UPDATE ON CENTRAL KALAHARI GAME RESERVE BLUE WILDEBEEST STUDY

Moses Selebatso

KANABO Conservation Link

CKGR PREDATOR PREY RESEARCH

Brief Introduction

The CKGR wildebeest study is part of the CKGR Predator Prey Project which aims at developing an understanding of the CKGR as an ecosystem. The CKGR Project is currently running 4 main studies on the blue wildebeest, lion, African Wild dog and Vultures. The wildebeest study aims at assessing the CKGR as an independent habitat for wildebeest population. History shows that the CKGR used to be a resident and mainly a transit route for migratory ungulates between the Kalahari Transfrointer Park and the Makgadikgadi/Nxai Pan National Park. The Makgadikgadi system was effective isolated from the CKGR by the Kuke and Setata Cordon fences, and continued landuse changes, fences and increasing livestock and human population are rapidly isolating the CKGR from the KTP. All these changes deprive the CKGR wildlife populations of the previously available benefits from the surrounding areas. This study selected the blue wildebeest as a key species for determining the viability of the CKGR in maintaining water dependent and formally migratory species.

The aerial surveys data by the Department of Wildlife and National Parks show that the wildebeest population has decline by over 90% for the last 30 years. The CKGR population is equally affected by the trends, and worse the remaining population is estimated to less than 3000 (2007 aerial surveys). Personal observation for the last two years, suggest that the current population could possibly be way below 1000. These estimates demonstrate how critical it is to identify and address the CKGR wildebeest population conservation and management issues.

In view of the total area of the CKGR and the habitat heterogeneity, it makes scientific sense to belief that the reserve may be a good habitat to maintain a viable (and hopefully increasing) wildebeest population. However, as demonstrated by the above trends, the reality does not seem to support the theory.

Through the CKGR Predator Prey Research, this project looks specifically at the wildebeest population focusing on four key objectives;

1. Determine the movement and home ranges patterns of the wildebeest population
2. Determine the Habitat selection patterns of the wildebeest population
3. Determine the Dietary selection pattern of the wildebeest population
4. And determine the demographic patterns of the wildebeest population

Project Progress

The study has successfully deployed a total of 16 satellite collars across the CKGR (including Khutse Game Reserve) in the last 16 months. Most of the collared wildebeest spent most of the dry season around artificial waterholes, and there has been a strong selection for valleys

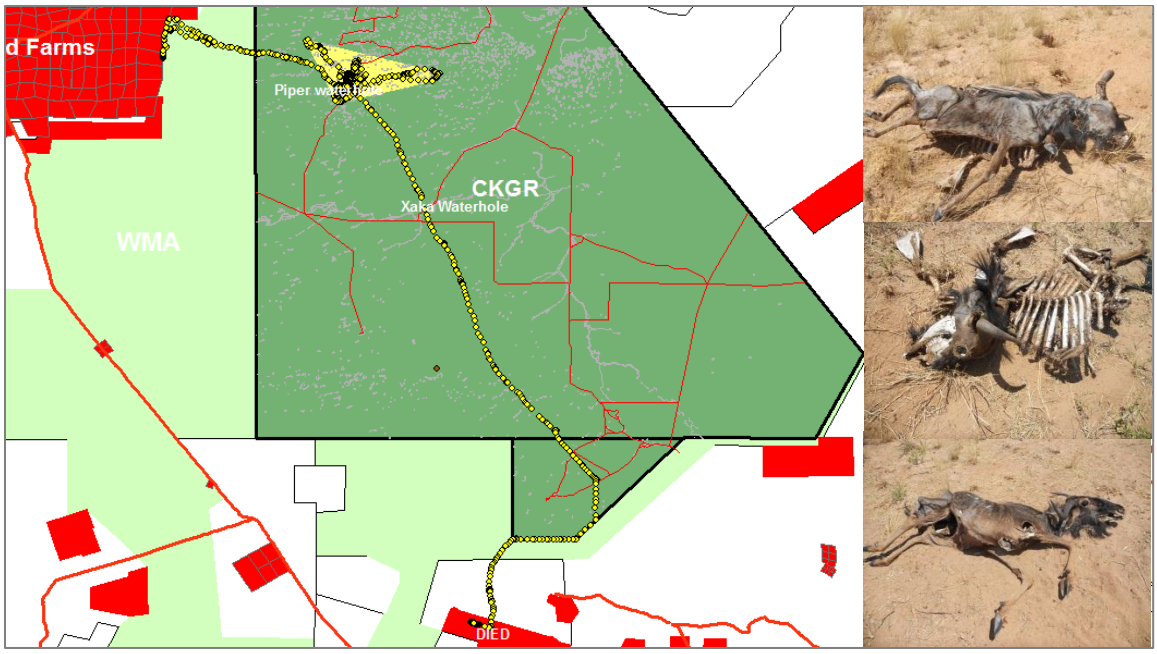
and pans throughout the reporting period, with notable excursions to open woodland close to the pans during dry season. In the current wet season (January, February and March), there has been little dependence on waterholes.

The project experienced high mortality of wildebeest, most of which may be a result of artificial waterholes drying up. A total of eight collared wildebeests died to date representing a 50% mortality rate). Four of the dead wildebeests were confirmed to have been killed by lions. Dehydration (and possibly exhaustion) is suspected to have killed the other two, wilddogs suspected to have killed one and there were no clue for the eighth wildebeest. The death of 4 out of 8 animals happened directly and or indirectly because the waterhole they depended on dried up. The details of these are described below.

A tragedy happened when one of the most preferred waterholes in the CKGR, Piper Pans, dried up in the middle of a dry season. About 200 wildebeest (the highest number of wildebeest recorded on the waterhole in the project) were estimated a month before the waterhole dried up. There were 3 collared wildebeests (Identified as 10187, 10188 and 10189 according to their collar IDs, respectively) in the pan and they all ended up dying.

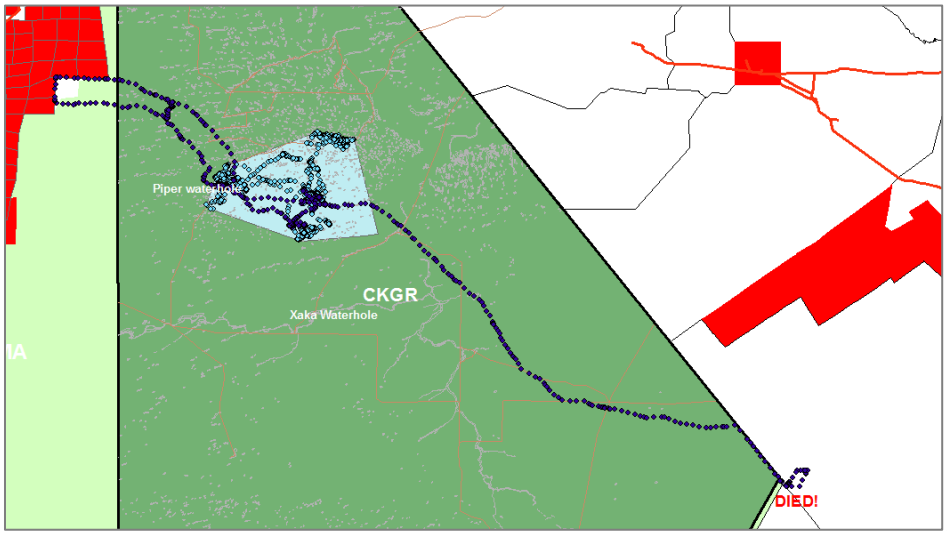
The Piper pans waterhole in full in May 2012 (left) and dry in July 2012 (right)

Two weeks after the waterhole had dried up two of the collared herds went west (separately) and were stopped by Ghanzi farms fences outside the reserve. Both came back about a week later and found the waterhole still dry. One of the herds went south and left the reserve through Khutse GR, crossed roads and was stopped by farms fences after a total of 560km (in two weeks) covered. See map below. The collared animal died 3 months later. On the site, a total of 8 carcasses were discovered in a radius 200m and only 6 live wildebeests were found. The whereabouts of another 20 members of the herd is unknown.



10188 Movement patterns between August 2011 and September 2012 in the CKGR (the light yellow polygon represent the home range before the waterhole dried up)and photos of the carcasses

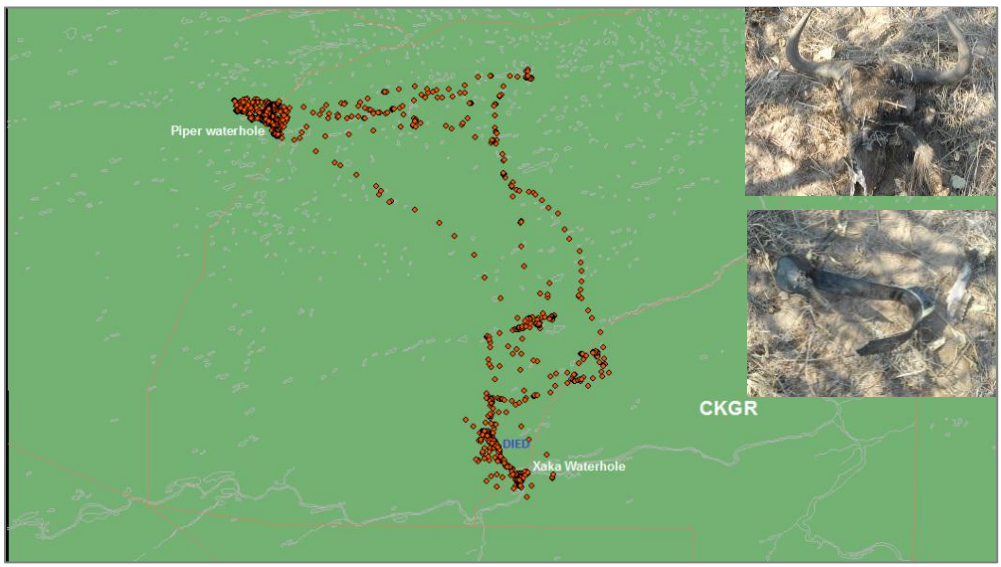
The other herd went east and was stopped by the CKGR eastern fence, before moving south along the fence. It died along a veterinary cordon fence about 40km outside the CKGR, after covering a total of about 500km. See blue dots on the map below. The whereabouts of the rest of the members (19) of the herd is unknown.



10189 Movement patterns between August 2011 and July 2012 in the CKGR (the light blue polygon represent the home range before the waterhole dried up)

The third herd from Piper Pans went straight to Xaka waterhole which was 65km south east and spent three months at the waterhole, before it also dried up in September. The herd attempted to go back north (assumed to be going to Piper Pans) and the collared wildebeest

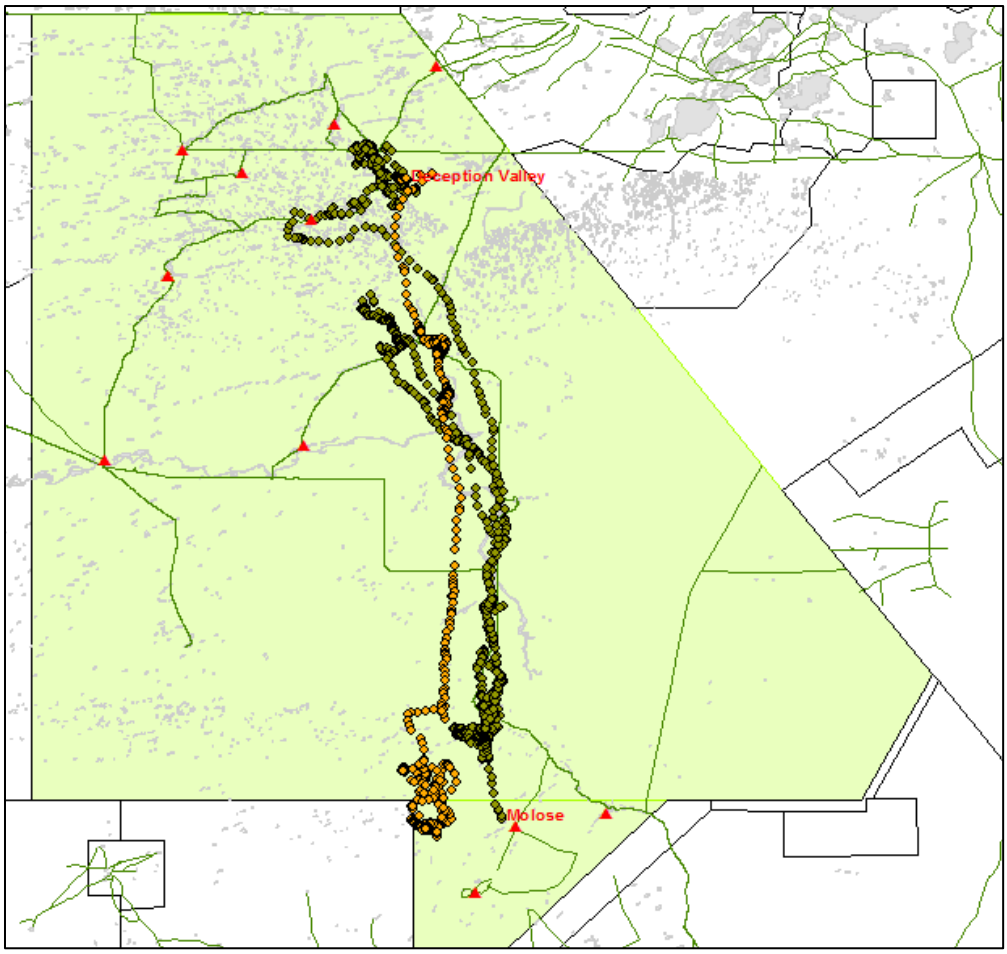
was killed by lions 8km north of the waterhole. This herd had 34 individuals a month before the death of the collared female. The project has also lost track of the rest of the herd.



10187 Movement patterns between Piper and Xaka Waterholes in the CKGR and photos of the carcass

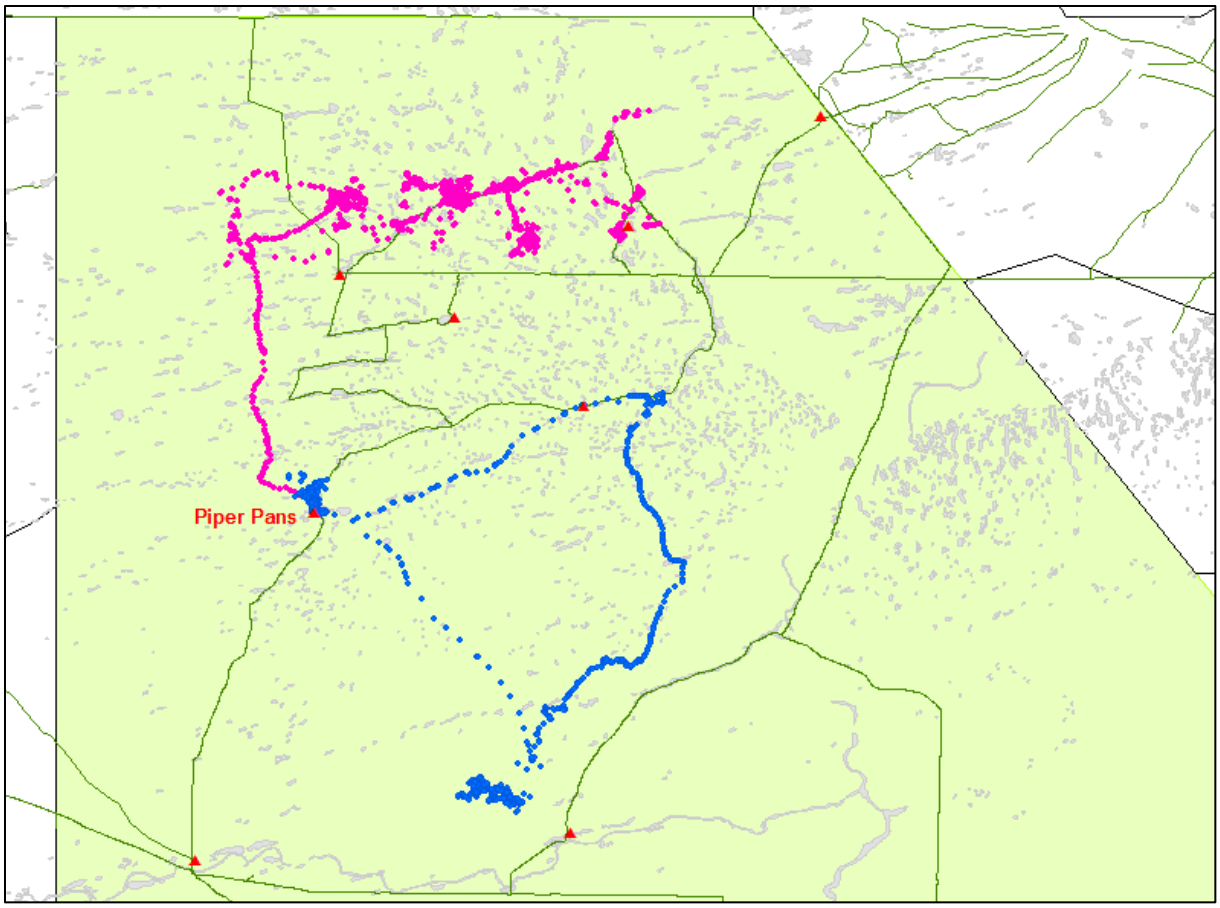
The other mortality occurred in the south western CKGR. The herd was collared at Quee Pan and it had stayed on the pan for the rest of the dry season, till the waterhole dried up in September. The wildebeest made frequent excursions out of the pan (and this is believed to have been effort to find alternative water source). Unfortunately, these excursions seem to have exposed the herd to lions between Quee pan and Khutse Game Reserve, where she died.

During this reporting period there have been some interesting movements, which may not be associated with any management of the reserve. A herd was collared at Molose waterhole at Khutse Game Reserve in September 2012, and started a journey to the north a week later. The herd ended up at Deception Valley, and stayed there for the whole of the wet season. At the end of wet season, March, the herd moved back to Kutse Game Reserve. See map below. There is an observation by Khutse Leopard Ecology project that wildebeest normally disappear for a year or two, and recolonize the reserve for a few months. This observation prompted this project to try and collar any herd sighted at Khutse to establish the origin of the herds. This recorded movement by Molly (named after Molose), shows that the CKGR could be the source of the Khutse wildebeest population. Through other project objectives the project is hoping to determine factors that trigger movement of wildebeest from one patch or landscape to the other.



Movement (green for beginning of wet season and yellow for end of wet season) of Molly (named after Molose) between Khutse Game Reserve to Deception valley in the CKGR. The red triangles represent waterhole locations.

Two other herds which were collared in different areas have merged at Piper pans. There was a herd of 15 wildebeest that we collared in November 2012 at Piper and another herd of four at Passarge valley in the north. The Piper herd left the pan in February 2013 after the waterhole dried up and went east to another waterhole (Letiahau), which was dry. The herd stayed in the south for a couple of month before heading back to Piper at the end of the wet season. At the same time, the herd that was at Passarge moved to Piper and they are currently at Piper and moving together around the pan. See the Map below.



Movement of the Piper (Blue) and Passarge (pink) herds before during wet season and meeting at Piper in April 2013.

The project has conducted grass sampling in the preferred and ignored sites in the CKGR and KGR. These will be analysed for nutritive qualities with the aim of determining the effects of grass quality on habitat and diet selection. We are also collecting wildebeest dung to determine the diet composition and assess the seasonal patterns of the diet. Updates on these will probably be reported in the next update.

Challenges

As mentioned above the main challenge has been the loss of the collared wildebeests in a herd. It has been very difficult to monitor a herd for over a year, which makes it difficult to accurately determine the seasonal movement patterns and habitat use. Collaring of game is a very expensive exercise and the loss of the collared herds within a few months means the process has to be repeated. It has also been a challenge to find herds that can be collared due to the low wildebeest population in the reserve. Nearly a third of located herds showed extreme shyness when approached by a vehicle, making it difficult to dart them from the ground. This behavior could either mean the wildebeests had a bad experience with a vehicle or human, which probably means they have been hunted, or it could mean they are not used to being close to vehicles.

Conclusion

As highlighted in the introduction, the purpose of the report was to highlight important observation and progress to date. The project has so far demonstrated the need to have a monitoring tool for the habitat use of the CKGR, particularly by declining populations like the blue wildebeest. It has been shown that waterholes play a critical role for this water dependent species. The study has also demonstrated the deadly impact of the drying of waterholes, especially during dry season when they are most needed. This observation could explain the drastic decline of the population in the CKGR, and other dry land areas where natural access to permanent water has been lost.

The project is hopeful that continued monitoring of the population for the next seven months would provide more insight on habitat use, preferred sites, dietary selection and most importantly how these come together to explain the population trends and therefore guide the management intervention for the wildebeest population, and the CKGR as an "independent" ecosystem.

Recommendations

While it is still a little early to make any science based recommendation, it appears to be important to regularly maintain the borehole. It is very important to attend to breakdowns of the boreholes within a week of breakdown. The data from the collared wildebeests showed that the animals leave the waterhole about 10 days after the breakdown.

Considering the observation on the Letiahau waterhole, where a wildebeest seemed to have been struggling to drink water at the waterhole, and that water seems to be a critical factor in the CKGR, the project is will assessment of water presence/absence and quality and the possible influence of such on distribution, and may be production of the population.