



ZAMBEZE DELTA ECOLOGY
HOLISTIC ECOSYSTEM RESEARCH PROJECT



MONTHLY REPORT
JULY 2019

A GROWING POPULATION

June was quite an eventful month with the re-collaring of several lions. What is even more exciting is that the tally of cubs has now reached 16, with three females still pregnant. This means that within one year post-release, the population has almost doubled! The team believes that most of the cubs were fathered by the local Mozambican male, which presents an exciting prospect in terms of the lion genetic diversity, by maintaining a local bloodline within the already diverse population. What an incredible start it has been to the biggest international lion reintroduction project in the world!



Figure 1. Lioness (*MAF006*) from the Makalali pride pictured here with one her three cubs moving through the floodplain in Coutada 10/11.

DARTS, COLLARS & SNARES

In mid-June, the veterinary team, consisting of Dr Sam Bila and Dr Ryan van Deventer, was brought in to dart several of the Zambeze Delta lions. The priority of lion captures was firstly to replace collars on lions that had failed and secondly to check on the condition of other lions and their working collars. In total,



nine lions were darted and six were given brand new Savannah Tracking GPS collars which were kindly donated by the Metzger Family Foundation (Lewis and Peggy Metzger, far left and far right [left picture]).

GPS collars have proven to be a vital tool in the post-release monitoring of the Delta's lions. Receiving regular updates on lion movements allows us to monitor lions remotely and observe their behaviour, which would be almost impossible without the collars. Furthermore, these collars grant us the opportunity to evaluate the long-term success of this lion reintroduction project.

VETS SAVE A LIONESS

On 18 June 2019, the veterinary team was flown out to re-collar a female lioness (*TSF005*). After the vets had darted the female, she unexpectedly ran into a nearby river, and, being sedated, she started drowning. Watching what was unfolding, the team had to react rapidly. The pilot, Mark Haldane lowered the helicopter and Ryan got out of his seat and lay on the landing skid of the helicopter. He then grabbed the female by the collar and together they dragged her out of the water to a patch of dry ground. She was not breathing, so the vet started CPR on the lioness and soon she started breathing again. The team quickly replaced the GPS satellite collar and checked her body condition to find that she was pregnant. Ryan then gave her the reversal drug to wake her up. Later, the team got a visual on the lioness and saw that she had fully recovered and was moving normally.



Thanks to their heroics, a female lion was rescued, along with some of Zambeze Delta's future lions.

Dr Sam Bila, who is the head of the Mozambique Veterinary Department and a lecturer at the University of Maputo, has been a vital asset to the team. Together, Sam and Ryan have shown incredible teamwork in darting wildlife, collecting (blood and hair) samples and ensuring that each animal fully recovers from a capture event. Their contributions have been invaluable in the



overall success of the Zambeze Delta lion reintroduction project and we look forward to more of their good work.

Figure 2. Dr Sam Bila (left) and Dr Ryan van Deventer (middle) drawing blood samples from a female lion in Coutada 11 with Ivan Carter (right) monitoring her breathing.

LIONESSE CAUGHT IN A SNARE

On 22 July 2019, Mark Haldane found a female lion (*KAF001*) caught in a wire snare in Coutada 14. The snare had wrapped around her waist and a decision was made to dart her and remove the snare. *KAF001* was darted later that afternoon and the wire, which had cut her about an inch deep, was removed using wire cutters. Fortunately, the wire did not appear to do any major damage and so the wound was cleaned and treated with antiseptic spray.



Given the shortage of game and high level of poaching in this part of Coutada 14, the team decided to move the lioness back into the floodplain of Coutada 11. This area has much more game and is regularly patrolled by the Zambeze Delta Safaris Anti-Poaching Unit. She was left under a palm tree, near water, and was provided with a reedbeek carcass to aid her recovery.



Thanks to the Cabela Family Foundation and the Ivan Carter Wildlife Conservation Alliance, in association with Zambeze Delta Safaris, we are able to get regular visuals on the Delta lions with helicopters, which is crucial in emergency situations like this. We will continue to monitor *KAF001*'s movements and her recovery.

INTRODUCING: THE NEW RESEARCH TEAM

On 14 June 2019, the new research team arrived at the Mungari Airfield in Coutada 11. The researcher team includes Willem Briers-Louw, Dr Dave Gaynor and Professor Alan Gardiner.



Figure 3. The research team joined in with lion re-collaring to experience what is happening at the forefront of this project. Pictured from left to right; Willem Briers-Louw, Dr Dave Gaynor and Professor Alan Gardiner.

Willem Briers-Louw

Willem completed his studies in Conservation Ecology at Stellenbosch University, which included a two-year MSc on the ecology of reintroduced lions and leopards in Malawi. He also worked in Namibia, monitoring wildlife and dealing with human-wildlife conflict on farmland. He has joined the team as the researcher and will focus his work on the lions as well as all other research aspects in the Zambeze Delta.

Dr Dave Gaynor

Dave Gaynor as Research Director of the Kalahari Research Centre has many years' experience in organizing and co-ordinating research and the associated information. He is an ecologist with a wide research knowledge, he has had twenty three years postdoctoral experience in mammal research. He also has understanding in community natural resource management and the development of computer programs to assist in recording and collection of data.

Professor Alan Gardiner

Alan Gardiner as Head of the Applied Learning Unit at the Southern African Wildlife College has many years' experience in project management. He is an ecologist with twenty four years postdoctoral experience in sustainable utilization of natural resources, community based natural resource use & environmental impact studies. Thirty four years' experience in the ecology & taxonomy of African Lepidoptera (Butterflies & Moths) and twenty two years' experience in the ecology & taxonomy of Southern African Scarabaeinae (Dung Beetles).



LION COLLAR DATA

JULY 2019

After almost one year since their release, most of the introduced lions have formed prides with relatively stable ranges. The average home range of lions in July was 56.6km² - relatively small areas considering the vast expanse of the Delta. This is likely attributable to the high abundance of prey available to the lions as carnivore home ranges typically correlate with prey biomass (i.e. the higher the prey biomass, the smaller the carnivore home range size and *vice versa*). In fact, most of the lions occupy ranges along the floodplain, where game is plentiful, and it is the common animals i.e. reedbuck and warthog, that dominate lion diets at the moment.

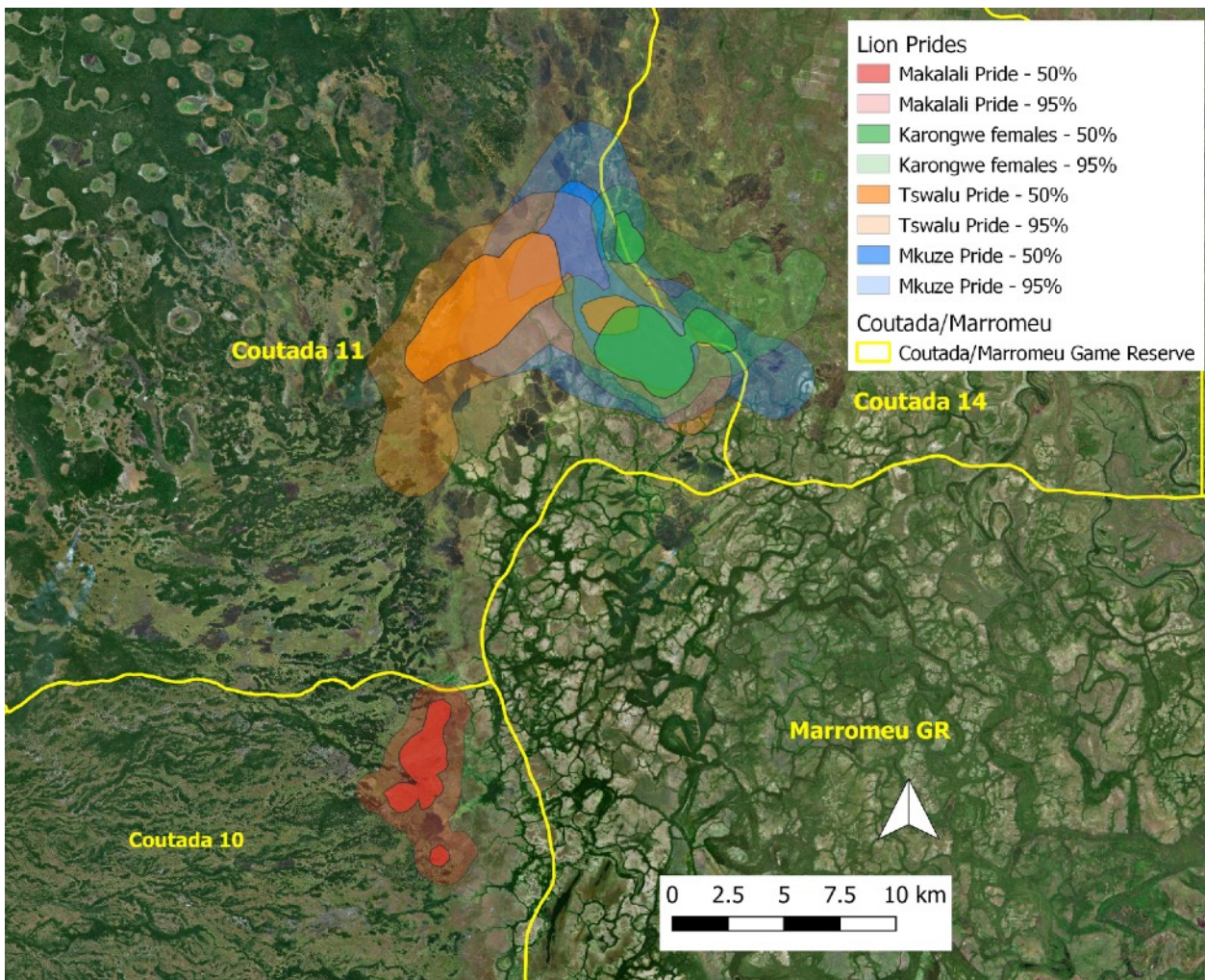


Figure 4. Core and home ranges for lion prides in July 2019 in the Coutada/ Marromeu Complex. The darker colour represents the core area (50% UD), while the lighter colour represents the home range (95% UD) of each pride.

Interesting things to note

- All prides had some degree of **range overlap** during the past month (7-49% core overlap), with the exception of the Makalali pride which occupy an area bordering Coutada 10/11. The overlapping ranges are likely to be due to movements of males establishing their dominance. For example, one of the Mkuze females (*MKF003*) **was seen mating** with the larger (and likely more dominant) male (*TSM002*) of the Tswalu pride. Based on the collar data, it appears that this male also chased the Mkuze male (*MKM001*) away from his pride.
- Khamab female (*KHF001*) **met up briefly** with one of the Makalali pride females (*MAF004*), but moved away the following day. Both *KHF001* and *TEF001* are two collared females that remain without prides. Solitary individuals tend to have less defined ranges and may cover large areas. We hope that at some point they will either join a pride or form their own pride.

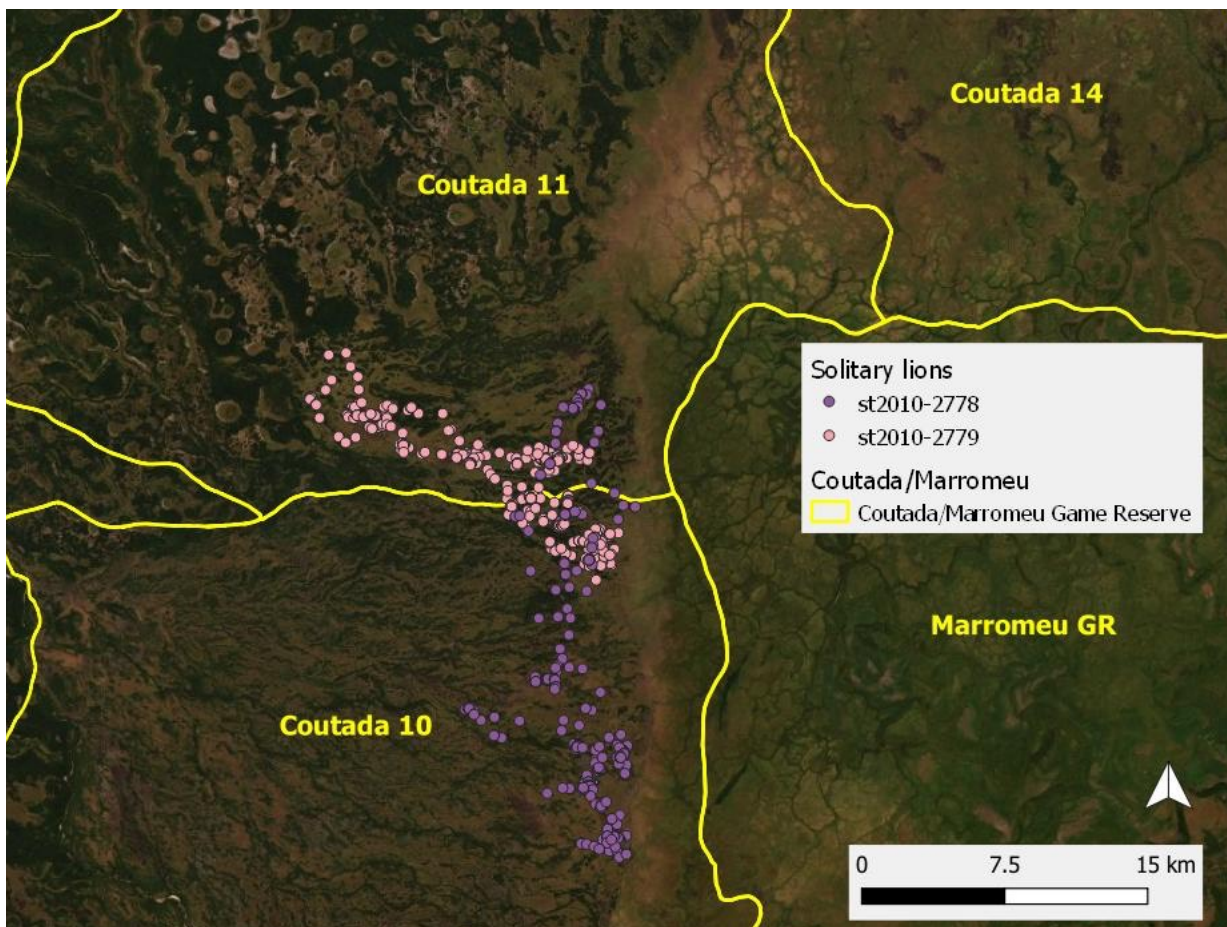


Figure 5. GPS locations of two solitary lions, *KHF001* (collar 2779) and *TEF001* (collar 2778) for July 2019.

24 LIONS: COLLAR STATS

- 17 - Number of collared lions
- 5.2km² - smallest area utilised in July 2019 (*MAF003*)
- 165.0km² - largest area utilised in July 2019 (*TEF001*)
- 2.4km - smallest mean daily distance moved (*KAF002*)
- 6.1km - largest mean daily distance moved (*TSM002*)*
- 70.6km - smallest monthly movement (*KAF002*)
- 188.8km - largest monthly movement (*TSM002*)*

* The high mean daily movements and total monthly movements of *TSM002* is likely due to him establishing a territory. As he was seen mating with females from two different prides.

24 LIONS: POPULATION STATS

- 21 - Current population size (excluding cubs)
- 4 - Number of prides
- 16 - Cubs born (as of July 2019)
- 3 - Pregnant females (as of July 2019)



24 LIONS: INDIVIDUAL DETAILS

LION ID	OLD COLLAR	NEW COLLAR	PRIDE	ORIGIN
KAF001	-	ST2010-2777	LONE FEMALES PRIDE	KARONGWE
KAF002	-	IRI2016-3071	LONE FEMALES PRIDE	KARONGWE
KHF001	-	IRI2016-3204	-	KHAMAB
KHF002	-	-	-	KHAMAB
MAF001	-	ST2010-2774	MAK PRIDE	MAKALALI
MAF002	-	ST2010-2782	MAK PRIDE	MAKALALI
MAF003	-	IRI2016-3073	MAK PRIDE	MAKALALI
MAF004	-	IRI2016-3074	MAK PRIDE	MAKALALI
MAF005	-	SIR91071	MAK PRIDE	MAKALALI
MAF006	-	SIR91072	MAK PRIDE	MAKALALI
MKM001	ST2010-2786	IRI2016-3195	BAD BOY PRIDE	MKUZE
MKF002	ST201-2776	IRI2016-3203	BAD BOY PRIDE	MKUZE
MKF003	-	IRI2016-3070	BAD BOY PRIDE	MKUZE
TEF001	-	ST2010-2778	-	TEMBE
TEF002	-	-	-	TEMBE
TEF003	-	-	-	TEMBE
TEF004	-	-	-	TEMBE
TSM001	ST2010-2780	IRI2016-3202	TAME PRIDE	TSWALU
TSM002	ST2010-2785	IRI2016-3196	TAME PRIDE	TSWALU
TSM003	-	IRI2016-3069	TAME PRIDE	TSWALU
TSF004	-	IRI2016-3067	TAME PRIDE	TSWALU
TSF005	ST2010-3068	IRI2016-3201	TAME PRIDE	TSWALU
TSM006	-	ST2010-2783	TAME PRIDE	TSWALU
TSM007	-	ST2010-2784	TAME PRIDE	TSWALU

	ALIVE
	UNKNOWN
	DECEASED

NEXT STEPS

MONITOR PREGNANT FEMALES
& CUBS



#24lions