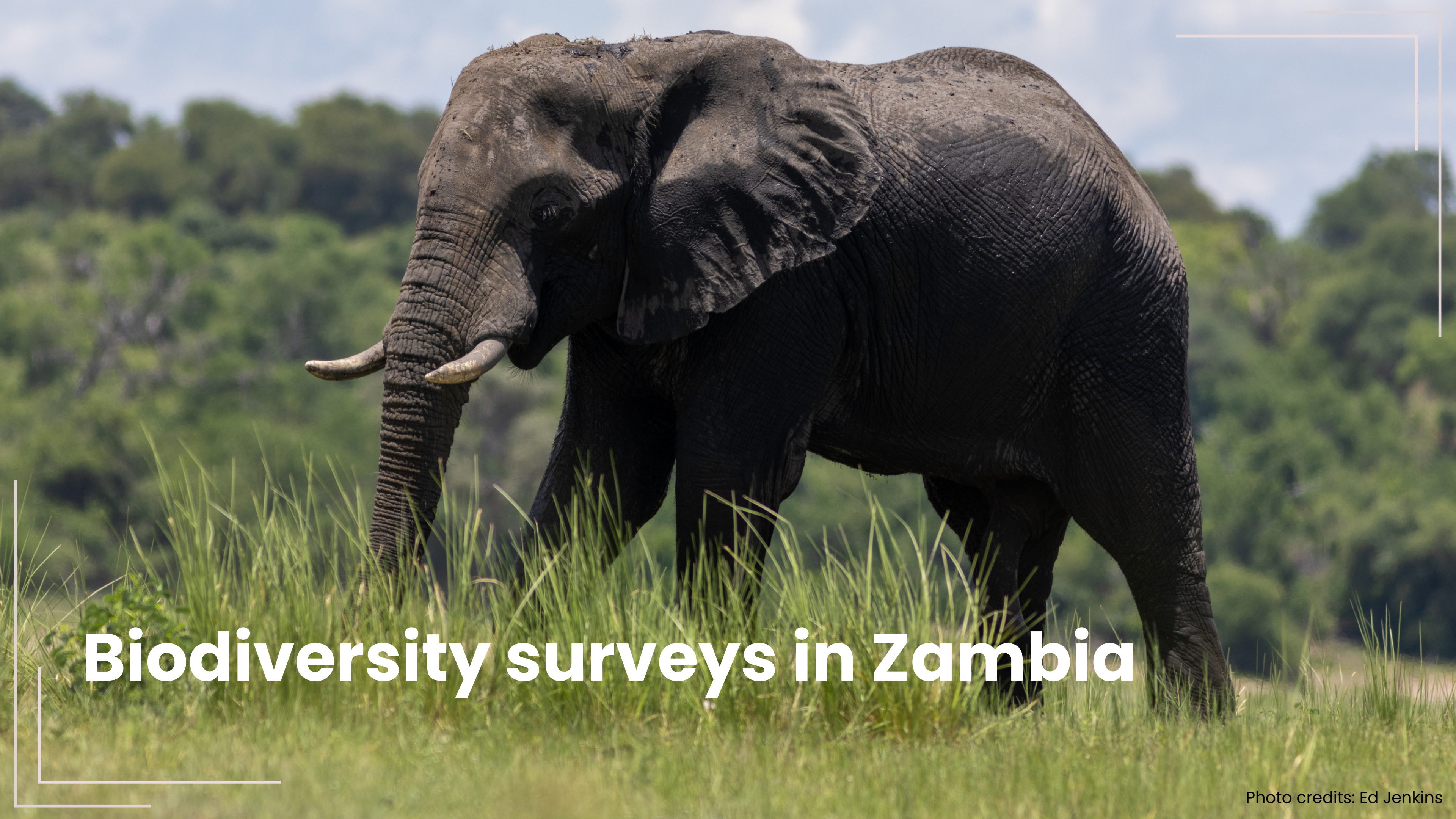




Biodiversity surveys in Zambia

Photo credits: Ed Jenkins

Grasslands and carbon projects

- Grasslands are very high in biodiversity, with more endangered species and potentially more chance for carbon storage, than tropical rainforests
- Carbon projects set a baseline which allows for changes to be assessed over time
 - This work will be used to develop a series of metrics for measuring biodiversity change over time across different areas



Shutterstock – Frank Booth

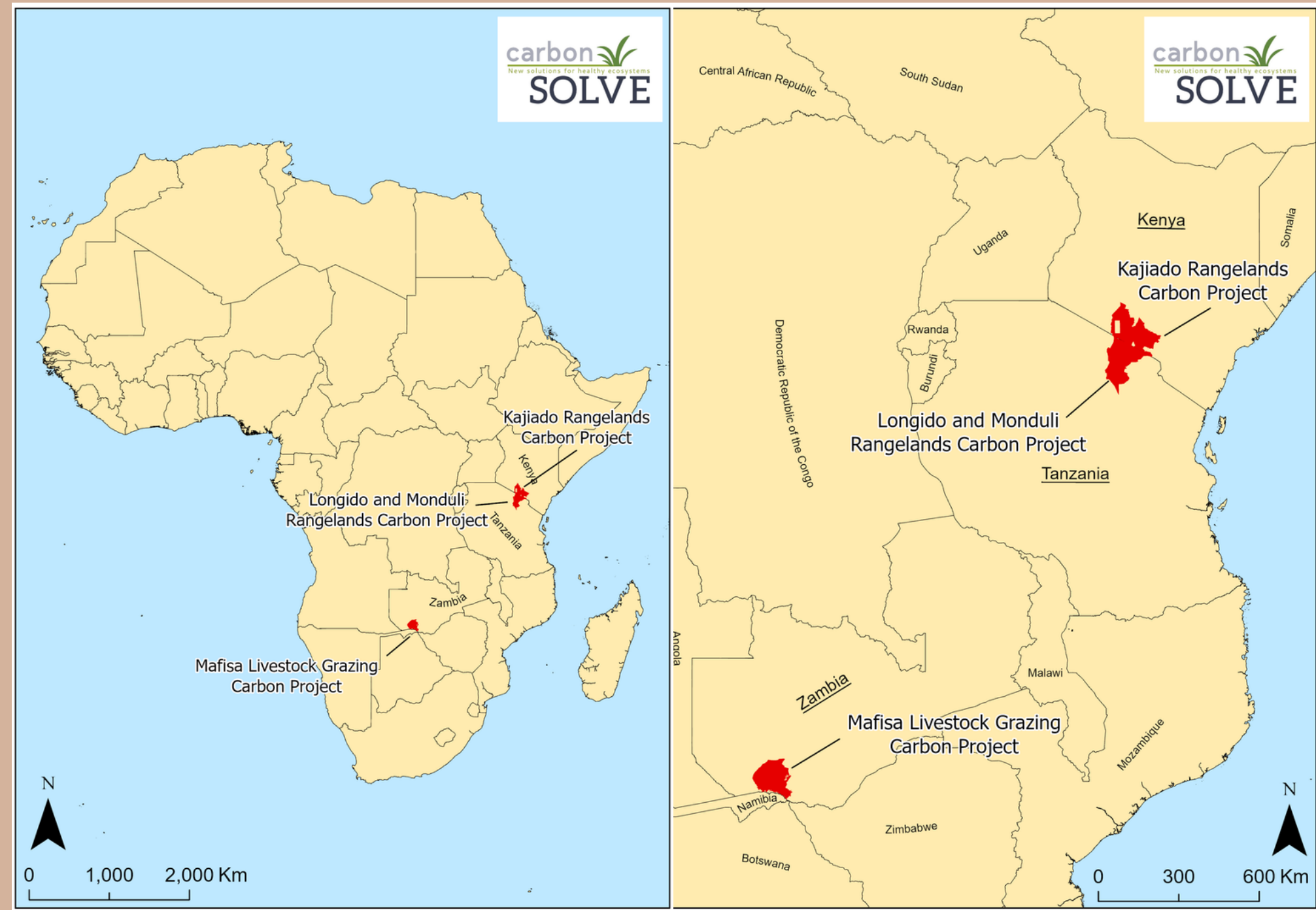
Wahlberg's Striped Skink
Trachylepis wahlbergii

Project overview

- The Mafisa Livestock Grazing Carbon Project (MLGCP) is a 1.26-million-hectare soil carbon project in southwestern Zambia in the Kavango Zambezi Transfrontier Conservation Area
- Working directly with local pastoral communities, the MLGCP is implementing rapid rotational grazing of livestock and fire management to reduce fire frequency and intensity in seasonally waterlogged soils

Project area

- Biodiversity surveys were conducted at 272 sampling sites
- The southern portion was surveyed in August – September 2023
- The northern portion was surveyed in January 2024
 - Further surveys are planned to take place every 3–5 years



Project team

- Staff from Biodiversity Research Institute and CarbonSolve worked to plan this study and execute the field data collection with expert support from:
 - Dr. Moses Chibesa (Copperbelt University)
 - Mokwani Kaluwe (Zambia Forestry Department)
 - Patrick Masiliso (Mafisa)
 - Andrew Mbenjile (BirdWatch Zambia)
 - Teleka Mhlanga (Mafisa)
 - Chaona Phiri (independent avifauna expert)



Vegetation surveys

- 262 species of plants identified across 88 sites
- 60 grass species identified
 - 13 annuals
 - 42 perennials
 - 5 both annual and perennial
- Grazing is more prevalent than browsing

Domestic cattle
Bos taurus



Invertebrates

- 833 pitfall traps across 68 sites
- Four 25 meter transects swept at 88 sites

Dung beetles:

- 4,601 individual dung beetles and 20,481 trap hours

Grasshoppers:

- 145 grasshoppers collected



Photo credits: Ed Jenkins

African birds

- A total of 256 birds from 69 families were detected in point count surveys (n=461)
- 112 bird species from 43 families were detected from acoustic recordings
- Columbidae, Ploceidae, and Estrildidae were most common across habitats



White-crowned Lapwing
Vanellus albiceps

Purple Grenadier
Granatina ianthinogaster

Bird species richness

- 24 families had more than 100 individuals detected across all survey sites
- Using point count data, species richness values (number of species) ranged from 1 – 30, with an average of 13.44 per site



African Darter
Anhinga rufa



African Hoopoe
Upapa africana

Photo credits: Ed Jenkins

Raptors

- 299 individuals of 32 species were detected
- Most numerous species were:
 - Lizard Buzzard
 - White-backed Vulture
 - Brown Snake-eagle



Brown Snake-eagle
Circaetus cinereus

Vervet Monkey
Chlorocebus pygerythrus



Mammals

- A total of 2,789 individuals of seven different mammal species were observed during transect surveys
- 98.9% included five domesticated species (cattle, donkeys, pigs, goat, and sheep)
- Wild species observed include Vervet monkey, Common Duiker, and Smith's Bush Squirrel

Conclusions

- Next steps are to repeat these surveys over time to monitor changes in carbon sequestration and biodiversity
- The better we understand the relationships between herbivores and the vegetation in these landscapes, the more likely we will be able to achieve sustainable outcomes that benefit nature and people

