# Large – Medium Mammal Aerial Survey
# TORO SEMLIKI WILDLIFE RESERVE AND SEMLIKI FLATS/RWENGARA WILDLIFE AREA

Report Prepared by

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## 1.0 INTRODUCTION

The survey in Toro-Semliki Wildlife reserve, Semliki Flats and Rwangara Community Wildlife Area was carried out from 24th April 2017 to 29th April 2017. This was an aerial total count of large to medium mammals as well as human activities taking place in the area. It was carried out by Uganda Wildlife Authority staff from UWA HQ, Ecological monitoring and research unit as well as staff from the field. The survey was undertaken during a relatively dry season when grass was short and some small patches of the survey area were burnt.

This was the 7th aerial survey to have been undertaken in the area. The chronologies of aerial surveys conducted in the study area over the past years are listed below, *Table 1*.

Table 1: Previous aerial surveys in study area

| Year | Coverage | Type |
|---|---|---|
| 1983 | Toro-Semliki WR, Semliki Flats and Rwengara wetlands | Sample count (Systematic Reconnaissance Flight) |
| 1995 | Toro-Semliki WR, Semliki Flats and Rwengara wetlands | Sample count (Systematic Reconnaissance Flight) |
| 2002 | Toro-Semliki WR, Semliki Flats and Rwengara wetlands | Sample count (Systematic Reconnaissance Flight) |
| 2010 | Toro-Semliki WR, Semliki Flats and Rwengara wetlands | Total aerial count |
| 2013 | Toro-Semliki WR, Semliki Flats and Rwengara wetlands | Total aerial count |
| 2015 | Toro-Semliki WR, Semliki Flats and Rwengara wetlands | Total aerial count |
| 2017 *(this report)* | Toro-Semliki WR, Semliki Flats and Rwengara wetlands | Total aerial count |

### Objectives

1. To assess and generate the population estimate of medium to large mammal species in Toro Semliki Wildlife Reserve and Semliki Flats/Rwengara area.
2. To generate information on the population trends of wildlife species and asses their distribution patterns in the habitats
3. To capture illegal activities if any taking place in the reserve

## 2.0 METHOD

### Study Area

The study area comprised of Toro-Semliki Wildlife Reserve, covering an area of 542km$^2$, Semliki Flats covering 390km$^2$ and the Rwengara wetlands covering 76km$^2$.

## Survey design

The survey area was divided into four counting blocks that could conveniently and easily be covered. These included two blocks in Toro Semliki WR and two blocks in Semliki flats/ Rwengara area. This design was created earlier and it was the one used in the 2010, 2013, 2015 surveys and now 2017 survey. The transects are spaced at a 1 km interval, deemed sufficient in scanning for total counting in wooded/bushed environments (Norton-Griffiths 1978). The transects were laid in the north-south alignment as shown in *Figure 2* below. Transects for the entire areas were uploaded onto the aircraft GPS using QGIS 2.6.0.

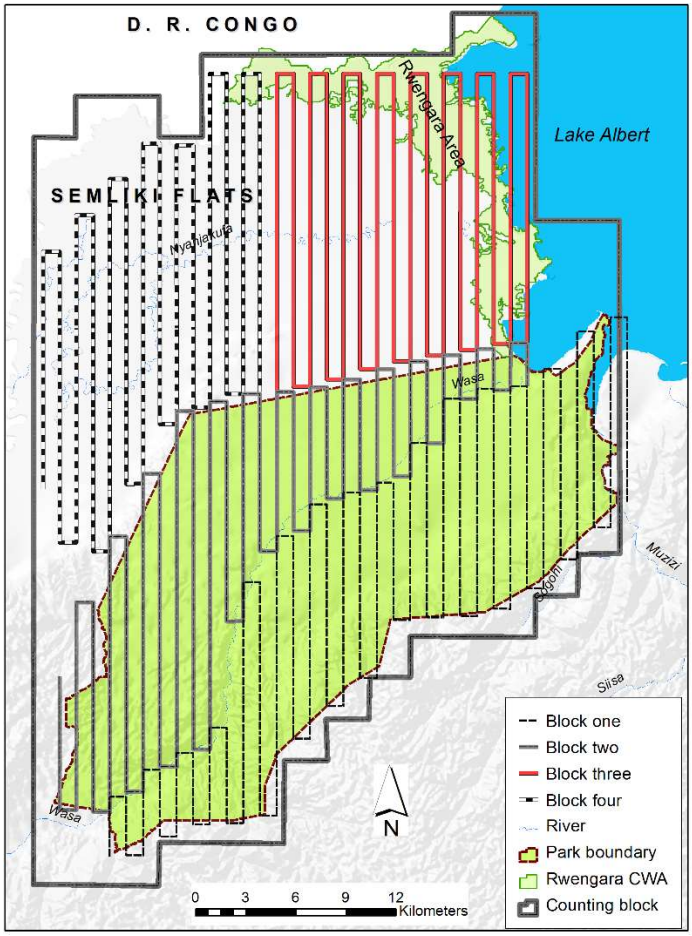

Figure 2: Survey plan

## Fieldwork

Total count method was followed for the aerial survey. A Cessna 182 (UWA 5X-UNH) was used for the entirety of the survey. The pilot and crew are listed in Appendix I.

The pilot flew the aircraft on the GPS moving-map display, following the preset tracks as his flight lines. At each observation of interest, the front-seat observer (FSO) marked a GPS waypoint, and recorded on the datasheet the waypoint number, species, visual estimate of the mammals

seen and or illegal activities encountered. The rear-seat observers (RSO's) were responsible for proper spotting of wildlife and human activities, herd-size estimation and taking of photos of large herds of animals as well as illegal activities.

**Lab work**

At the end of the flight, the FSO downloaded the GPS data onto the computer. This included the waypoints that had been marked and tracks of the actual flight of the plane. The tracks were plotted on the map to see whether there were areas missed out during the survey. The waypoints were tabulated in the excel spreadsheet as X and Y coordinated and the attribute data collected correlated to the waypoint. Total estimates for each species and human activities were summarized, and all observations plotted on the map.

## 3.0 RESULTS AND DISCUSSIONS

**Count data and observations**

The results of 2017 survey, for medium - large wildlife species was summed up and are given in Table 2 below;

Table 2: Mammal Population for Toro Semliki Wildlife Reserve/Semliki Flats/ Rwengara area

| Species | Toro Semliki WR | | Rwangara | |
|---|---|---|---|---|
| | Encounters | Population Est | Encounters | Population Est |
| Buffalo | 60 | 764 | | |
| Elephant | 4 | 13 | | |
| Giant Forest Hog | 1 | 4 | | |
| Hornbills | 2 | 3 | | |
| Uganda Kob | 458 | 6,916 | | |
| Shoebill | | | 3 | 3 |
| Warthog | 32 | 116 | | |
| Waterbuck | 25 | 81 | | |

**Mammal Distribution Maps**

The mammals encountered were spatially mapped using the GIS computer package ArcGIS 10.3 (1999-2014 ESRI Inc.). Relative abundance of animals, in the different parts of the surveyed area was represented using circles of different sizes. This enables the spatial distribution of animals to be visually analyzed showing concentrations of different species as shown in *Figure 3. Figure 4* shows the path that the pilot flew with the plane during the survey.

In general the survey shows that there is both increases and decrease in population numbers of wild animal's species. Notable is decrease in number of elephants from 33 in 2013 to 27 in 2015 and now to 13 in 2017. The buffalo and kob populations have increased while the waterbuck and warthog population has gone down. This time again, sighting of the Giant forest hog was realized just like was the case in the 2015 survey.

The wildlife that was remaining in the Semliki Flats and the Rwengara area seem to have been exterminated. The area is littered with cattle with few sightings of the shoebill stork in the Rwangara wetland.

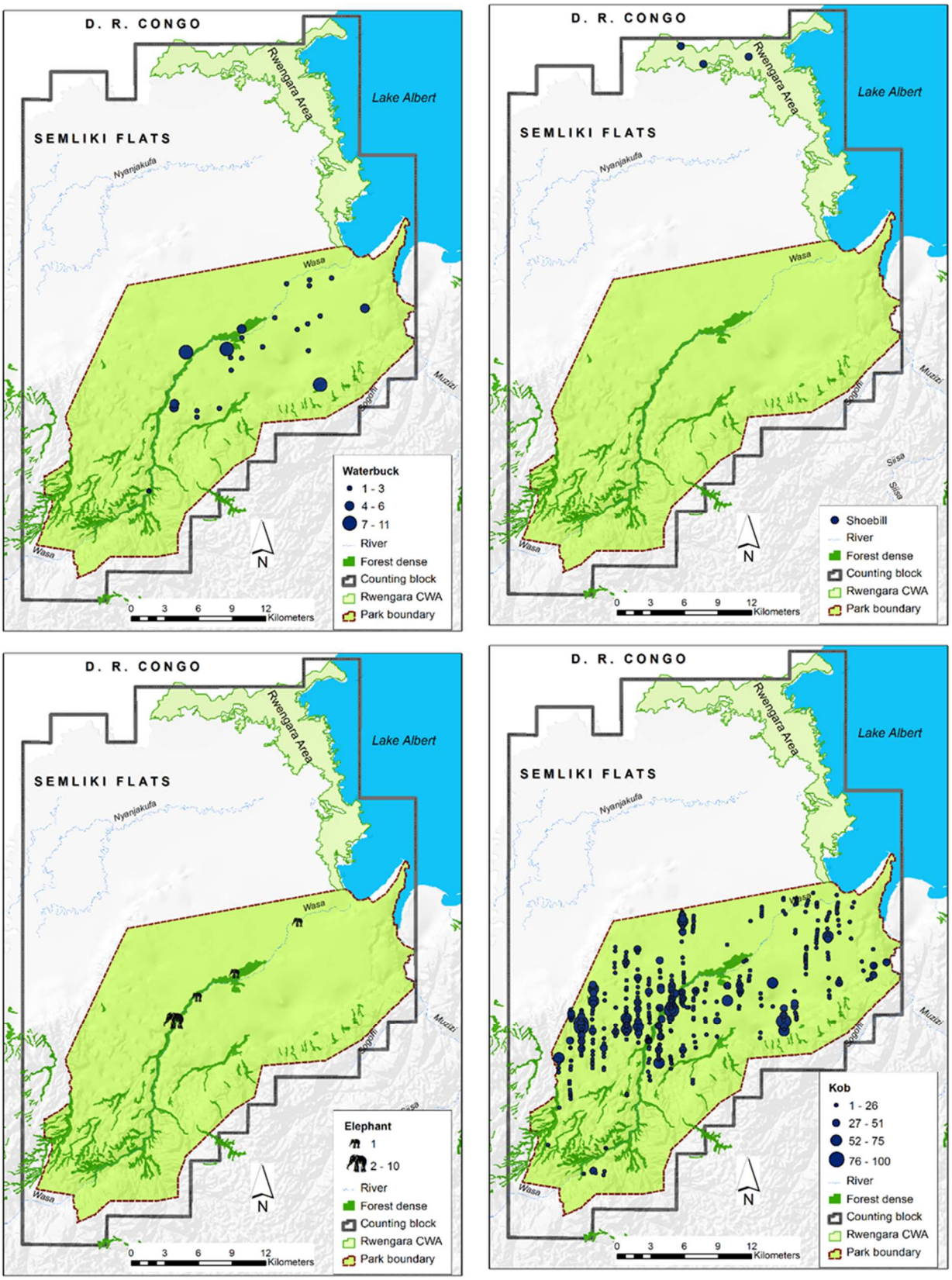


Figure 3 (part 1): Distribution of Waterbuck, shoebill, Elephant and Uganda kob, March 2017

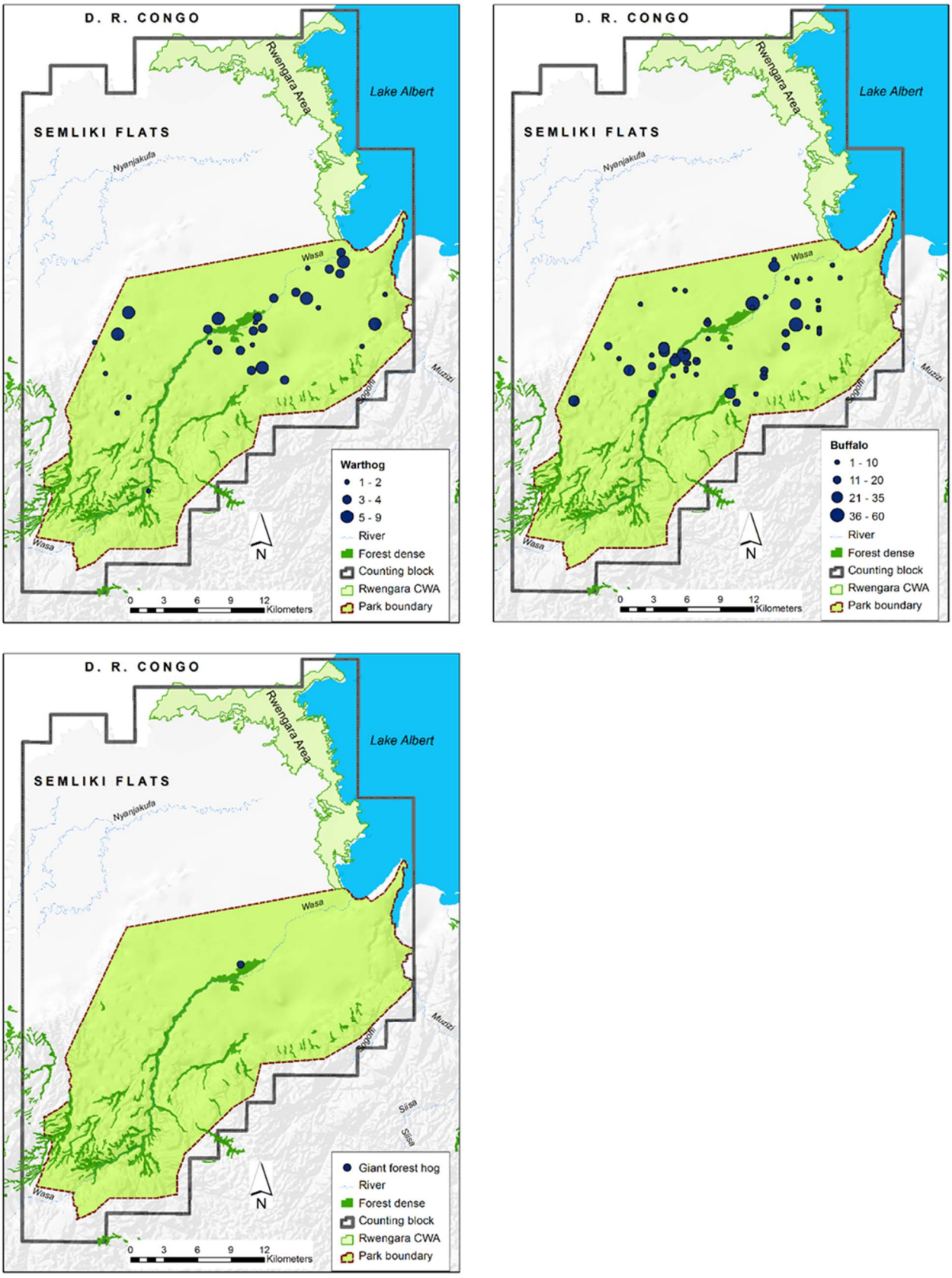


Figure 3 (part 1): Distribution of Warthog, buffalo and giant forest hog, 2017

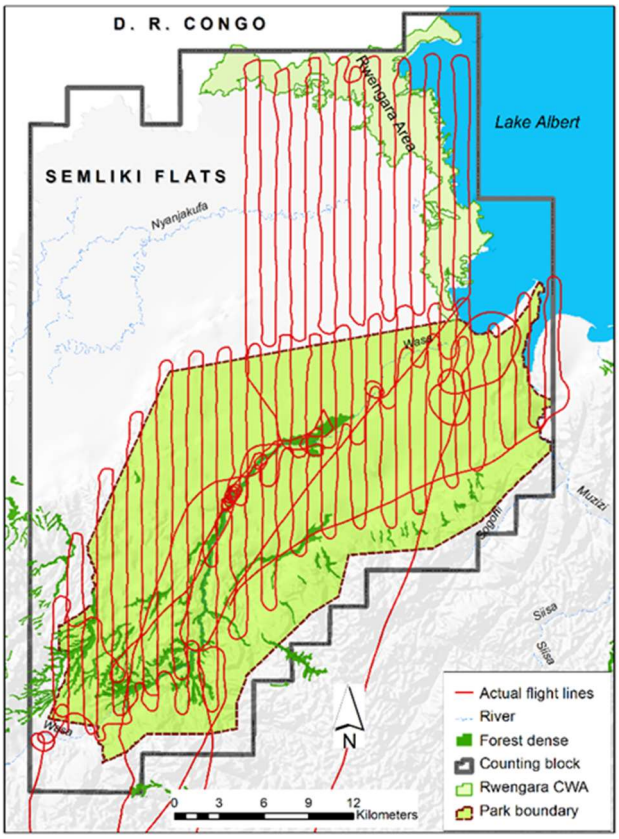

Figure 4: Flight path during survey, February 2017

**Illegal activity**

The illegal activity encountered during this survey was only cattle grazing. The pattern of cattle grazing is the same as that of 2015 as shown in *Figure 5* below. Thus grazing is still persistent in places of the northern part of the reserve

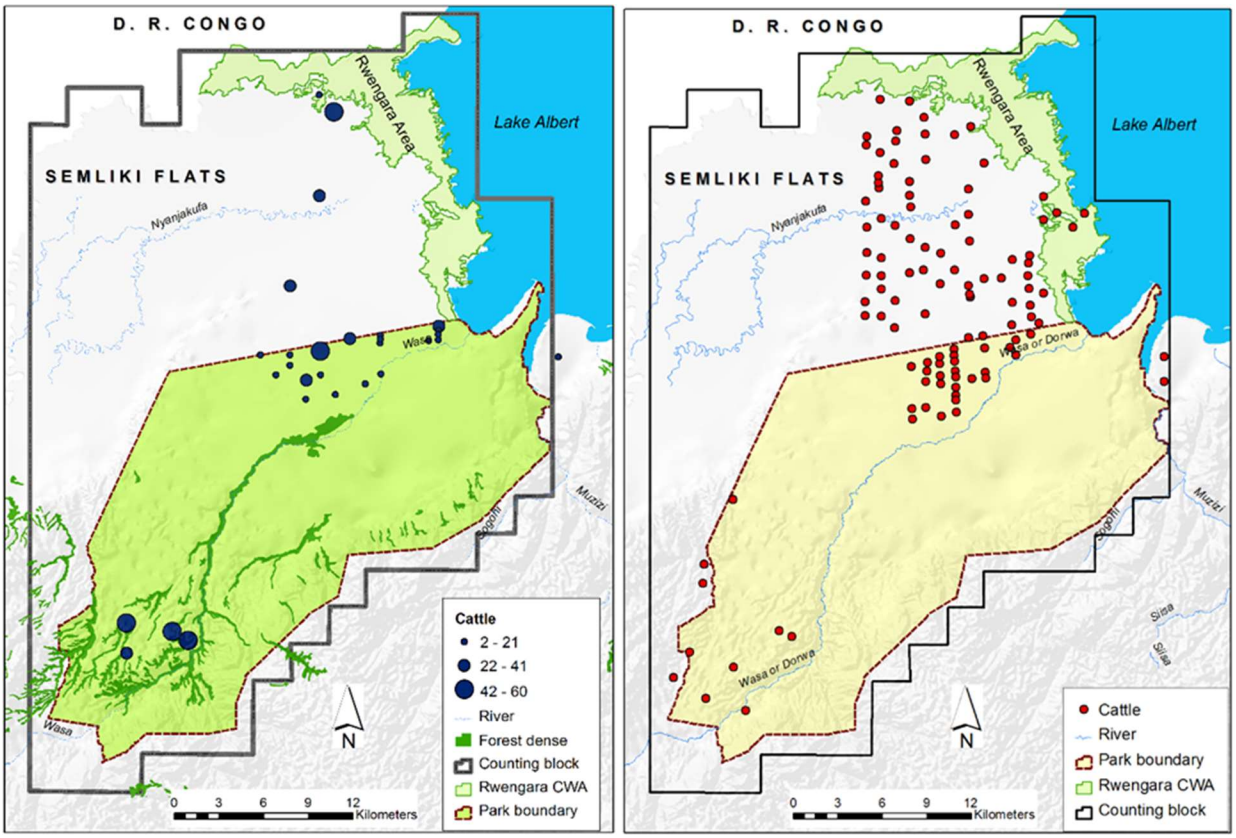


Figure 5: Map showing distribution of cattle grazing left April 2017, right March 2016

APPENDIX I

**Survey Crew**

| Name | Responsibility | Protected area |
|---|---|---|
| Emmanuel Twesigye | Pilot | Uganda Wildlife Authority HQ |
| Aggrey Rwetsiba | FSO | Uganda Wildlife Authority HQ |
| Fredrick Wanyama | FSO | Uganda Wildlife Authority HQ |
| Eria Fred Kisame | RSO | Uganda Wildlife Authority HQ |
| Nelson Enyagu | RSO | Rwenzori National Park |
| Kitimbo Herbert | RSO | Uganda Wildlife Authority HQ |
| Abitegeka Gerald | RSO | Toro Semliki Wildlife Reserve |

**Aircraft:** Cessna 185 5X- UNH