



Elephant utilization of the Zambezi-Chobe floodplain
Wildlife Dispersal Area, Zambia
Half-Yearly Report
December 2020



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Elephant Connection Research Project
Kavango Zambezi Transfrontier Conservation Area
Zambia

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CONSERVATION AND RESEARCH PROJECT GRANT

Half-yearly Report #5 December 2020

a) PROJECT TITLE: Elephant utilization of the Zambezi-Chobe floodplain Wildlife Dispersal Area, Zambia

b) Half-yearly Report

c) Principal Investigator

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d) Project Start Date: June 2018

e) Grant End Date: June 2021

2) Conservation needs

The Kavango Zambezi Transfrontier Conservation Area (TFCA) in southern Africa is the world's largest TFCA, providing a vast landscape for long-distance animal migrations. One of the main objectives of KAZA TFCA is to establish wildlife connectivity throughout its protected landscape, yet in the face of ongoing habitat loss the Zambian component of KAZA TFCA is losing its capacity to provide movement corridors that can enable elephants to undertake long-distance migrations between KAZA countries. The provision of corridors linking protected areas in the KAZA region will enable many of southern Africa's 300,000-strong elephant population to re-connect across fragmented habitats and function as a meta-population, as they will be able to safely move across the multiple land-use types that make up the KAZA landscape, thereby alleviating the impacts of habitat loss and climate change on otherwise isolated wildlife populations.

This project aims to identify transboundary elephant movement corridors and connectivity through knowledge of elephant movements gained from fitting satellite tracking collars in Zambia, combined with field-verified elephant sightings in locations where collar data is not yet being generated. This research has enabled us to document frequent cross-border exploratory behaviours by elephants from Namibia, Botswana and Zimbabwe into Zambia, and also to identify and assist rural farmers that are impacted by elephant crop-raiding. Our research contributes to the KAZA-wide assessment of elephant connectivity and elephant corridor needs, which will be influential in designating wildlife movement corridors for protection by the five partner countries to improve elephant management throughout KAZA TFCA.

In the past few months, we have fitted an additional 9 GPS satellite tracking collars to elephants and some of these have already added valuable information about connectivity between KAZA elephant populations and transboundary crossing points that need protection. Our field-verified elephant sightings provided by communities have also highlighted new areas along the Zambezi River (the international border) that are now in need of support to deter elephants from crop-raiding, as the Department of National Parks and Wildlife are not present in these areas and therefore not available to assist farmers. These areas are being impacted due to the increased number of elephants we have identified moving northwards into Zambia during the dry season from the adjacent countries of Namibia, Botswana and Zimbabwe. We have assisted 11 farming families with solar-powered Poliwire electric fencing systems in one of these new areas to encircle their produce gardens to deter elephants from entering. For Zambians, these produce gardens are an important source of food in the dry season, with excess vegetables providing much needed income for families. Efforts to reduce elephant crop raiding in these transboundary areas is vital to facilitate coexistence between people and elephants, so that communities support efforts to re-establish traditional elephant movement pathways across country borders.

3) Summary of goals and objectives

1. Determine elephant landscape utilization within the Zambian component of the Zambezi-Chobe floodplain Wildlife Dispersal Area of KAZA TFCA, through wild elephant movement data generated from GPS satellite tracking collars.
2. Conduct regular field investigations to view areas frequented by collared elephants and gather relevant data to identify factors that determine elephant movements, potential threats, and locate movement corridors.
3. Explore implementation of poliwire electric fencing systems in other regions, and provide support for the expansion of their use.

Actions taken:

Objective 1.

An additional 9 GPS satellite tracking collars were fitted to elephants to investigate elephant movements and connectivity.

Elephant movement data was submitted to the KAZA TFCA secretariat for the KAZA-wide Circuit theory/Connectivity analysis of elephant movements.

Objective 2. Continuation of field verification of community reports of elephant presence in Zambia's southern section of the Zambezi-Chobe floodplain WDA, which has shown an increasing number of elephants present in farming areas in the dry season.

Objective 3. Two new areas in Zambia now being assisted with HEC mitigation, which was needed due to increasing numbers of elephants.

4) Activities that differed from the original proposal

Approval was granted for a budget reallocation to convert some of the Vehicle Fuel budget allocation (July 2020-June 2021) towards the purchase of an elephant satellite tracking collar.

5) Conservation outcomes

We recorded an increased number of elephants at our field sites along the Zambezi River this half-year. We documented 50 verified reports of elephant presence east of Sesheke town (Fig. 1), which is more than double from the same period in 2019, with community members reporting herd sizes up to 30 individuals (average herd size 10), whereas previously reported herds were half that size.

On Sekoma Island, numbers of elephants during the dry season were much higher than previous years, with the first record of young calves on the island. Previously island visitors were mainly small aggregations of male elephants, but this half-year two females with very young calves spent a few months on the island together, and also groups of up to 15 mixed-age males were regularly seen. These increased numbers recorded at our field sites adds more support to our observation that elephants appear to be returning to Zambian landscapes where they have been absent for at least a decade, showing that Zambia is making progress in providing a safe dry-season environment once again.

Earlier in the year, we were advised about a new commercial farm project that was planning to establish in the Mambova elephant corridor adjacent to the area where we are conducting conflict mitigation. Through our engagement with the company they chose to move the site for the commercial farm away from the elephant corridor, hence eliminating the potential for increased human-elephant conflict as elephants would likely have been attracted to the commercial farm and thereby spent more time in rural community areas as a result of this.

We also continued to foster human-elephant coexistence by assisting 12 rural families and a community school to secure their produce against crop-raiding by elephants.

Major findings and accomplishments to date:

Elephant movement corridors:

This half year the five elephants collared at the northern end of the Zambezi-Chobe floodplain WDA (Mulobezi Game Management Area (GMA) of southern Kafue National Park) gradually reduced their movements as the dry season progressed and three of the collared elephants in Mulobezi GMA clustered around remaining rivers as other widely distributed water pools dried up. The other collared male and female elephant a little further north in southern Kafue NP moved within separate areas of 300 square miles throughout most of the dry season, so these areas clearly provided sufficient water and food resources despite lack of rain for many months. The exception to this was when each elephant moved south to Mulobezi GMA for a few days in October when the first rains of the wet season occurred, but thereafter returned north to their original areas. This has been described by some researchers as exploratory behaviour prior to seasonal range shifts, when elephants investigate if an area meets their requirements for a permanent seasonal move, and obviously in this case neither elephant thought so.

As these 5 collars have reached their life expectancy and will be removed in the coming months, the data that they have been generating will now be continued by 5 new collars provided by the KAZA TFCA secretariat that were fitted to different elephants in this area during November. This half year we were able to fit an additional 9 GPS satellite tracking collars to elephants in the Zambezi-Chobe floodplain Wildlife Dispersal Area of KAZA TFCA to investigate elephant movements and connectivity. Eight of these collars were provided by the KAZA TFCA secretariat to meet objectives set out in the Strategic Planning Framework for the Conservation and Management of Elephants in KAZA TFCA. During this collaring exercise in southern Kafue NP/Mulobezi GMA we were excited to locate two large elephant herds of up to 200 individuals, evidencing a healthy elephant population in the southern parts of the park.

Also during this collaring exercise we were able to provide support to NGO Game Rangers International to use the helicopter to search for snared elephants that had been seen near the elephant orphanage, and also to provide an opportunity for their trainee veterinarian to experience an elephant collaring operation.

This half year we continued our field verification of community reports of elephant presence in Zambia's southern section of the Zambezi-Chobe floodplain WDA, which provides additional

information from locations where we have not yet fitted tracking collars to elephants. This has enabled us to document frequent cross-border exploratory behaviours by elephants from Namibia, Botswana and Zimbabwe (Fig. 1).

We were able to capitalize on this flow of information to locate 2 male elephants in October to fit tracking collars in a new area where we were not previously receiving data from collared elephants. This is another area that may provide connectivity between central KAZA TFCA and Kafue NP via Zambia's forestry areas to the north of the Zambezi River. After having their collars fitted, these males crossed the Zambezi river south into Namibia and thereafter one male moved southwest to Namibia's Mudumu NP, and the other male moved further south into Botswana near to the Namibian border post. We are excited about these collars as they have already provided some great information about transboundary crossing areas where there was previously a big information gap, and we are hopeful that these two males will return to Zambia in the coming dry season.

At the southern end of the Zambezi-Chobe floodplain WDA, the two male elephants collared on Sekoma-Ilombe islands near Kazungula on the Zambezi River remained on their dry season island refuge from July to October 2020. We could see from the one active tracking collar that they made regular journeys into community areas, however most of these night-time forays were in areas that we had already provided assistance to secure vegetable gardens with Poliwire Electric fencing systems (see Fig. 2), so their impact was much lower than it otherwise might have been. This area seems to be a favorite spot for the elephants to visit, so we will no doubt have more farmers that need assistance in this area in the future.

In October, we successfully removed the two satellite tracking collars from male elephants on Sekoma island for which the batteries were due to expire (one of these collars had already failed in January 2020). We had planned to fit one of these males with a new collar so we could continue to monitor their crop-raiding behaviour in the area, but both of them were developing a blister under their collar belting so for their health and welfare we did not fit either of them with a new collar. As there were so many new elephants visiting Sekoma Island this dry season, it was an easy matter to locate a recipient for the new collar, which was a young male.

This new male elephant has already shown some interesting movement behaviours. Three weeks after the tracking collar was fitted, this male moved northeast into Zambia for 16.5 km before returning to Sekoma Island the next day. This is the furthest we have recorded a collared elephant moving northwards from this island into Zambia. Then in December 2020 after moving southwards into Botswana for the wet season, he decided to spend a couple of weeks in a forested area right in the middle of Kasane town, and our collaborator at NGO Elephants Without Borders investigated this area and located him (photo below) and reported that he was with a herd of 10 mixed-age male elephants. It is amazing that a small herd of elephants could seemingly happily exist in an area less than one square mile in size in the middle of an established town for so long without being disturbed. This is in stark contrast to the town of Livingstone in Zambia, some 70 km to the east, where elephants are chased through the streets by residents.

After finally leaving the town environment he moved to the Botswana and Zimbabwe border, where he spent the remainder of the year with equal amounts of time in each country in forests on either side of the border.



Conflict mitigation:

This half year we have helped a number of people with solar-powered poliwire electric fencing systems to deter elephants from entering their property.

We assisted a community school of 800 students in Livingstone, Zambia to deter elephants from entering the school grounds and raiding vegetable and maize gardens that the students cultivate, which are a vital food source for these vulnerable and orphaned children.

In the Mambova area, adjacent to Sekoma Island we issued 4 new batteries to existing poliwire electric fencing systems, and assisted one additional farmer with a poliwire electric fence to protect his vegetable garden from elephant crop-raiding. This farmer lives at a location where the 2 male collared elephants frequently cross onto the Zambian mainland at night, seemingly to browse in the riparian zone on the river bank (rather than crop raiding). The farmer had previously cultivated his vegetable plot on the river bank next to a mango tree, which is a favourite of elephants. We encouraged this farmer to move his vegetable garden next to his house so he could better protect it during the night, and also encircled it with a poliwire electric fence to help with this.

We also assisted a further 11 rural families to secure their livelihoods from elephant crop-raiding in a new area along the Zambezi River where the increasing number of elephants over the past few years has caused conflict. In Sikalya village, 11 families cultivate gardens at a water pool nearby the village, and during this dry season these vegetable gardens were twice raided by elephants that had come to drink at the pool. A request for help came to us via the Department of National Parks and Wildlife and we were happy to help.

6) Impact

Humans impacted by the project:

12 rural farming families received Poliwire Electric fencing systems for HEC mitigation on their subsistence farms this half year (76 people: 18 men / 16 women / 42 children), plus one school incl. agricultural garden at a school of 800 students (orphans/vulnerable children)

Elephants impacted by the project: approximately 500 elephants are reported to reside in our Zambian study area; and ~6600 in Kafue National Park which will be connected to the larger population of approximately 220,000 in KAZA TFCA.

7) Problems during grant period

The continuing decline of Zambia's currency due to inability of the country to meet its debt repayments is having an impact on the purchasing power of the currency. The main effect it has on our work is that the cost of equipment and services that we need to acquire from outside the country has increased markedly. To counter this, we have now opened a USD bank account for deposit of donor funds.

However, the declining currency value has also now placed the cost of the poliwire electric fencing systems out of the reach of rural subsistence farmers, as local incomes have not increased but the cost of the equipment in Zambian currency has increased by almost 50% in the past year.

8) Project success

The goal of this study is to *identify wildlife movement corridors within the Zambian landscapes of KAZA TFCA by determining elephant landscape utilization, and identifying impediments to elephant movements and threats to their survival that restrict connectivity with cross-border elephant populations.*

We have collected further data this half-year regarding transboundary crossing points into Zambia and movement of elephants northward towards Kafue National Park.

The latest elephant collared on Sekoma Island at the intersection of 4 countries has moved the furthest northward towards Kafue National Park that we have previously seen from a collared elephant, providing more information about elephants' utilization of this movement corridor.

We fitted a further 2 elephant tracking collars in a new area along the Zambezi River adjacent to Namibia and almost immediately the movement data enabled us to identify connectivity with other elephant populations and transboundary crossing points between Zambia and Namibia. To enhance our understanding of elephant transboundary movements we continued to reach out to cross-border counterparts in Namibia, Botswana and Zimbabwe to strengthen relationships for information sharing and future collaborations.

In addition, we aim to *mitigate the impact of elephants on the livelihoods of subsistence farmers*, which we have continued to do by assisting more farmers to deter elephants from entering their fields and raiding their produce.

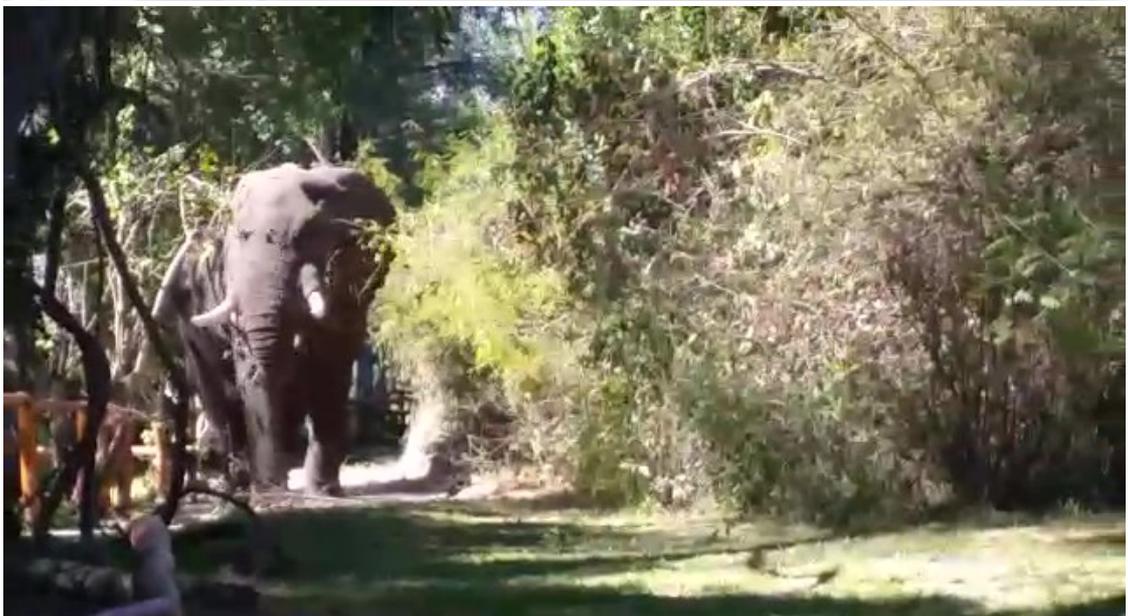
9) Next steps

We have evidenced that the number of elephants moving across the Zambezi River into Zambia from other countries during the dry season is increasing, and will no doubt impact more rural farmers as they cultivate their dry-season vegetable plots. We will combine the movement data from the new elephant tracking collars with verified elephant sightings from community members to continue to monitor the impact of elephants on rural livelihoods along 100 km of the Zambezi River. We will develop our team to assist with this monitoring, and support farmers who are being impacted by increased elephant numbers during the dry season.

10) Human interest story

With the advent of Covid-19 most tourist lodges are closed, with lockdowns and closure of international borders reducing tourist numbers to a point where it is not viable for lodges to remain open. Fewer people around has resulted in wildlife feeling comfortable to move through normally tourist-dominated locations during the day, whereas perhaps previously they would only pass by at night. At one of the transboundary corridor areas where we are studying elephant movements, Sekoma Island fishing lodge has experienced visits by elephants into the lodge grounds since the tourists have stopped coming. The elephants on the island usually coexist well with lodge residents, and both stay out of each other's way, but lately the elephants have found the attraction of the exotic lodge garden irresistible, so they sneak in when they see no-one is around. Elephants are surprisingly quiet on their feet despite their size, and usually they can only be detected by the noise of breaking branches while they are feeding. The lodge manager 'caught' one of the male elephants in the garden one day and attempted to shoo him out of the garden, a somewhat dangerous activity but previous meetings between the two had been peaceful so the manager thought he would give it a go. He showed that with the right approach, it is possible to manage elephant encounters without escalating conflict. He re-enacted the situation for us - starting with a slow approach towards the bull and addressing him 'hey you, big boy' then softly coaxing 'hello big boy, come on, let's go', but instead of retreating back along the path he had come, the elephant started to slowly move towards the manager with big purposeful steps and extended ears. After a quick backwards retreat by the manager towards the lodge building, the bull also took evasive action and took a quick exit up a small path into the bush and away from the lodge – this exit point was his focus hence why he needed to move towards the manager and not away.

'Eeesh, you scared the s*** out of me, (laughing), he's a big lad !'



11) Organisations associated with the project & their roles

- Elephant Connection. Design and implementation of all activities
- Department of National Parks and Wildlife. Project partner providing support, advice and manpower.

12) Financial report of International Elephant Foundation funds spent

1st July – 31st December 2020

Grant payment July 2020 USD 17,000 (plus \$1,354 b/fwd from June report) = \$18,354

Funds Received 27 July 2020 ZMW 305,352.30

Conversion Rate 17.9619

	Budget Item	Actual Expenditure in ZMW	USD \$
	EQUIPMENT		
	Poliwire electric fencing systems	-	-
	Elephant satellite tracking collar (incl. freight & 2 yrs data fee)	55,252	3,076
	CONSULTANT / HIRE FEES		
2.	Helicopter hire to remove 2 elephant satellite tracking collars and fit one new collar		9,000
	PROJECT PERSONNEL		
3.	Principal Researcher & Research Assistant		5,000
	SUPPLIES		
4.	Servicing, Repairs, Insurance, Tires and Maintenance for 4wd vehicle	17,494	974
	Vehicle fuel		
5.	-Elephant movement corridors	20,894	1,163
	-Conflict Mitigation	2,849	159
6.	Office, admin & communications	33,741	1,878
	TOTAL		USD \$ 21,250

c/fwd (-\$2,896)

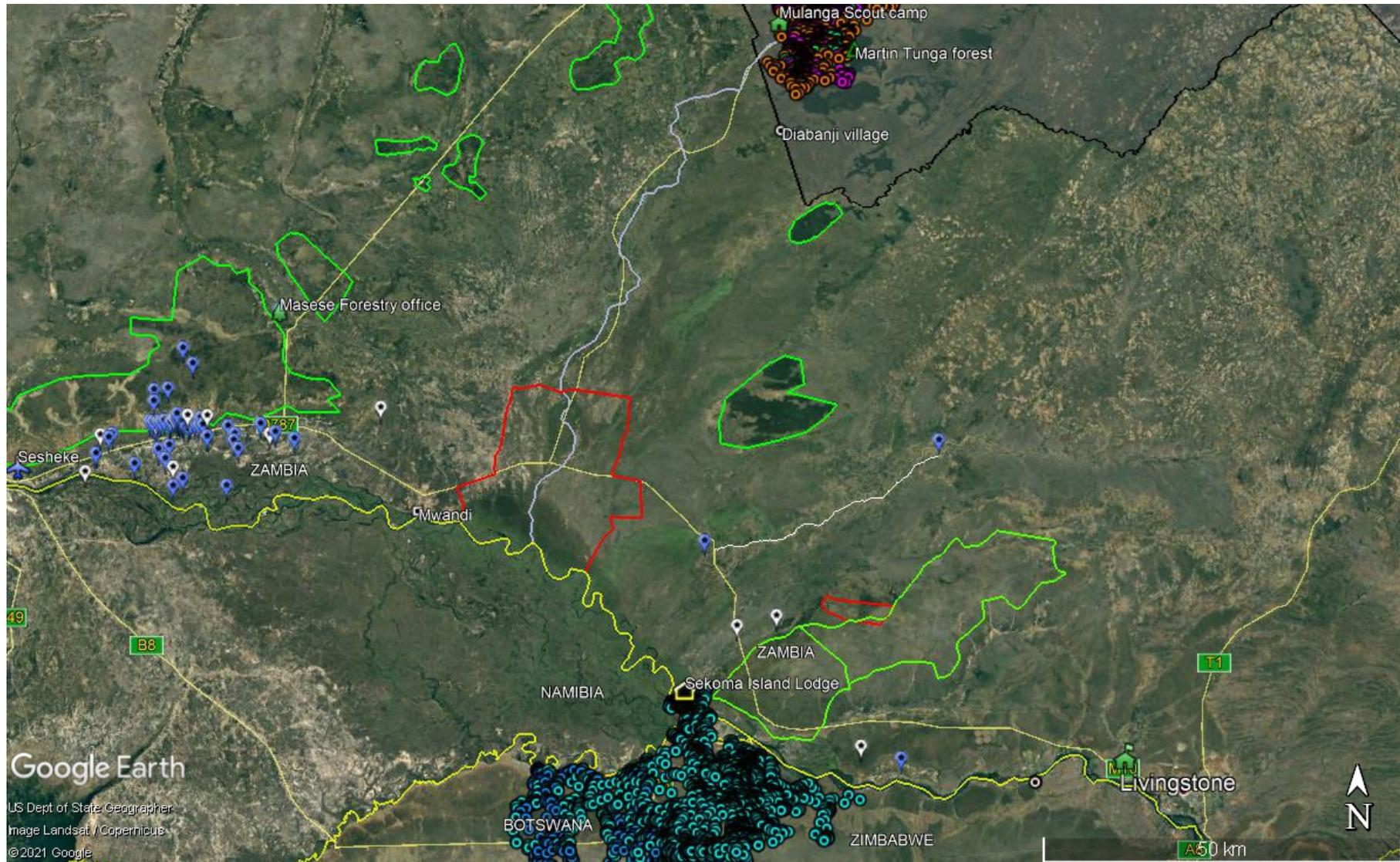


Figure 1. Zambian component of the Zambezi-Chobe floodplain WDA, with 2020 data from two satellite collars deployed in the southern portion of the Zambian component, and 3 of the 5 satellite collars deployed in the northern portion (Sichifulo GMA) (coloured circles). The additional white and blue balloons represent elephant sightings in Zambia reported by community members during 2020 and we have verified the blue balloons by the presence of tracks or dung. Red lines are game fences.

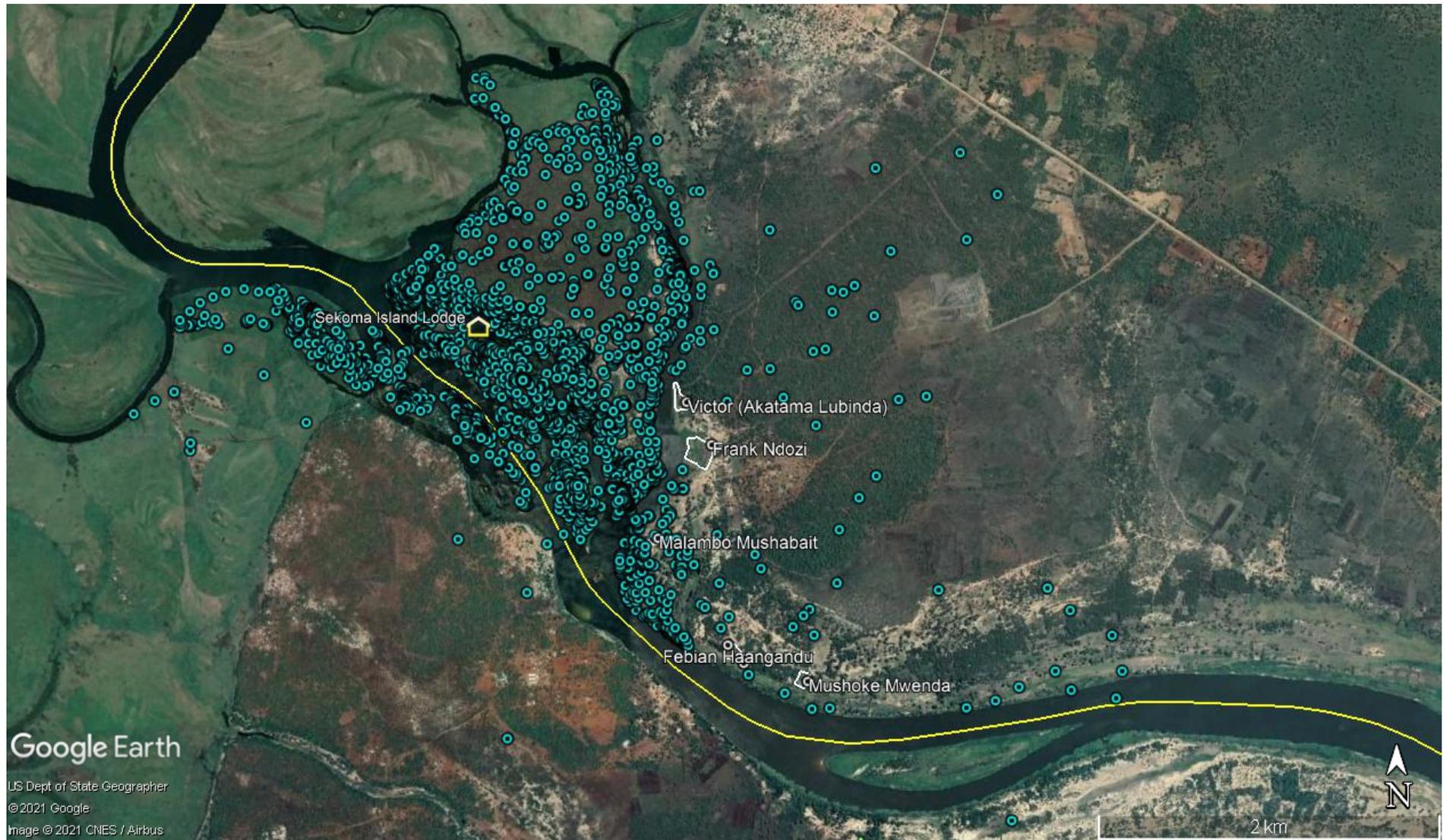


Figure 2. Collared male elephant movements (blue circles) July to October 2020 on Sekoma-Ilombe islands Zambia, in relation to Poliwire electric fencing systems (white shapes) put in place to deter elephants from raiding produce gardens when they move off the island into community areas at night. The Zambezi River forms the international border (yellow line) between Zambia (north) and Namibia (south).