



ZAMBEZE DELTA ECOLOGY
HOLISTIC ECOSYSTEM RESEARCH PROJECT



MONTHLY REPORT
OCTOBER 2019

TWENTY FOUR LIONS

The Twenty Four Lions reintroduction project is thriving in the Zambeze Delta of Mozambique. This healthy and rapidly growing lion population indicates that the area is highly suitable for lions, both in terms of habitat and prey availability. The large number of introduced lions, coupled with sourcing the lions from a range of different origins within South Africa, certainly provides various benefits, including a rapid population growth and high genetic diversity to avoid inbreeding depression¹.

One of the reasons for the reintroduction and post-release monitoring success has undoubtedly been having regular aerial support. This has been funded entirely by the Cabela Family Foundation and their contributions have been significant to this projects' success. Another very important tool for monitoring the lions has been GPS/VHF satellite collars. By knowing where these lions are moving, we are able to track the life history of each lion. Additionally, in cases where lions are showing unusual movements, we are then able to access aerial support to get visuals on the lions to assess the situation and determine whether intervention is required.

As we sit at the end of October, we reflect on a few recent changes that have taken place recently. Firstly, the hot-dry season is now in full swing, with daily temperatures soaring well above 40 degrees Celsius. Secondly, we captured and collared three of our lionesses (Tembe 3) which we had not seen for more than one year after their release! Thirdly, we have seen a shift in male lion movements, with the Bad Boy Male switching prides with the Tame Pride Males. Finally, our Snared Lady (KAF001) reunited with her Karongwe Pride female (KAF002) for the first time in approximately two months.

¹Trinkel, M. *et al.* (2010). Inbreeding and density-dependent population growth in a small, isolated lion population. *Animal Conservation*, 13, 3, 374-382.

TRACKING LIONS: COUTADA 10

In October, the research team spent a couple days tracking lions in Coutada 10, a neighbouring concession. There are three prides which occur in the area, these are the: Mak Pride, SirTrack Pride and Tembe 1 Pride. Of the released lions, these prides tend to have the most fixed home ranges, which is due to the presence of cubs in each of the Prides (see *Lion Movements* section).

MAK PRIDE

The Mak Pride, which consists of four adult females and nine cubs, were seen on four different occasions during this trip. Tracking these lions was fairly challenging as the concession still has areas with very tall grass. During our visit the lions tended to remain in these areas, which made sightings fairly limited (see below). Despite this, we were able to get relatively close to them by vehicle and take a number of photos. Additionally, we put up a camera trap at a kill and got some very nice close-up shots of the lionesses and their cubs (Fig. 1).





Figure 1. Camera trap photos of the Mak Pride on a reedbuck kill in Coutada 10.

SIRTRACKS

We tried tracking the two Sirtrack females (MAF005 & MAF006) but their collars have not sent any uploads for two weeks, so we were unable to locate them. These collars had a similar issue about 4 months ago but have been transmitting fine since then. If this issue persists, we might need to re-collar these females.

TEMBE 1

We spent some time trying to get visuals on the Tembe 1 female (TEF001, 2778). Unfortunately, her area is currently inaccessible by vehicle. We will keep monitoring her movements and hopefully we can get eyes on her and her cub(s) soon.

MATING LIONS

| Courtship | Flehmen | Oestrous |

Our research team has been tracking the mating of Bad Boy Pride's Mkuze Male (MKM001) and one of the Tame Pride's females (TSF004) along the edge of the floodplain in Coutada 11. Their GPS collar data showed that they were moving together since the 17th of October. Upon investigation, they were found together, displaying social affection and mating regularly. From 22 October onwards, the two were still moving together, but did not mate with the same intensity as during the first 5-6 days.



Figure 2. Mating can be quite tiring. Here are a few pictures of the Tame Pride female (TSF004) and Mkuze male (MKM001) relaxing between mating sessions.

REPRODUCTION IN LIONS

Female lions only come into reproductive maturity from 2 to 2.5 years old. After reaching sexual maturity, females come into oestrous for 2 - 6 days in intervals of 16-20 days. When a female is in oestrous, the male will smell her scent using the Jacobson's organ (also known as the vomeronasal organ). This

The word 'flehmen' is a German word which means "to bare the upper teeth".

is displayed in the form of a 'flehmen grimace', with the lips pulled up, tongue extended and head raised. The male will stay close to the female and can be very possessive over her during this time, which is called the primary oestrous period.

The courtship usually starts with enticement from either the male or the female. When mating, the male will typically bite the female at the back of the neck and/or emit a sound known as a 'yawl', indicating copulation. Mating lasts on average 15-17 minutes, which means lions can mate more than 250 times during this period. They often continue mating for 1 - 4 days after the primary oestrous period. This is called secondary oestrus and is evident from the male being less possessive over the female and mating for shorter periods with longer intervals between mating. After a gestation period of about 110 days, females give birth to an average of 2-3 cubs^{2,3}.



Figure 3. Mkuze Male about to bite the neck of the Tame Pride female during mating.

²Rudnai, J. (1973). Reproductive biology of lions (*Panthera leo massaica* Neumann) in Nairobi National Park. *African Journal of Ecology*, 11, 241-253.

³Packer, C. & Pusey, A.E. (1983). Male takeovers and female reproductive parameters: a simulation of oestrus synchrony in lions (*Panthera leo*). *Animal Behaviour*, 31, 334-340.

LION MOVEMENTS

OCTOBER

Lion movements in October did not vary much from previous months. Figure 4 shows the GPS locations of all prides as well as polygons of male ranges to show their coverage of prides. Male ranges overlap a fair amount due to switching pride tenure, while almost zero overlap exists between prides, except for some overlap between the Bad Boy, Karongwe and Tame Prides. Average lion core and home range was 13 and 59 km² respectively. Males had substantially larger ranges (93 km²) than females (28 km²). Females without cubs had almost three times the home range size (36 km²) compared to females with cubs (14 km²).

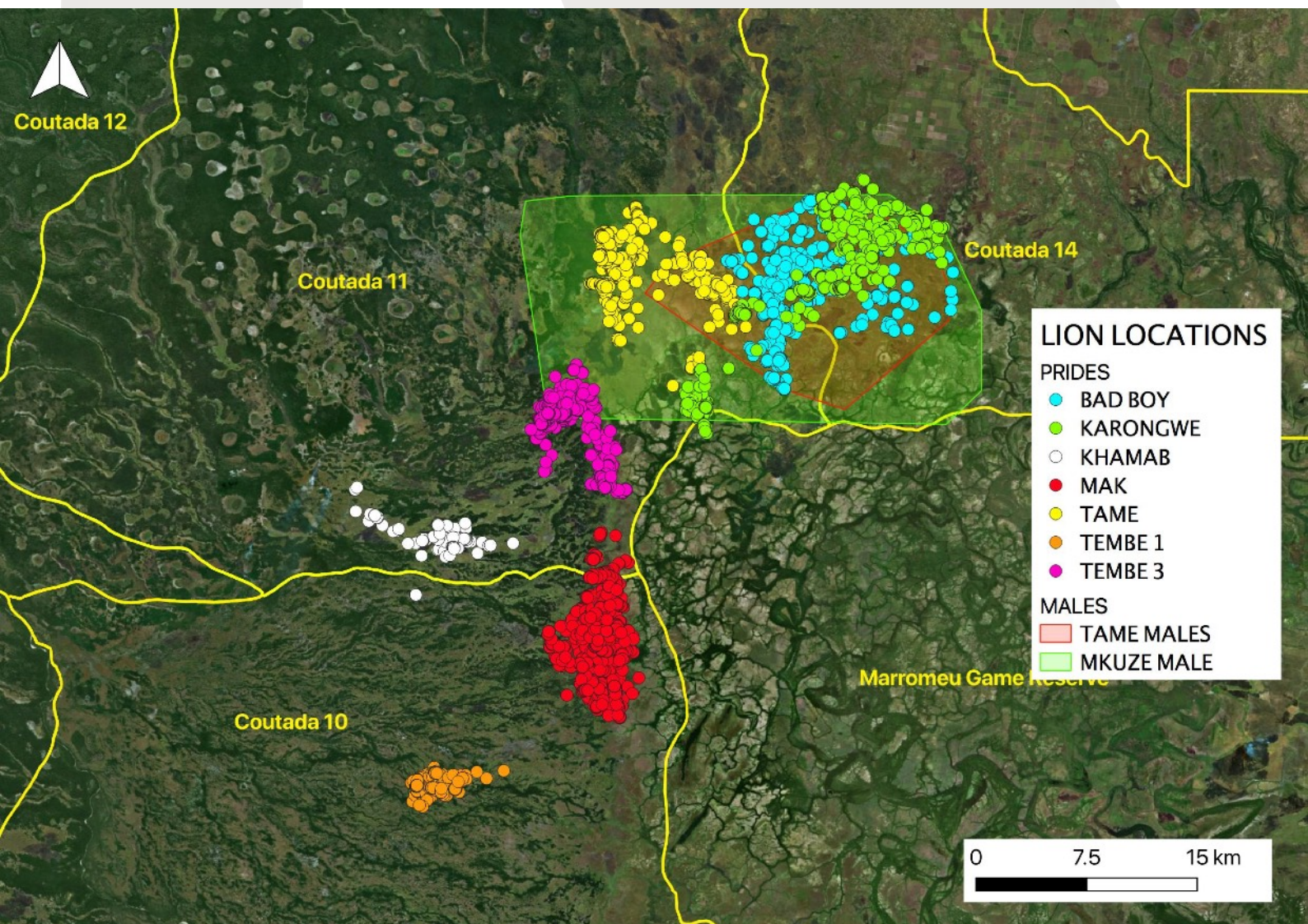


Figure 4. Map showing all lion pride GPS locations for October 2019. Male coverage of female locations is indicated by coloured polygons.

IMPORTANT NOTES

TEMBE 3 COLLAR DATA

After the first month's collar data of the Tembe 3, we can see that they occupy a fairly small range in Coutada 11 (Fig. 4). This is great news as it means they have established a fixed range. Upon their capture, we found that one of the Tembe 3 was pregnant (TEF004), while another female (TEF002) was found mating with the local Mozambique male for consecutive days. This may certainly aid in their permanency in this part of our concession.

KARONGWE PARTNERS MEET UP

Snared Lady (KAF001) finally met up with her Karongwe pride partner (KAF002). From mid-October they started moving together again. We hope this bond lasts and that they form a fixed pride.

MATING LIONS

After the Mkuze Male returned from his trek to the Zambeze River at the end of September, he spent some time in Coutada 11. For 2 weeks he was seen together with Tame Pride's female TSF004, and mating with her for the first 5 days.

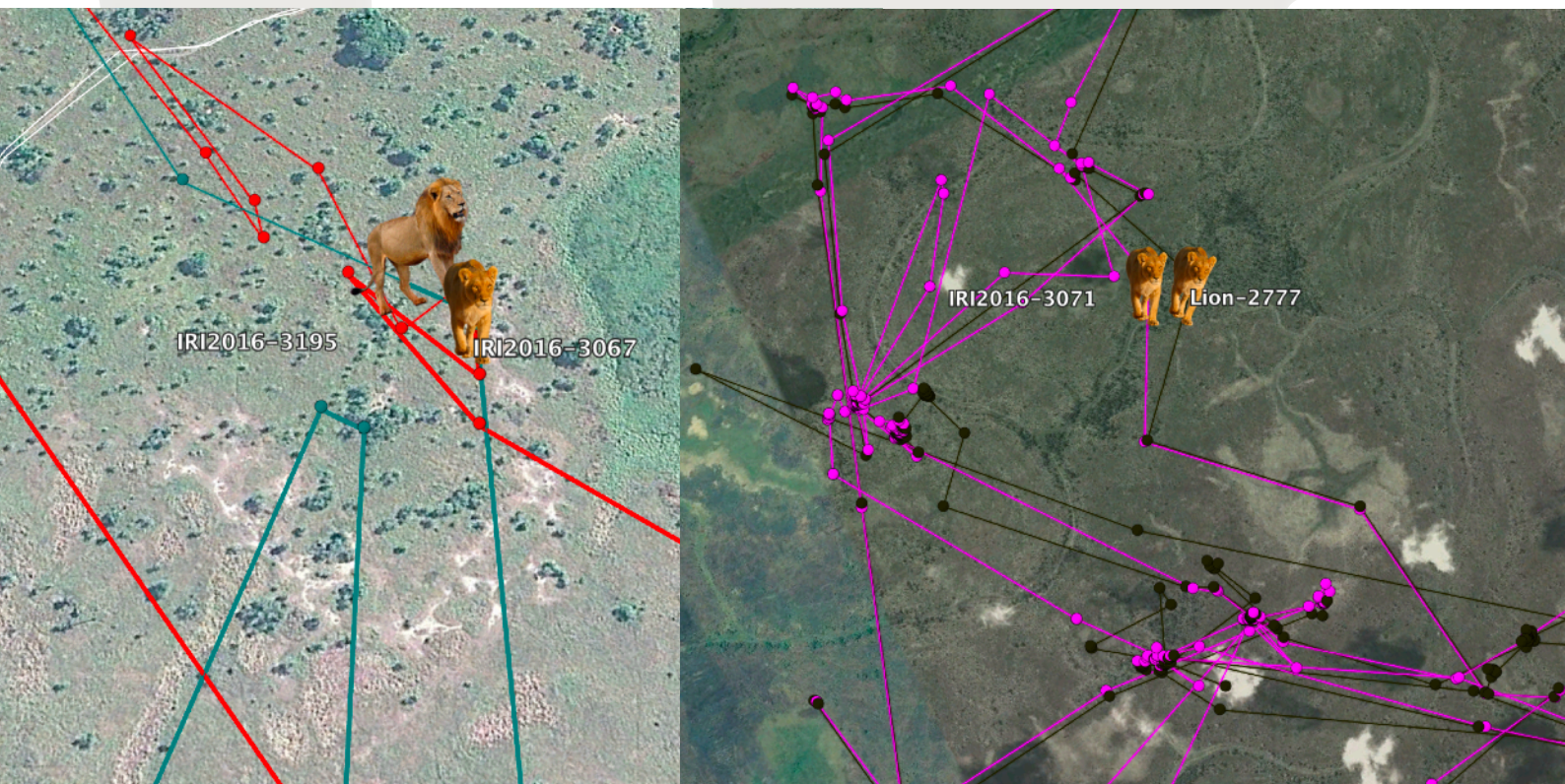


Figure 5. Left: Movements of the Mkuze Male and Tame Pride female (TSF004); Right: Movements of Snared Lady (KAF001) and her Karongwe Pride partner (KAF002).

OBJECTIVES: NOVEMBER

GET VISUALS ON CUBS

FOLLOW UP ON LION KILLS



#24LIONS