

Quarterly report July 2009

The ecology of the African buffalo (*Syncerus caffer*) in the Okavango Delta, Botswana

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In the past few months, all four of the remaining satellite collars that were first put out in December 2007 were recovered after they emitted mortality signals. Upon examination of the collars, which were all found on the ground (as opposed to on a buffalo carcass), it became apparent that the fault was with the remote release mechanism that came as standard when the collars were ordered. Although this mechanism was not programmed to release, or triggered remotely, it constituted a weak point in the collars, which broke following strain put onto the collars from being worn by buffalo for over a year. All of the collars recovered had been on buffalo cows for at least one full year, so they have provided valuable information.

Three of these collars were recovered by February, so were returned to the manufacturer for repair. A further two new satellite collars were ordered to be deployed. All of these collars were returned to me at the beginning of June, when I applied for a darting permit to deploy them. The permit was granted to me on the 25th June, 2009, number WP/RES 15/2/2 XVI (46), allowing me to dart six (6) buffalo cows within a period of one month. A separate report has been submitted for this darting session.

In October 2008, I deployed seven (7) store on board collars, in addition to the satellite collars. I have since recovered two of these collars that were broken through wear and tear from the buffalo. Both of the collars that I recovered has lost their GPS units, and when I downloaded data from them, they had each only managed to take fixes for the first three weeks following deployment. I have had visuals of two further collars, which were still on buffalo, but had also lost their GPS units. A few weeks ago, I was sent some photographs of another collared animal that was seen close to Chief's Camp in December 2008, which had also lost the GPS unit. Examination of the collars that I recovered showed that the GPS units were not securely attached to the collars, instead being mainly held on by the outer coating covering the belting material of the collars. It appears that this outer coating got caught on bushes and scratched off, then the GPS units were torn off. Unfortunately this means that the collars did not collect much data, and are only useful as VHF collars. I have recently had reports that another of these collars is emitting a recovery signal, so is likely to have come off the buffalo as well.

There are two of these collars that I have not been able to find since the beginning of last wet season. I had a report of a signal from one of these far to the east of my camp, but have not had access to a plane to confirm this. I will do so as soon as the plane that I usually use is back in Botswana. These two animals were collared on the Gomoti, so I expected them to return there after the end of the wet season, but I have not picked up a signal from the collars in that area. It is therefore possible that these two collars came off the buffalo further to the east. Since I have not been able to confirm the area that

these animals spent the wet season in, it would be useful to track collars, even if they are no longer on the buffalo, simply to get an idea of how far they moved to get to their wet season home range.

For the majority of the early flood season (April – July), I had only two satellite collars working, B76 along the Gomoti and B78 along the Boro. I was able to find a few other herds to collect population dynamics data and faecal samples – sufficiently to meet my targets.

B76 moved across from her wet season range at the beginning of May, which is later than last year, but probably due to the heavy rains that fell in March, at the end of the wet season. Since then, the herd has spent a lot of its time on large islands north of the main Chitabe land mass, only recently moving down the western side, close to Chitabe lodge (see Figure 1).

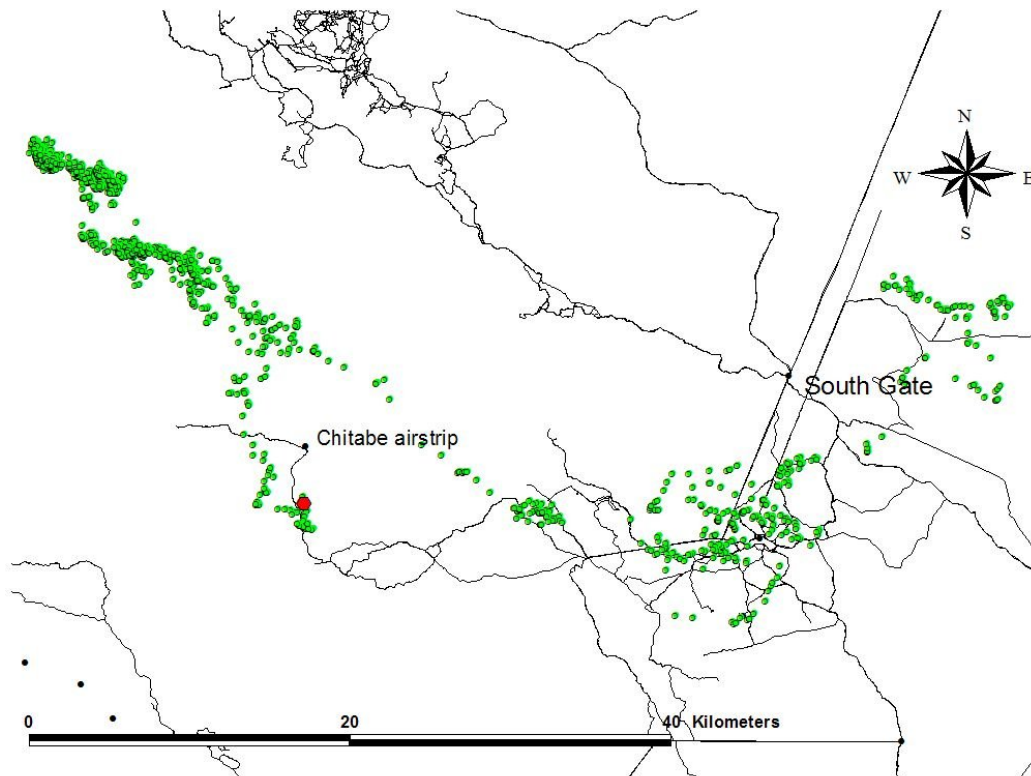


Figure 1: Movements of B76 between April – July 2009
Each dot represents one fix; red dot represents current location

B78 has spent the majority of her time on the Boro, with some excursions towards the Santantadibe (see Figure 2). The area covered by this herd is much smaller than that covered by B76. This is similar to last year, when herds in the Stanley's areas stayed within a smaller home range, compared to the Gomoti herds that moved extensively within a much larger area.

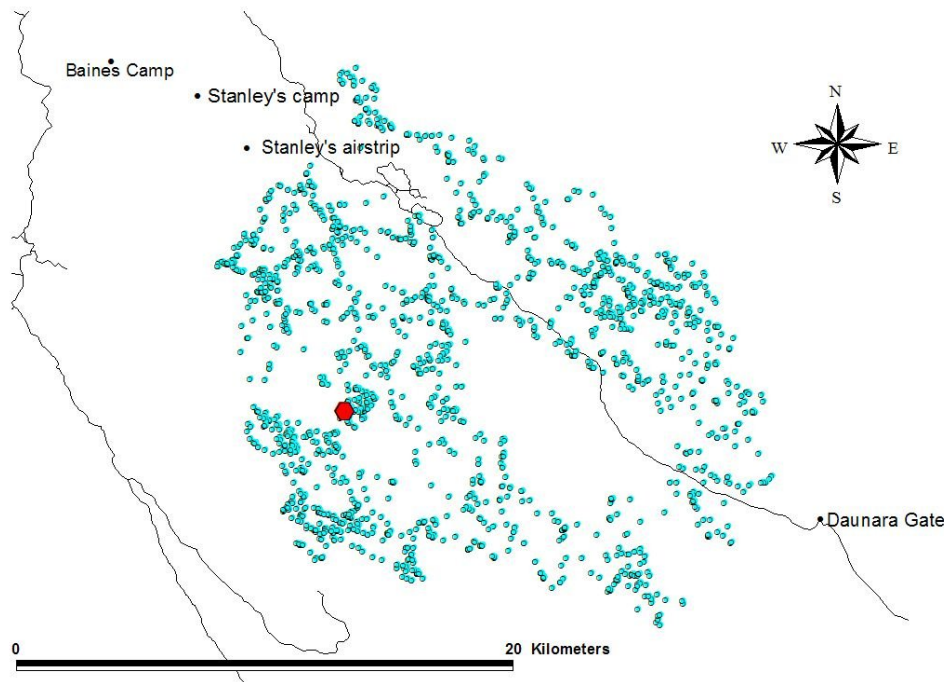


Figure 2: Movement of B78 between April – July 2009
 Each dot represents one fix; red dot represents current location

The flood waters started rising very rapidly shortly after the unusual rainfall at the beginning of June. The water has caused a bit of an issue for me in terms of fieldwork, since most of the areas used by the buffalo herds have become inaccessible to me. Having only two animals with satellite collars to sample habitat data from has also caused problems, since one of them has spent a lot of time in areas that are completely surrounded by water. Since the sudden rise of the floodwater, I have had to abandon certain areas that are now completely flooded and impossible to drive through. These factors have combined to mean that I have not been able to collect as much data from habitats as I would like, although the season is not over yet. I still hope to meet my minimum target before the end of the month.

I have been looking at some of the data collected by the satellite collars over the last year, in particular at the activity patterns at different times of day. In all seasons, there seem to be several peaks of grazing and resting, although these are more pronounced during the early flood season and less pronounced during the late flood season (see figures 3 – 5).

I have used the temperatures recorded by the collars to calculate average temperatures at each hour of the day during each season (see figure 6). The wet season showed the least variation in temperature throughout the day, which is to be expected with rainfall and cloud cover. The general trend in temperatures was similar across the seasons, which was expected. The highest temperatures are between 12:00 and 17:00, which I thought would correspond with buffalo herds seeking shade and resting. Although there is an increase in the proportion of time spent resting around midday, the greatest resting peak across the seasons occurs around 06:00. Temperature therefore does not appear to play a major role in the activity patterns of buffalo herds.

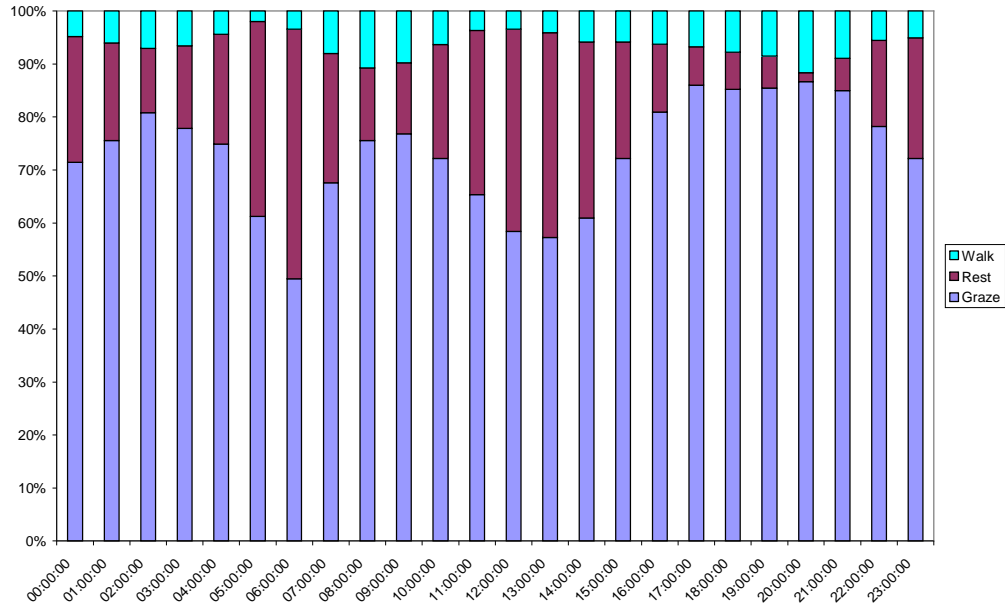


Figure 3: Activity patterns of buffalo during wet season (2007-08)

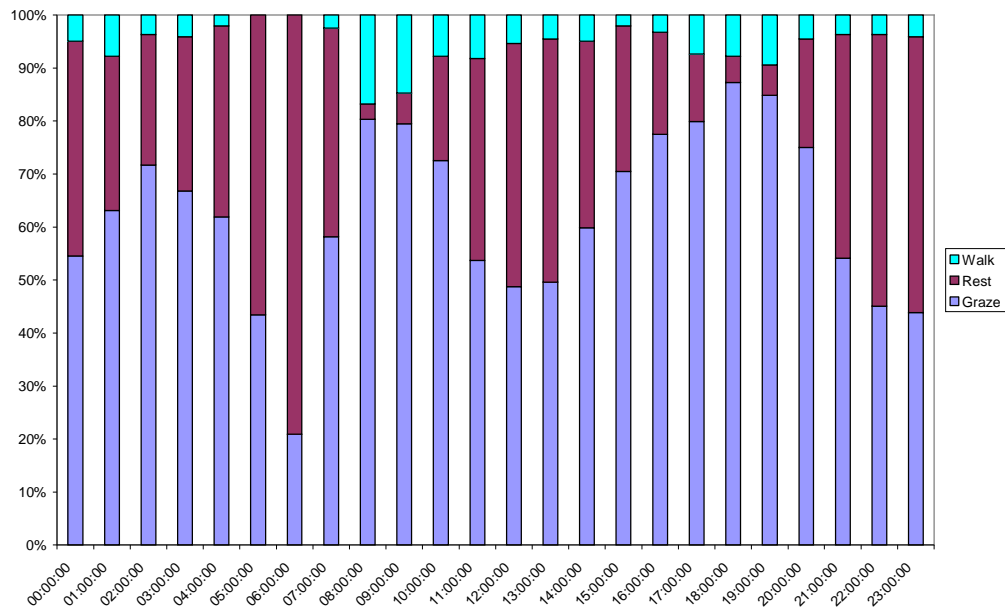


Figure 4: Activity patterns of buffalo during early flood season (2008)

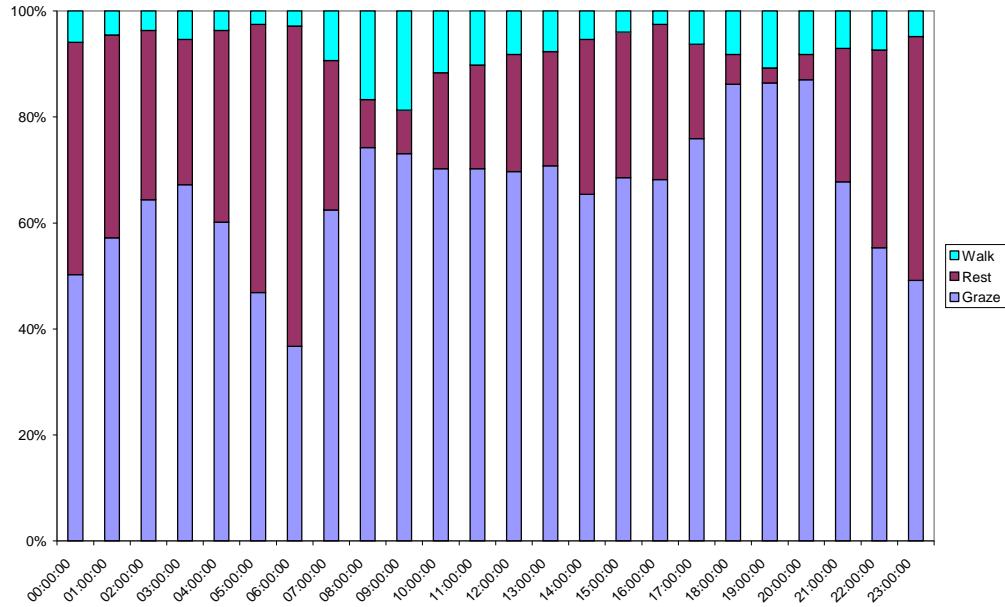


Figure 5: Activity patterns of buffalo during late flood season (2008)

I have used the temperatures recorded by the collars to calculate average temperatures at each hour of the day during each season (see figure 6). The wet season showed the least variation in temperature throughout the day, which is to be expected with rainfall and cloud cover. The general trend in temperatures was similar across the seasons, which was expected. The highest temperatures are between 12:00 and 17:00, which I thought would correspond with buffalo herds seeking shade and resting. Although there is an increase in the proportion of time spent resting around midday, the greatest resting peak across the seasons occurs around 06:00. Temperature therefore does not appear to play a major role in the activity patterns of buffalo herds.

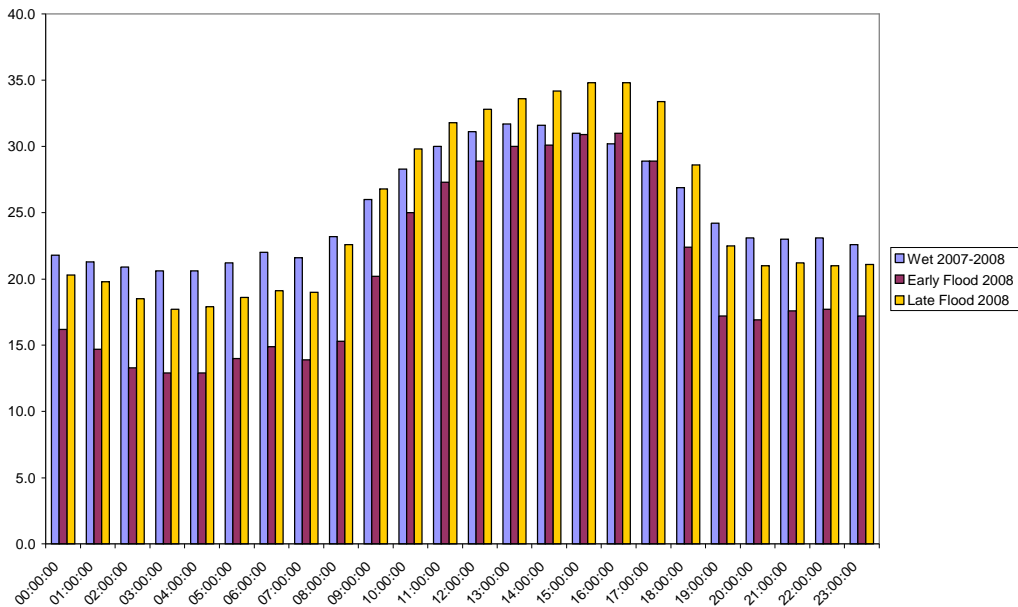


Figure 6: Hourly temperatures across seasons

The temperature recorded by the collars will to some extent be dependent on the habitat selected by the buffalo wearing the collar. At the hottest point of the day, the buffalo may be in the shade, so the temperature recorded by the collar may be lower than it would be if the buffalo were in the sun. However, given that the herds have been grazing more than resting at almost every time of day, this is unlikely to have a major effect on the average temperature across a four month season.

I have been closely monitoring the movements of two of the buffalo that were collared in June 2009. They were collared in separate herds, well within my study area, but have since joined up and walked almost continuously, average 4 – 5 km per day. They are currently 51 km from where they were collared, very close to Chief's Camp. They walked up the north-eastern edge of Chief's Island, and are now reaching Mombo Island (see Figure 7). This is not behaviour that I have seen outside of the migration at the beginning of the wet season, although this movement is slower than the migration. I am waiting for these animals to reach their destination before deciding what to do with them. It is extremely interesting behaviour, but I have not had any herds in that area up until now, so the sample size would be too low for adequate comparisons. If they remain in Mombo for the next few months, I may have to dart these animals again and re-deploy the collars on herds that (hopefully) will stay within my study area.



Figure 7: Movement of collared animals from collaring (south eastern point) to current location (north western point)