acacia drepanolobium	1	Acacia drepanolobium wooded grassland	1104	08/08/2020
6	Chepskunya	5	Acacia drepanolobium	3.5	Acacia drepanolobium wooded grassland	1111	08/08/2020
		Average = 2.8		Average = 3.5		Average = 1111	

Appendix 5: *Karamoja Apalis* sightings.

Sightings along transects

S/no	Transect name	Location	Survey I (Aug 2020)	Survey II (Feb 2021)	Survey III (Apr 2021)	Activity	M	F	Total
1	Napedet	Pian-Upe Wildlife Reserve	1			F			1
2	Kopenek	Pian-Upe Wildlife Reserve	7			F			7
13	Mukalati Camp	Pian-Upe Wildlife Reserve		4		F			4
14	Chepskunya	Kween District		1		F			1
19	Loporokocho	Pian-Upe Wildlife Reserve			2	F			2
20	Nakakwon	Pian-Upe Wildlife Reserve			21	F			21
Total			8	5	23				36

Opportunistic sightings

S/no	Transect name	Location	Activity	M	F	Total
1	Chepskunya	Kween District	F	1	1	2
Total				1	1	2

Appendix 6: List of Birds recorded during the survey

s/no	Common name	Scientific name	Family name	2020 IUCN Red List	Pian-Upe	Iriiri, Napak	Bokora - Matheniko	Chepskunya, Kween	Soroti
1	Common Ostrich	<i>Struthio camelus</i>	Struthionidae	LC	1		1		
2	Striated Heron	<i>Butorides striata</i>	Ardeidae	LC	1		1		
3	Black-headed Heron	<i>Ardea melanocephala</i>	Ardeidae	LC	1				
4	Hamerkop	<i>Scopus umbretta</i>	Scopidae	LC	1				
5	White Stork	<i>Ciconia ciconia</i>	Ciconiidae	LC	1				
6	Yellow-billed Stork	<i>Mycteria ibis</i>	Ciconiidae	LC	1				
7	Abdim's Stork	<i>Ciconia abdimii</i>	Ciconiidae	LC	1				
8	African Openbill	<i>Anastomus lamelligerus</i>	Ciconiidae	LC	1				
9	Marabou Stork	<i>Leptoptilos crumenifer</i>	Ciconiidae	LC	1				
10	Hadada Ibis	<i>Bostrychia hagedash</i>	Threskiornithidae	LC	1				
11	Black Kite	<i>Milvus migrans</i>	Accipitridae	LC	1	1	1		1
12	Black-winged Kite	<i>Elanus caeruleus</i>	Accipitridae	LC	1			1	
13	Hooded Vulture	<i>Necrosyrtes monachus</i>	Accipitridae	CR		1			
14	African White-backed Vulture	<i>Gyps africanus</i>	Accipitridae	CR	1				
15	Rüppell's Vulture	<i>Gyps rueppelli</i>	Accipitridae	CR	1				
16	Black-chested Snake-Eagle	<i>Circaetus pectoralis</i>	Accipitridae	LC	1				
17	Western Banded Snake-Eagle	<i>Circaetus cinerascens</i>	Accipitridae	LC	1	1			
18	Eastern Chanting-Goshawk	<i>Melierax poliopterus</i>	Accipitridae	LC	1		1		
19	Dark Chanting-Goshawk	<i>Melierax metabates</i>	Accipitridae	LC	1	1	1		
20	African Goshawk	<i>Accipiter tachiro</i>	Accipitridae	LC		1			
21	Grasshopper Buzzard	<i>Butastur rufipennis</i>	Accipitridae	LC		1			
22	Tawny Eagle	<i>Aquila rapax</i>	Accipitridae	VU		1			
23	Wahlberg's Eagle	<i>Hieraaetus wahlbergi</i>	Accipitridae	LC	1	1			
24	Bateleur	<i>Terathopius ecaudatus</i>	Accipitridae	EN	1				
25	Long-crested Eagle	<i>Lophaetus occipitalis</i>	Accipitridae	LC	1	1	1	1	
26	Martial Eagle	<i>Polemaetus bellicosus</i>	Accipitridae	EN	1				

27	Common Kestrel	<i>Falco tinnunculus</i>	Falconidae	LC	1				
28	Grey Kestrel	<i>Falco ardosiaceus</i>	Falconidae	LC	1				
29	Red-necked Falcon	<i>Falco chicquera</i>	Falconidae	LC	1	1			
30	Helmeted Guineafowl	<i>Numida meleagris</i>	Numididae	LC	1	1		1	
31	Heuglin's Francolin	<i>Francolinus icterorhynchus</i>	Phasianidae	LC	1	1			
32	Crested Francolin	<i>Ortygornis sephaena</i>	Phasianidae	LC	1		1	1	1
33	Yellow-necked Spurfowl	<i>Pternistis leucoscepus</i>	Phasianidae	LC	1		1		
34	Red-necked Spurfowl	<i>Pternistis afer</i>	Phasianidae	LC	1				
35	Common Button-quail	<i>Turnix sylvaticus</i>	Turnicidae	LC	1	1			
36	Quail-plover	<i>Ortyxelos meiffrenii</i>	Turnicidae	LC	1				
37	Black-bellied Bustard	<i>Eupodotis melanogaster</i>	Otididae	LC	1				
38	African Wattled Lapwing	<i>Vanellus senegallus</i>	Charadriidae	LC				1	
39	Common Sandpiper	<i>Actitis hypoleucos</i>	Scolopacidae	LC	1				
40	Wood Sandpiper	<i>Tringa glareola</i>	Scolopacidae	LC			1		
41	African Green-Pigeon	<i>Treron calvus</i>	Columbidae	LC	1				
42	Bruce's Green-Pigeon	<i>Treron waalia</i>	Columbidae	LC	1				
43	Blue-spotted Wood-dove	<i>Turtur afer</i>	Columbidae	LC		1		1	
44	Black-billed Wood-dove	<i>Turtur abyssinicus</i>	Columbidae	LC	1				
45	Tambourine Dove	<i>Turtur tympanistria</i>	Columbidae	LC		1	1		
46	Namaqua Dove	<i>Oena capensis</i>	Columbidae	LC		1		1	
47	Ring-necked Dove	<i>Streptopelia capicola</i>	Columbidae	LC	1	1		1	
48	Red-eyed Dove	<i>Streptopelia semitorquata</i>	Columbidae	LC	1				
49	Mourning Collared Dove	<i>Streptopelia decipiens</i>	Columbidae	LC		1			
50	Vinaceous Dove	<i>Streptopelia vinacea</i>	Columbidae	LC	1	1		1	1
51	Laughing Dove	<i>Spilopelia senegalensis</i>	Columbidae	LC	1	1		1	
52	Meyer's Parrot	<i>Poicephalus meyeri</i>	Psittacidae	LC	1				
53	White-crested Turaco	<i>Tauraco leucolophus</i>	Musophagidae	LC		1			
54	White-bellied Go-away-bird	<i>Crinifer leucogaster</i>	Musophagidae	LC	1		1		

55	Eastern Plantain-eater	<i>Crinifer zonurus</i>	Musophagidae	LC		1			
56	African Cuckoo	<i>Cuculus gularis</i>	Cuculidae	LC			1		
57	Red-chested Cuckoo	<i>Cuculus solitarius</i>	Cuculidae	LC	1		1		
58	Diederik Cuckoo	<i>Chrysococcyx caprius</i>	Cuculidae	LC	1		1	1	
59	Klaas's Cuckoo	<i>Chrysococcyx klaas</i>	Cuculidae	LC	1		1		
60	White-browed Coucal	<i>Centropus superciliosus</i>	Cuculidae	LC	1	1			1
61	Standard-winged Nightjar	<i>Caprimulgus longipennis</i>	Caprimulgidae	LC	1				
62	White-rumped Swift	<i>Apus caffer</i>	Apodidae	LC	1				
63	African Palm Swift	<i>Cypsiurus parvus</i>	Apodidae	LC	1	1			1
64	Speckled Mousebird	<i>Colius striatus</i>	Coliidae	LC	1	1			
65	Blue-naped Mousebird	<i>Urocolius macrourus</i>	Coliidae	LC	1	1	1		
66	Striped Kingfisher	<i>Halcyon chelicuti</i>	Alcedinidae	LC	1	1			
67	Woodland Kingfisher	<i>Halcyon senegalensis</i>	Alcedinidae	LC	1				
68	Malachite Kingfisher	<i>Corythornis cristata</i>	Alcedinidae	LC	1				
69	African Pygmy-kingfisher	<i>Ispidina picta</i>	Alcedinidae	LC	1				
70	Little Bee-eater	<i>Merops pusillus</i>	Meropidae	LC	1			1	
71	Cinnamon-chested Bee-eater	<i>Merops oreobates</i>	Meropidae	LC	1				
72	Blue-cheeked Bee-eater	<i>Merops persicus</i>	Meropidae	LC	1				
73	Olive Bee-eater	<i>Merops superciliosus</i>	Meropidae	LC	1				
74	Broad-billed Roller	<i>Eurystomus glaucurus</i>	Coraciidae	LC	1				
75	Abyssinian Roller	<i>Coracias abyssinicus</i>	Coraciidae	LC	1				
76	Purple Roller	<i>Coracias naevius</i>	Coraciidae	LC			1		
77	Green Wood Hoopoe	<i>Phoeniculus purpureus</i>	Phoeniculidae	LC	1				
78	Abyssinian Scimitarbill	<i>Rhinopomastus minor</i>	Phoeniculidae	LC	1		1		
79	Northern Red-billed Hornbill	<i>Tockus erythrorhynchus</i>	Bucerotidae	LC	1				
80	African Grey Hornbill	<i>Tockus nasutus</i>	Bucerotidae	LC	1	1		1	
81	Yellow-rumped Tinkerbird	<i>Pogoniulus bilineatus</i>	Lybiidae	LC	1				
82	Red-fronted Tinkerbird	<i>Pogoniulus pusillus</i>	Lybiidae	LC	1		1		

83	Yellow-fronted Tinkerbird	<i>Pogoniulus chrysoconus</i>	Lybiidae	LC	1	1	1		1
84	Spot-flanked Barbet	<i>Tricholaema lacrymosa</i>	Lybiidae	LC	1		1		
85	White-headed Barbet	<i>Lybius leucocephalus</i>	Lybiidae	LC	1	1			
86	Black-billed Barbet	<i>Lybius guifsobalito</i>	Lybiidae	LC	1	1		1	
87	Double-toothed Barbet	<i>Lybius bidentatus</i>	Lybiidae	LC	1				1
88	D'Arnaud's Barbet	<i>Trachyphonus darnaudii</i>	Lybiidae	LC	1		1	1	
89	Greater Honeyguide	<i>Indicator indicator</i>	Indicatoridae	LC	1				
90	Nubian Woodpecker	<i>Campethera nubica</i>	Picidae	LC	1	1	1	1	
91	Cardinal Woodpecker	<i>Dendropicos fuscescens</i>	Picidae	LC	1				
92	Grey Woodpecker	<i>Dendropicos goertae</i>	Picidae	LC	1				
93	Flappet Lark	<i>Mirafra rufocinnamomea</i>	Alaudidae	LC	1				
94	Sand Martin	<i>Riparia riparia</i>	Hirundinidae	LC	1		1	1	
95	Banded Martin	<i>Riparia cincta</i>	Hirundinidae	LC	1				
96	Red-breasted Swallow	<i>Cecropis semirufa</i>	Hirundinidae	LC	1				
97	Lesser Striped Swallow	<i>Cecropis abyssinica</i>	Hirundinidae	LC			1		
98	Barn Swallow	<i>Hirundo rustica</i>	Hirundinidae	LC	1	1	1	1	
99	Angolan Swallow	<i>Hirundo angolensis</i>	Hirundinidae	LC	1			1	
100	Yellow Wagtail	<i>Motacilla flava</i>	Motacillidae	LC	1				
101	Yellow-throated Longclaw	<i>Macronyx croceus</i>	Motacillidae	LC				1	
102	African Pipit	<i>Anthus cinnamomeus</i>	Motacillidae	LC		1			
103	Tree Pipit	<i>Anthus trivialis</i>	Motacillidae	LC	1				
104	Dark-capped Bulbul	<i>Pycnonotus tricolor</i>	Pycnonotidae	LC	1	1			1
105	White-browed Robin-Chat	<i>Cossypha heuglini</i>	Muscicapidae	LC				1	
106	African Thrush	<i>Turdus pelios</i>	Turdidae	LC	1				
107	Whinchat	<i>Saxicola rubetra</i>	Muscicapidae	LC	1	1			
108	Northern Wheatear	<i>Oenanthe oenanthe</i>	Muscicapidae	LC	1	1		1	
109	Isabelline Wheatear	<i>Oenanthe isabellina</i>	Muscicapidae	LC	1	1		1	
110	Pied Wheatear	<i>Oenanthe pleschanka</i>	Muscicapidae	LC		1		1	

111	Spotted Palm - Thrush	<i>Cichladusa guttata</i>	Muscicapidae	LC	1		1	1	
112	Buff-bellied Warbler	<i>Phyllolais pulchella</i>	Cisticolidae	LC		1			
113	Northern Crombec	<i>Sylvietta brachyura</i>	Macrosphenidae	LC	1			1	
114	Moustached Grass Warbler	<i>Melocichla mentalis</i>	Macrosphenidae	LC	1		1		
115	Zitting Cisticola	<i>Cisticola juncidis</i>	Cisticolidae	LC	1	1			
116	Wing-snapping Cisticola	<i>Cisticola ayresii</i>	Cisticolidae	LC	1				
117	Croaking Cisticola	<i>Cisticola natalensis</i>	Cisticolidae	LC	1	1		1	1
118	Rattling Cisticola	<i>Cisticola chiniana</i>	Cisticolidae	LC	1	1	1	1	
119	Winding Cisticola	<i>Cisticola marginatus</i>	Cisticolidae	LC	1	1			
120	Singing Cisticola	<i>Cisticola cantans</i>	Cisticolidae	LC	1	1	1	1	
121	Trilling Cisticola	<i>Cisticola woosnami</i>	Cisticolidae	LC	1				
122	Short-winged Cisticola	<i>Cisticola brachypterus</i>	Cisticolidae	LC	1				
123	Foxy Cisticola	<i>Cisticola troglodytes</i>	Cisticolidae	LC	1	1			
124	Tawny-flanked Prinia	<i>Prinia subflava</i>	Cisticolidae	LC	1	1			1
125	Grey-capped Warbler	<i>Eminia lepida</i>	Cisticolidae	LC	1		1		
126	Grey-backed Camaroptera	<i>Camaroptera brevicaudata</i>	Cisticolidae	LC	1	1	1		1
127	Yellow-breasted Apalis	<i>Apalis flavida</i>	Cisticolidae	LC	1				
128	Karamoja Apalis	<i>Apalis karamojae</i>	Cisticolidae	VU	1			1	
129	African Grey Flycatcher	<i>Malaernornis microrhynchus</i>	Muscicapidae	LC	1	1			
130	Pale Flycatcher	<i>Malaernornis pallidus</i>	Muscicapidae	LC	1		1		
131	Swamp Flycatcher	<i>Muscicapa aquatica</i>	Muscicapidae	LC	1				
132	Chinspot Batis	<i>Batis molitor</i>	Platysteiridae	LC	1				
133	Grey-headed Batis	<i>Batis orientalis</i>	Platysteiridae	LC	1		1		
134	African Paradise-flycatcher	<i>Terpsiphone viridis</i>	Monarchidae	LC	1		1		
135	Silverbird	<i>Empidonis semipartitus</i>	Muscicapidae	LC	1	1	1	1	
136	Copper Sunbird	<i>Cinnyris cuprea</i>	Nectariniidae	LC	1	1		1	1
137	Marico Sunbird	<i>Cinnyris mariquensis</i>	Nectariniidae	LC	1		1		
138	Scarlet-chested Sunbird	<i>Chalcomitra senegalensis</i>	Nectariniidae	LC	1	1			



139	Beautiful Sunbird	<i>Cinnyris pulchellus</i>	Nectariniidae	LC	1		1		
140	Grey-backed Fiscal	<i>Lanius excubitoroides</i>	Laniidae	LC	1	1	1	1	
141	Yellow-billed Shrike	<i>Corvinella corvina</i>	Laniidae	LC	1	1			
142	Tropical Boubou	<i>Laniarius major</i>	Malaconotidae	LC	1				
143	Black-headed Gonolek	<i>Laniarius erythrogaster</i>	Malaconotidae	LC	1	1		1	1
144	Brubru	<i>Nilaus afer</i>	Malaconotidae	LC	1				
145	Black-crowned Tchagra	<i>Tchagra australis</i>	Malaconotidae	LC	1	1		1	1
146	Sulphur-breasted Bush-shrike	<i>Malaconotus sulfureopectus</i>	Malaconotidae	LC	1		1		
147	Northern White-crowned shrike	<i>Eurocephalus ruppelli</i>	Laniidae	LC	1		1	1	
148	White-crested Helmet-shrike	<i>Prionops plumatus</i>	Vangidae	LC			1		
149	Fork-tailed Drongo	<i>Dicrurus adsimilis</i>	Dicruridae	LC	1	1	1	1	
150	Piapiac	<i>Ptilostomus afer</i>	Corvidae	LC					1
151	Pied Crow	<i>Corvus albus</i>	Corvidae	LC	1		1		1
152	Fan-tailed Raven	<i>Corvus rhipidurus</i>	Corvidae	LC	1				
153	Black-headed Oriole	<i>Oriolus larvatus</i>	Oriolidae	LC	1				
154	Western Oriole	<i>Oriolus brachyrhynchus</i>	Oriolidae	LC		1			
155	Red-billed Oxpecker	<i>Buphagus erythrorhynchus</i>	Buphagidae	LC	1				
156	Greater Blue-eared Starling	<i>Lamprotornis chalybaeus</i>	Sturnidae	LC	1		1	1	
157	Lesser Blue-eared Starling	<i>Lamprotornis chloropterus</i>	Sturnidae	LC	1	1			
158	Rüppell's Starling	<i>Lamprotornis purpuroptera</i>	Sturnidae	LC	1	1			
159	Splendid Starling	<i>Lamprotornis splendidus</i>	Sturnidae	LC	1				
160	Superb Starling	<i>Lamprotornis superbus</i>	Sturnidae	LC	1	1	1	1	
161	Shelley's Sparrow	<i>Passer shelleyi</i>	Passeridae	LC	1	1	1	1	
162	White-browed Sparrow-Weaver	<i>Plocepasser mahali</i>	Ploceidae	LC			1		
163	Chestnut-crowned Sparrow-Weaver	<i>Plocepasser superciliosus</i>	Ploceidae	LC		1			
164	White-headed Buffalo-Weaver	<i>Dinemellia dinemelli</i>	Ploceidae	LC			1		
165	Red-billed Buffalo-Weaver	<i>Bubalornis niger</i>	Ploceidae	LC			1		
166	Village Weaver	<i>Ploceus cucullatus</i>	Ploceidae	LC	1	1			

167	Lesser Masked Weaver	<i>Ploceus intermedius</i>	Ploceidae	LC	1				
168	Vitelline Masked Weaver	<i>Ploceus velatus</i>	Ploceidae	LC	1				
169	Fox's Weaver	<i>Ploceus spekeoides</i>	Ploceidae	NT	1			1	
170	Baglafaecht Weaver	<i>Ploceus baglafaecht</i>	Ploceidae	LC					1
171	Little Weaver	<i>Ploceus luteolus</i>	Ploceidae	LC	1		1		
172	Black-headed Weaver	<i>Ploceus melanocephalus</i>	Ploceidae	LC	1				
173	Vieillot's Black Weaver	<i>Ploceus nigerrimus</i>	Ploceidae	LC			1		
174	Red-billed Quelea	<i>Quelea quelea</i>	Ploceidae	LC	1	1			
175	Cardinal Quelea	<i>Quelea cardinalis</i>	Ploceidae	LC	1				
176	Red-headed Weaver	<i>Anaplectes rubriceps</i>	Ploceidae	LC	1				
177	Fan-tailed Widowbird	<i>Euplectes axillaris</i>	Ploceidae	LC	1	1			
178	Black Bishop	<i>Euplectes gierowii</i>	Ploceidae	LC	1				
179	Yellow-mantled Widowbird	<i>Euplectes macroura</i>	Ploceidae	LC	1	1			
180	Northern Red Bishop	<i>Euplectes franciscanus</i>	Ploceidae	LC	1	1			
181	Black-winged Red Bishop	<i>Euplectes hordeaceus</i>	Ploceidae	LC	1				
182	Red-cheeked Cordon-bleu	<i>Uraeginthus bengalus</i>	Estrildidae	LC	1	1		1	
183	Red-billed Firefinch	<i>Lagonosticta senegala</i>	Estrildidae	LC	1	1			
184	Common Waxbill	<i>Estrilda astrild</i>	Estrildidae	LC	1				
185	Crimson-rumped Waxbill	<i>Estrilda rhodopyga</i>	Estrildidae	LC	1				
186	Black-rumped Waxbill	<i>Estrilda troglodytes</i>	Estrildidae	LC	1	1			
187	Fawn-breasted Waxbill	<i>Estrilda paludicola</i>	Estrildidae	LC	1				
188	Quail-Finch	<i>Ortygospiza atricollis</i>	Estrildidae	LC	1	1			
189	Bronze Mannikin	<i>Spermestes cucullata</i>	Estrildidae	LC	1	1			
190	Cut-throat Finch	<i>Amadina fasciata</i>	Estrildidae	LC		1			
191	Pin-tailed Whydah	<i>Vidua macroura</i>	Viduidae	LC	1	1			
192	Brimstone Canary	<i>Serinus sulphurata</i>	Fringillidae	LC			1		
193	Yellow-fronted Canary	<i>Serinus mozambica</i>	Fringillidae	LC	1	1			1
194	Reichenow's Seedeater	<i>Crithagra reichenowi</i>	Fringillidae	LC	1				

Appendix 7: Woody species sampling point data.

Sampling Points	<i>Acacia drepanolobium</i>	Cultivated Area	Combretum spp	<i>Balanites aegyptica</i>	Mixed Thickets	<i>Acacia Seyal</i>	<i>Ficus glumosa</i>	Mixed Shrub	<i>Latana Camara</i>	School Lawn	Acacia - Commiphora	Total
Napedet - 1	4											1
Napedet - 2				8								1
Napedet - 3	3											1
Napedet - 4				8.5								1
Kopenek - 1	3											1
Kopenek - 2	4											1
Kopenek - 3	4											1
Kopenek - 4	5											1
Roan Track - 1			8									1
Roan Track - 2	4.5											1
Roan Track - 3				8								1
Roan Track - 4			5									1
Okudud Village - 1	4											1
Okudud Village - 2	4											1
Okudud Village - 3	4											1
Okudud Village - 4	5											1
Napedet South - 1	2.5											1
Napedet South - 2	4											1
Napedet South - 3	7											1
Napedet South - 4	7											1
Okudud Village II - 1	3											1
Okudud Village II - 2	2											1
Okudud Village II - 3	1.5											1
Okudud Village II - 4		N/A										0
Mukalati Camp - 1	4.5											1



Soroti Railway - 2									1			1
Soroti Railway - 3		N/A										0
Soroti Railway - 4										N/A		0
Okudud Village III - 1	3											1
Okudud Village III - 2	2.5											1
Okudud Village III - 3		N/A										0
Okudud Village III - 4		N/A										0
Loporokocho - 1				8								1
Loporokocho - 2	3											1
Loporokocho - 3	10											1
Loporokocho - 4	7											1
Nakakwon - 1	10											1
Nakakwon - 2	8											1
Nakakwon - 3	10											1
Nakakwon - 4						2.5						1
Turutuku - 1	1.8											1
Turutuku - 2	1.6											1
Turutuku - 3	1.4											1
Turutuku - 4	1.3											1
Sinyu Ranger Post - 1											3	1
Sinyu Ranger Post - 2											2.5	1
Sinyu Ranger Post - 3											2.3	1
Sinyu Ranger Post - 4											2.3	1
Frequency	39	4	4	5	4	8	4	1	2	1	4	76
Relative Frequency	51.31578947	5.263157895	5.263157895	6.578947368	5.263157895	10.52631579	5.263157895	1.315789474	2.631578947	1.315789474	5.263157895	100



Appendix 8: Herbaceous species sampling point data.

Sampling Points	<i>Hyparrhenia rufa</i>	<i>Setaria sphacelata</i>	<i>Digitaria abyssinica</i>	Cultivated Areas	Bare Areas	Modified Habitats	Herbaceous Cover (%)	Altitude (m)	Soil Colour
Napedet - 1	2						100	1091	Black
Napedet - 2	2						100	1105	Black
Napedet - 3	2						100	1099	Black
Napedet - 4	2						100	1101	Black
Kopenek - 1	2						100	1085	Brown
Kopenek - 2	1.8						100	1080	Black
Kopenek - 3	2						100	1081	Black
Kopenek - 4	1						100	1087	Black
Roan Track - 1		1.5					100	1140	Black
Roan Track - 2		2.5					100	1140	Black
Roan Track - 3		1.7					100	1134	Black
Roan Track - 4		1.8					100	1137	Black
Okudud Village - 1				N/A			N/A	1125	Black
Okudud Village - 2	0.5						60	1126	Black
Okudud Village - 3	2						100	1128	Black
Okudud Village - 4				N/A			N/A	1136	Black
Napedet South - 1	1.5						100	1103	Black
Napedet South - 2	1						100	1107	Black
Napedet South - 3	2						100	1104	Black
Napedet South - 4	2						100	1101	Black
Okudud Village II - 1	1						90	1136	Black
Okudud Village II - 2	0.5						90	1136	Black
Okudud Village II - 3	0.5						80	1132	Black
Okudud Village II - 4				N/A			N/A	1131	Black
Mukalati Camp - 1	0.2						50	1065	Black
Mukalati Camp - 2	0.7						60	1064	Black

Mukalati Camp - 3	0.3						60	1064	Black
Mukalati Camp - 4	0.8						70	1063	Black
Lake Opeta Swamp - 1	1						100	1049	Black
Lake Opeta Swamp - 2	1						100	1049	Black
Lake Opeta Swamp - 3	1.5						100	1047	Black
Lake Opeta Swamp - 4	0.7						100	1048	Black
Chepskunya - 1	0.3						30	1105	Black
Chepskunya - 2	0.5						50	1104	Black
Chepskunya - 3	0.5						60	1103	Black
Chepskunya - 4	0.3						50	1103	Black
Morua'lkaleei - 1	0.7						80	1165	Black
Morua'lkaleei - 2	0.5						70	1167	Black
Morua'lkaleei - 3	1						100	1155	Black
Morua'lkaleei - 4	0.5						80	1155	Black
Iriiri Acacia - 1					N/A		N/A	1241	Black
Iriiri Acacia - 2	1						75	1220	Black
Iriiri Acacia - 3	0.3						50	1222	Black
Iriiri Acacia - 4	2						60	1224	Brown
Iriiri Combretum - 1	2						50	1223	Black
Iriiri Combretum - 2	2						60	1243	Black
Iriiri Combretum - 3	0.5						50	1256	Black
Iriiri Combretum - 4	1.5						50	1227	Black
Iriiri Impeded Drainage - 1	0.7						70	1161	Black
Iriiri Impeded Drainage - 2	0.2						40	1160	Black
Iriiri Impeded Drainage - 3	0.3						30	1159	Black
Iriiri Impeded Drainage - 4	0.3						50	1161	Black
Soroti Railway - 1					N/A		N/A	1123	Red
Soroti Railway - 2					N/A		N/A	1122	Red

Soroti Railway - 3				N/A			N/A	1118	White
Soroti Railway - 4						N/A	N/A	1121	White
Okudud Village III - 1	1						90	1131	Black
Okudud Village III - 2	1						90	1131	Black
Okudud Village III - 3				N/A			NA	1127	Black
Okudud Village III - 4				N/A			N/A	1136	Black
Loporokocho - 1	0.5						80	1154	Black
Loporokocho - 2	0.2						70	1155	Black
Loporokocho - 3	0.1						100	1158	Black
Loporokocho - 4	0.4						100	1158	White
Nakakwon - 1			0.3				80	1130	Black
Nakakwon - 2			0.25				80	1129	Black
Nakakwon - 3			0.3				80	1135	Black
Nakakwon - 4			0.25				70	1133	Black
Turutuku - 1	0.01						50	1140	Black
Turutuku - 2	0.01						50	1137	Black
Turutuku - 3	0.02						50	1137	Black
Turutuku - 4				N/A			N/A	1137	Black
Sinyu Ranger Post - 1	0.3						100	1186	Brown
Sinyu Ranger Post - 2	0.3						100	1182	White
Sinyu Ranger Post - 3	0.05						80	1189	Red
Sinyu Ranger Post - 4	0.05						80	1186	Red
Frequency	57	4	4	7	3	1	76		
Relative Frequency	75	5.263157895	5.263157895	9.210526316	3.947368421	1.315789474	100		

END