



THE SCIENCE OF ENVIRONMENTAL COMPLIANCE : EVIDENCE-BASED ACTIONS FOR EMIS

10TH ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT LEKGOTLA | 18 - 21 NOVEMBER 2024 | KZN

AN EYE IN THE SKY

Early detection and rapid response to illegal trade-related wildlife poisoning throughout southern Africa.



Call centre: +27 86 111 2468
www.dffe.gov.za



ENDANGERED
WILDLIFE TRUST

WHY VULTURES?

Vultures are irreplaceable within an ecosystem, something many people still do not realise

SOUTH AFRICAN SAVANNAH VULTURE SPECIES



< VULNERABLE >

VU



< ENDANGERED >

EN



< CRITICALLY
ENDANGERED >

CR



< CRITICALLY
ENDANGERED >

CR



< CRITICALLY
ENDANGERED >

CR

1

CAPE
VULTURE

2

LAPPET-FACED
VULTURE

3

WHITE-HEADED
VULTURE

4

HOODED
VULTURE

5

WHITE-BACKED
VULTURE



CAPE
VULTURE



< VULNERABLE >

VU

CAPE VULTURE

Gyps coprotheres



2

LAPPET-FACED
VULTURE



◀ ENDANGERED ▶

EN

LAPPET-FACED VULTURE

Torgos tracheliotus



3

WHITE-HEADED
VULTURE



< **CRITICALLY
ENDANGERED** >
CR



WHITE-HEADED VULTURE

Trigonoceps occipitalis



4

HOODED
VULTURE



< CRITICALLY
ENDANGERED >

CR



HOODED VULTURE
Necrosyrtes monachus



5

WHITE-BACKED
VULTURE



< CRITICALLY
ENDANGERED >

CR

WHITE-BACKED VULTURE

Gyps africanus

“OVERALL IT IS SUSPECTED TO HAVE UNDERGONE A VERY RAPID DECLINE OF 63-89% OVER THREE GENERATIONS OWING TO INTENTIONAL AND UNINTENTIONAL POISONING...”

**LEAST
CONCERN**
LC

2004



**NEAR
THREATENED**
NT

2007



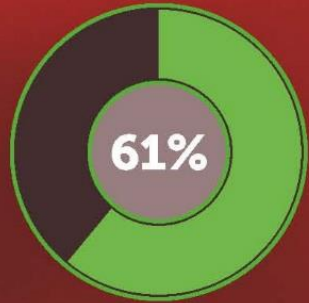
ENDANGERED
EN

2012



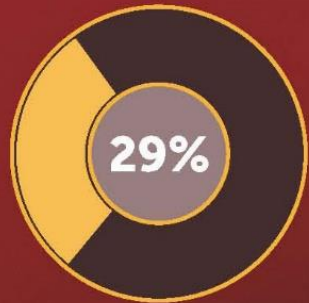
**CRITICALLY
ENDANGERED**
CR

2015



POISONING

- › Poisoning as a result of human-wildlife conflict where vultures are incidental victims.
- › Intentional poisoning by ivory poachers not wanting to be found by rangers.

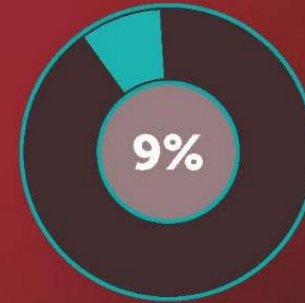
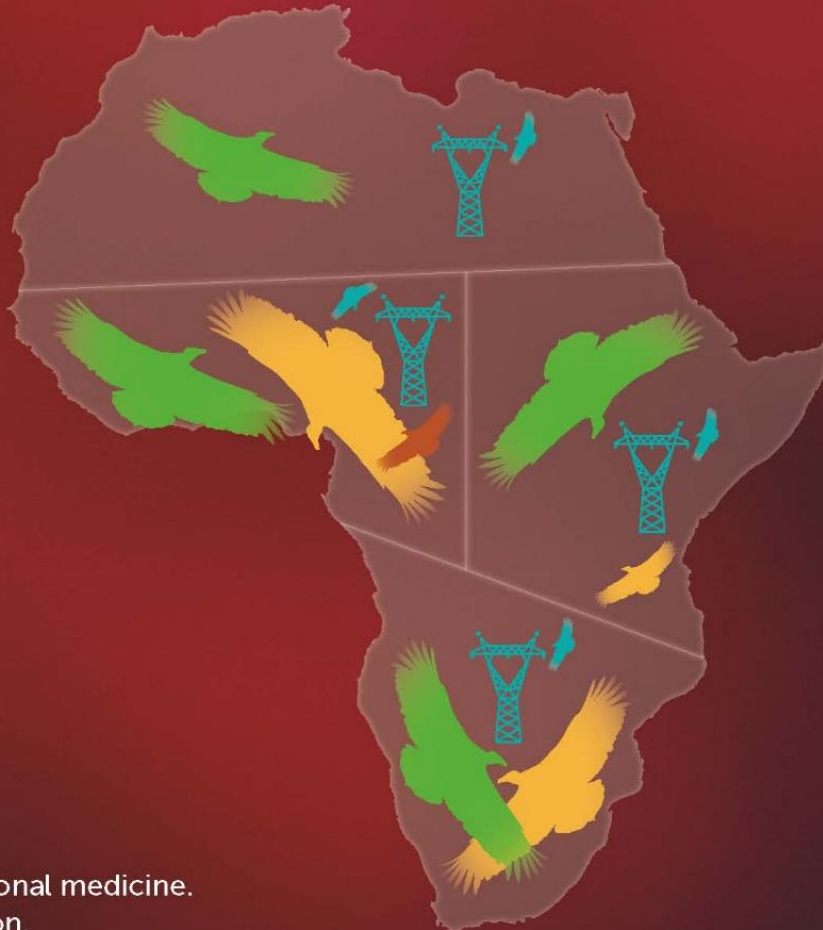


PERSECUTION

- › For body parts used in traditional medicine.
- › Also involves the use of poison.

WHAT THREATENS AFRICA'S VULTURES?

Percentages are only representative reasons for recorded deaths. Other important threats, as yet hard to quantify, such as habitat reduction, disturbance at nesting sites and reduced food availability are not illustrated



ELECTROCUTION & COLLISION

With poorly-planned powerlines, windfarms and roads. Increasing threat with investment in development.



OTHER RECORDED KILLING

People are potentially eating poisoned vultures.



MULTI-SPECIES ACTION PLAN TO CONSERVE AFRICAN-EURASIAN VULTURES (VULTURE MSAP)

CMS Raptors MOU Technical Publication No. 5.
CMS Technical Series No. xx



What are the threats?



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AN EYE IN THE SKY

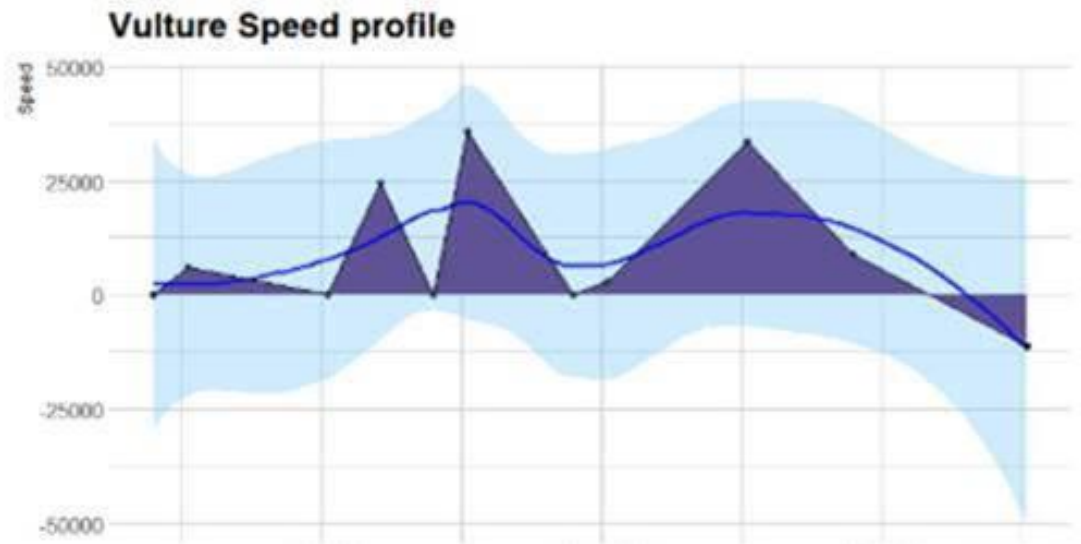
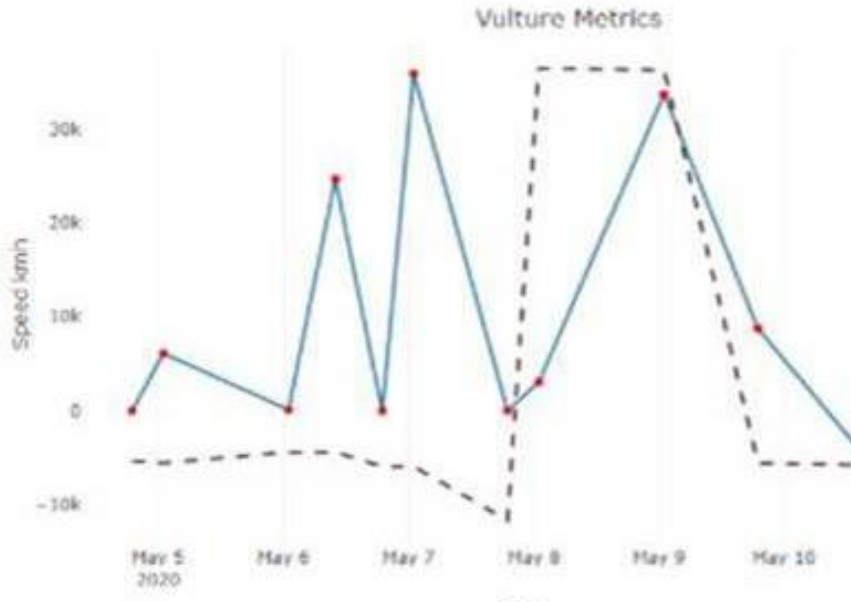
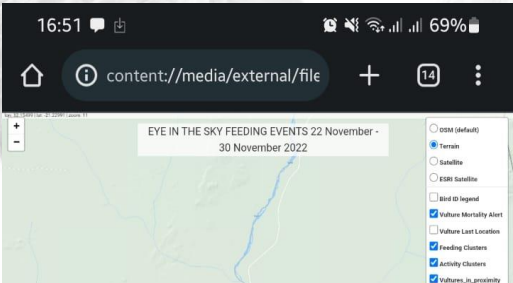
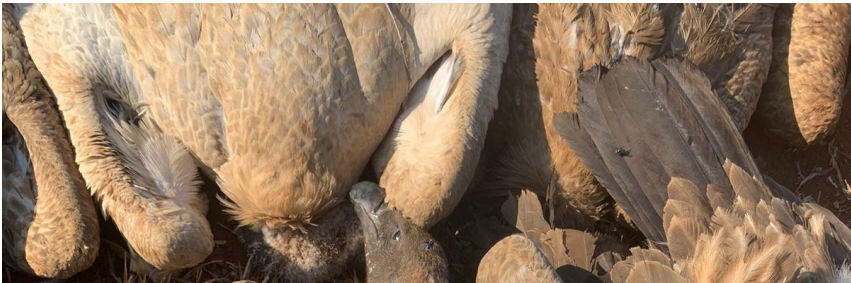
The application of vulture tracking data
as a way of detecting poisoning and
feeding events.



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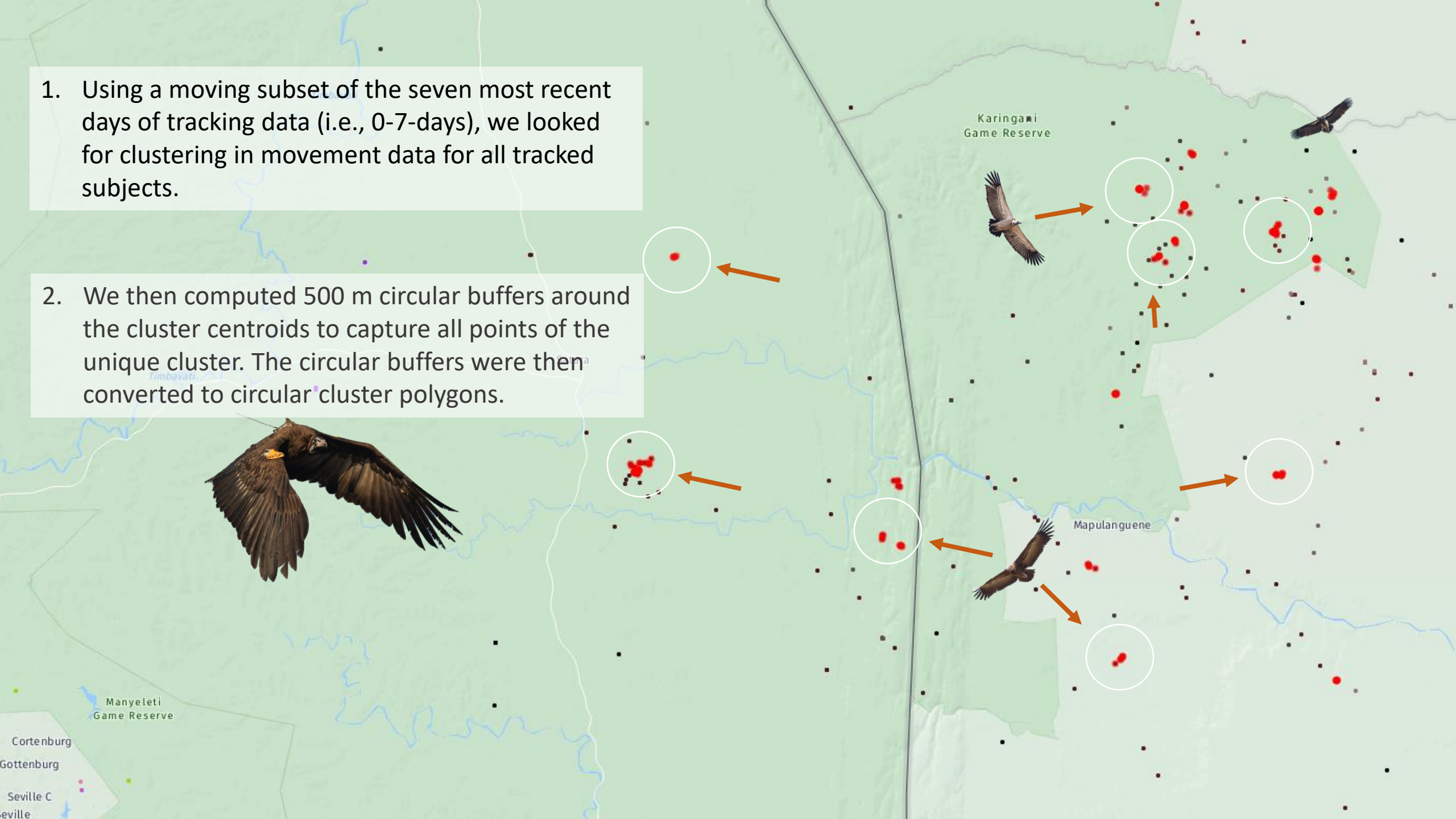


EARLY DETECTION OF POISONING EVENTS

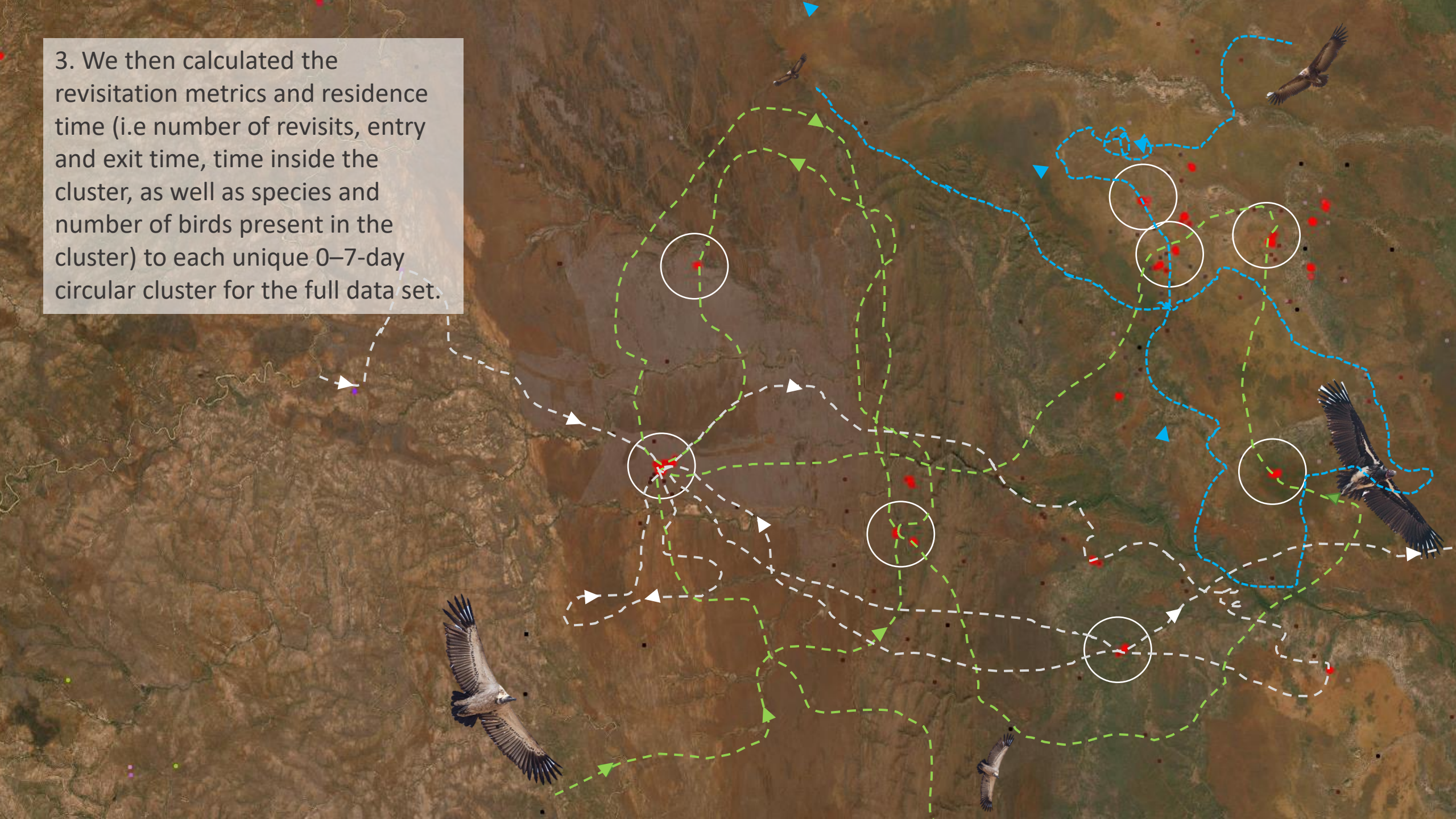


1. Using a moving subset of the seven most recent days of tracking data (i.e., 0-7-days), we looked for clustering in movement data for all tracked subjects.

2. We then computed 500 m circular buffers around the cluster centroids to capture all points of the unique cluster. The circular buffers were then converted to circular cluster polygons.



3. We then calculated the revisitation metrics and residence time (i.e number of revisits, entry and exit time, time inside the cluster, as well as species and number of birds present in the cluster) to each unique 0–7-day circular cluster for the full data set.



4. Feeding clusters were classified as clusters that were only visited in the 0–14-day time window. Clusters visited more regularly were assumed to be roosts, watering points, supplementary feeding sites or breeding sites

Cluster visited
regularly over last
180 days



Roost

Cluster visited only in
last 0-14 days



Feeding detected



Feeding detected

Cluster visited only in
last 0-7 days



Feeding detected



Roost

Cluster visited
regularly over last
180 days



Water point

Cluster visited
regularly over 365
days

A satellite map of the African continent is shown in the background. Numerous small, colored dots are plotted across the landmass, primarily concentrated in the central and southern regions. The dots are colored red, amber, green, and grey, corresponding to the alert levels listed in the text overlay. The text is overlaid on a dark grey semi-transparent rectangle on the left side of the image.

**JANUARY
2023
AUGUST 2024**

Red – 54,236

Amber – 33,305

Green – 16,671

Grey – 1,034

Total Alerts –

JANUARY
2023
AUGUST 2024

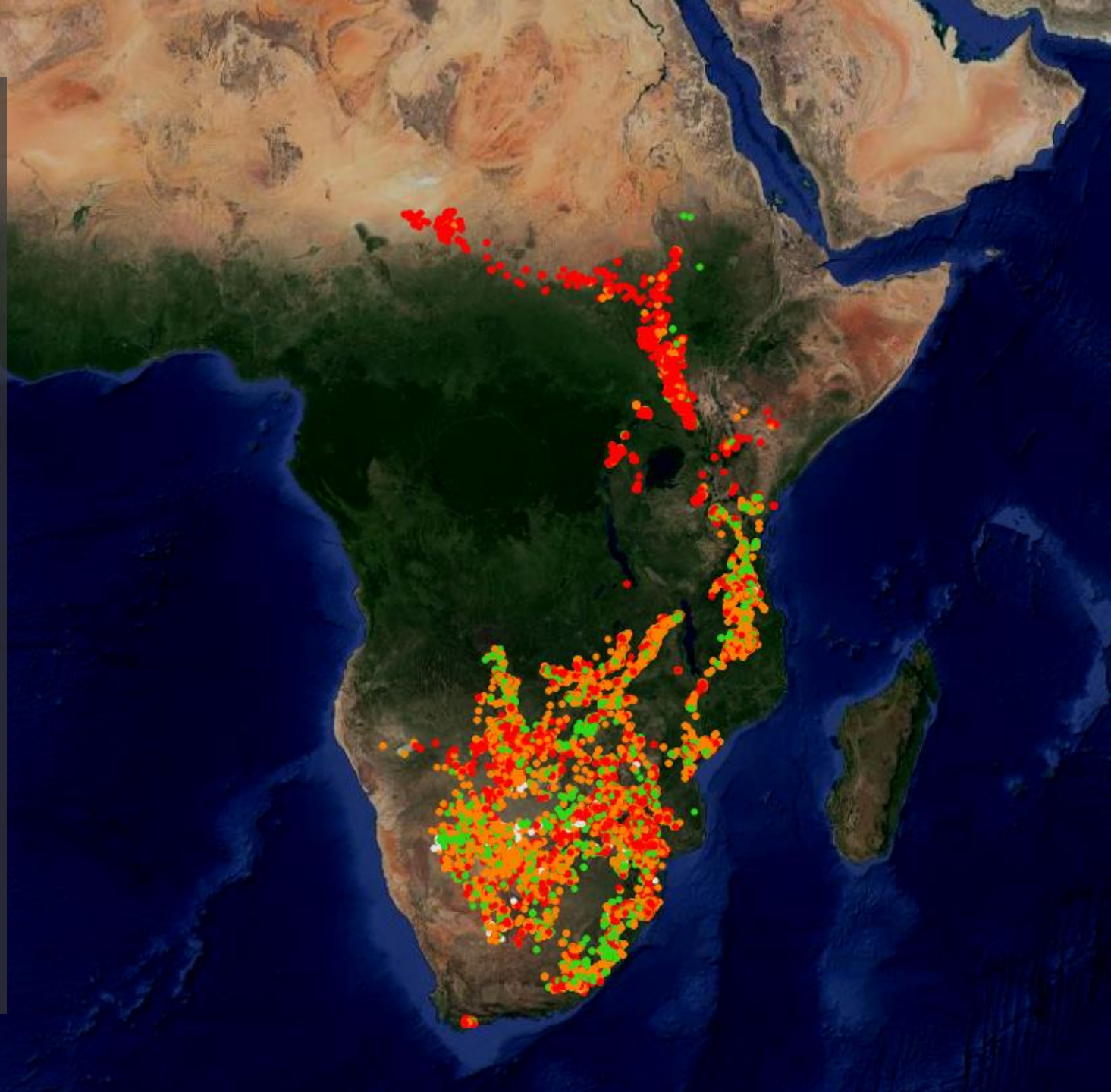
Red – 54,236

Amber – 33,305

Green – 16,671

Grey – 1,034

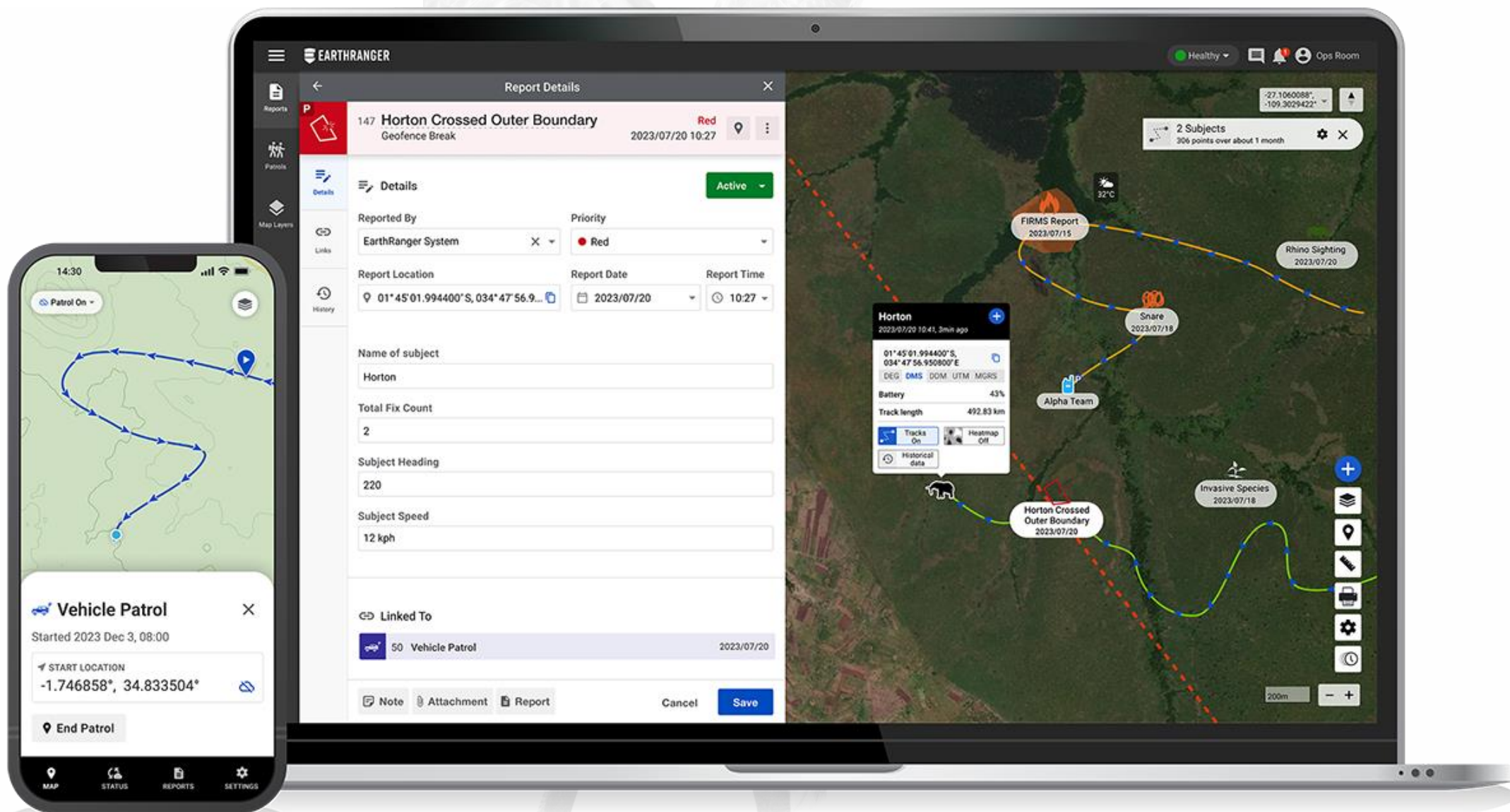
Total Alerts –





EARTHRANGER

A product of AI2





Events



Patrols



Map Layers



Settings



Events



165758 Cluster 165758 (6 pts, 2 devices)
Vulture Cluster

Red

19 Nov 24 07:40



Details

Reported By



Reported By...

Priority

Red



History

Event Location



-23.722517°, 31.099167°



Event Date



2024/11/16

Event Time



13:30

Study Title

Eye in the Sky Greater Kruger TFCA - MOVE2

Devices

WBV_1303_ST_LR_3792625773 (WBV_1303_ST_LR_3792625773), WBV_8

Cluster Start

2024-11-16T11:30:07Z

Cluster End



Note



Attachment



Event

Cancel

Save



-23.722191°, 31.100411°



Cluster 165576 (3 pts, 1 devices)
16 Nov 24



50 m





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SNARING & POISONING

The link between snaring and wildlife
poisoning is clear, and can lead to
catastrophic impacts

POISONING TIMELINE

1

Poacher sets
snare



2

Animal killed
in snare



3

Meat taken
from carcass



4

Carcass
laced with
poison



5

Poisoning of
target or
non-target
species



BY ACCELERATING THE SPEED OF DETECTION FOR
SNARING SITES, IT AFFORDS A CHANCE TO FIND
POISONING EVENTS EARLIER, OR EVEN STOP THEM FROM
HAPPENING ALTOGETHER.





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LETABA RANCH GAME RESERVE

Understanding the threat landscape
and developing solutions for the long-
term recovery



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A satellite map of a region, likely in South Africa, showing two distinct areas highlighted in green. The area on the left is a long, narrow strip of land, while the area on the right is a larger, more rectangular area with a complex internal network of yellow lines, possibly representing roads or property boundaries. A small white circle on the left side of the map highlights a specific location within the green strip. Two white lines originate from this circle and point towards the text labels for Mthimkhulu and Letaba Ranch. The background is a detailed satellite image showing terrain, vegetation, and some water bodies.

Mthimkhulu
8,500ha

Letaba Ranch
29,500ha

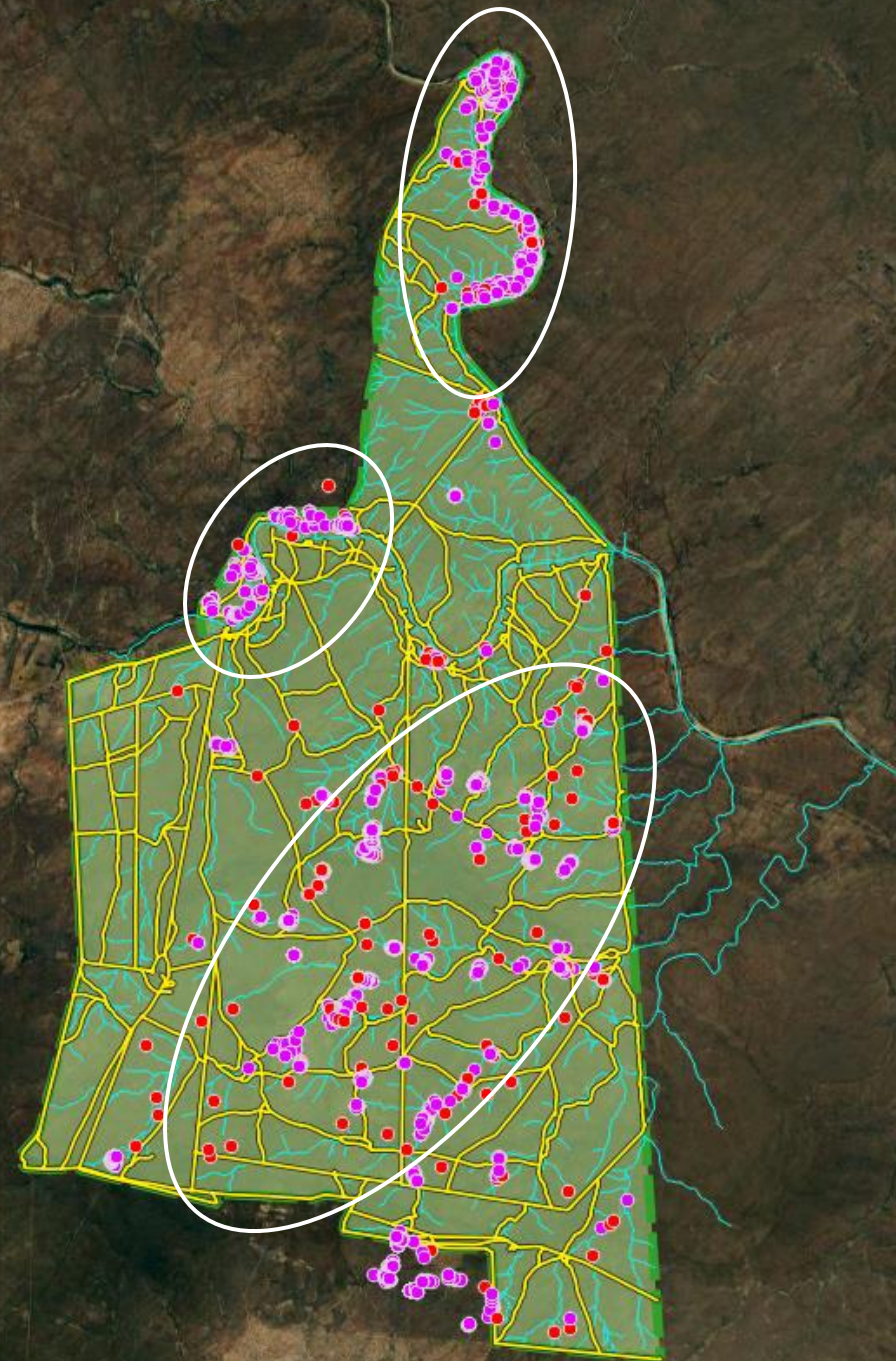


2023

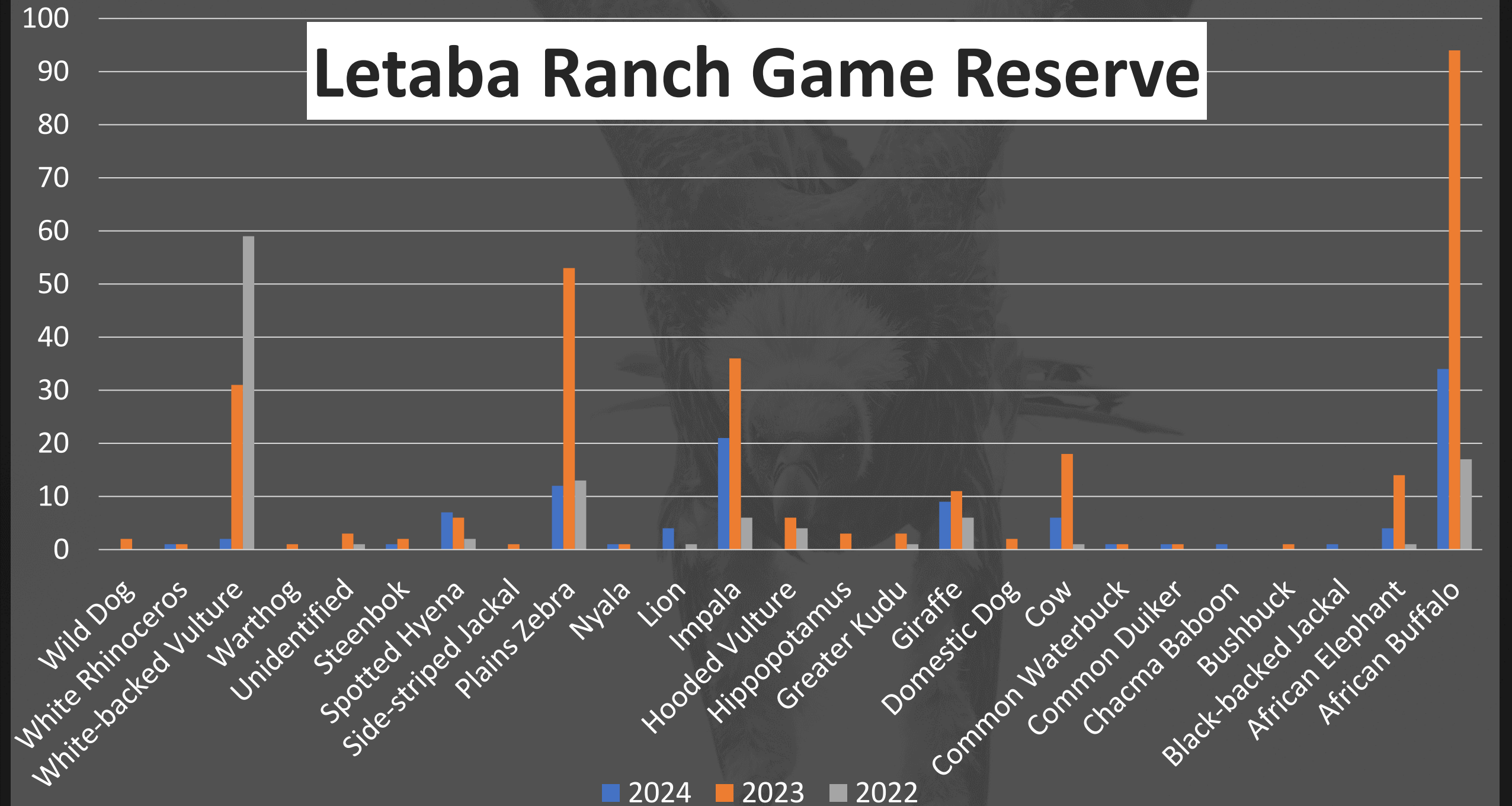
Total Mortalities – 257
Snared Mortalities – 195
Snares – 1513

2024

Mortalities – 123
Snared Mortalities – 96
Snares – 987



Letaba Ranch Game Reserve





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THE FUTURE OF EYE IN THE SKY

Finding new ways to improve the
application of vulture tracking data for
conservation.

Vulture Spatial Use (Log Scale)

Unique Individuals per 3km² Grid Cell (Log Scale)

FUTURE DEVELOPMENTS

- Targeted expansion of tracked subjects
- Inclusion of different species; Lion, Spotted Hyena & Bateleur
- Improve data sharing with relevant individuals and organisations
- Accelerate response time to incidents



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THANK YOU



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Protecting forever, together.



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