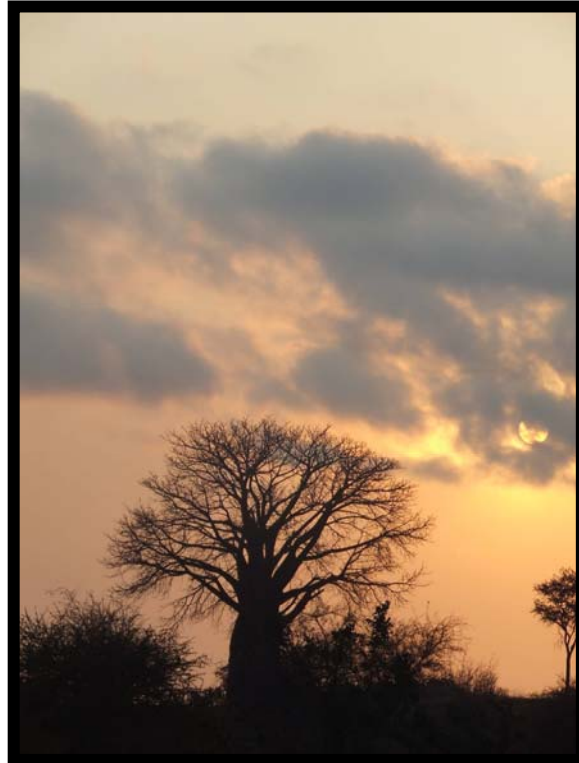


**Transboundary elephant movements within the northern Kruger
National Park: a contribution towards the Great Limpopo
Transfrontier Park design**

**Report
February 2009**



Drs. Steve and Michelle Henley
STE Transboundary Elephant Research Programme



in collaboration with:



Period: 20 February – 1 March 2009

Researchers: Michelle Henley and Sieglinde Rode

Activities:

- GPS mapping of roads in the area to construct a map
- Looking for elephants for identification purposes
- Entering of available guide's elephant sighting information into an electronic database (1172 sightings in total from August 2007 until the 25 February 2009)
- Preliminary analysis of data (database handed over to Walter Jubber including spreadsheet with statistics based on analyses)
- Graphic display of preliminary results based on guide's sighting database and Walter Jubber's resightings ID database
- Presentation of results and preliminary findings to the JMB of the Kruger National Park at Punda Maria on the 26th of February 2009.
- Handing over of STE Transboundary Elephant Research Programme presentation and contact with SANParks to Walter Jubber for reference.
- Guest presentations on three occasions
 - 11 people attended the presentations in total
 - First presentation was attended by many of the Wilderness guides
 - No guests arrived for the 3rd presentation. We suggest that the presentations are advertised in advance or the date and time of the presentations are written up on a black chalk board two days prior to the presentation. The chalk board notification can then be displayed in a prominent place close to the bar so that guests can plan to attend the talk in advance.

Results:

Both bulls and breeding herd numbers fluctuated according to season (Fig. 1 &2). Monthly estimates of the totals of bulls and individuals within breeding herds represent an overestimate as many of the animals counted during morning drives, could have been recounted by the guides during afternoon drives. We suggest that a distinction is made between morning and afternoon drives in the sightings book.

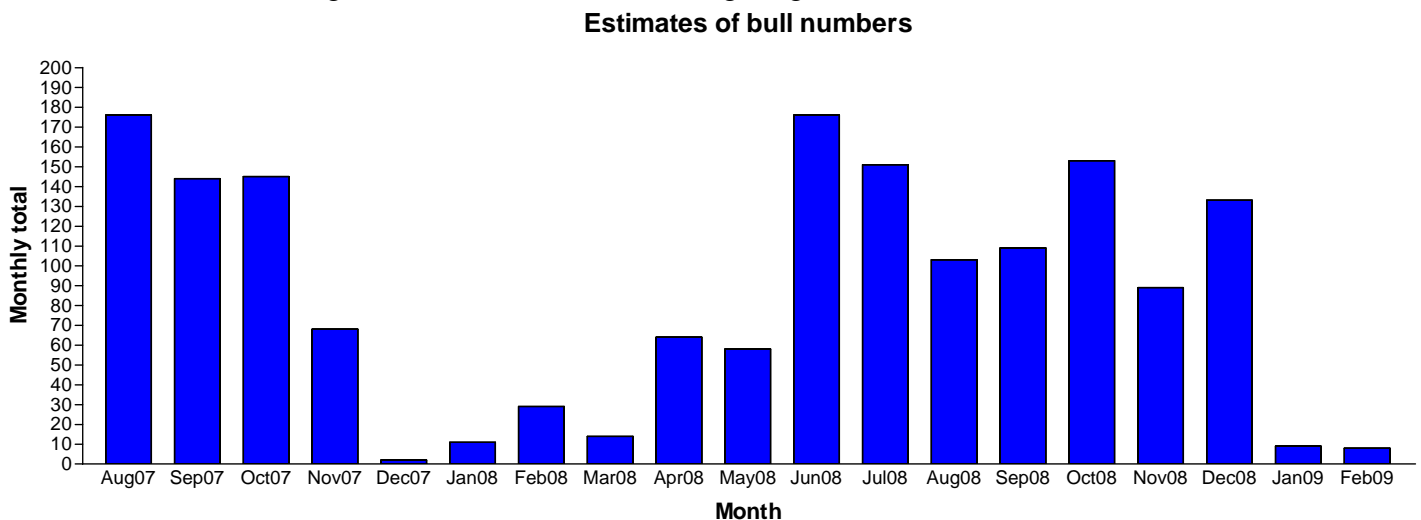


Figure 1. Monthly estimates of bull numbers based on guide sightings from August 2007 until February 2009.

Estimates of cow numbers

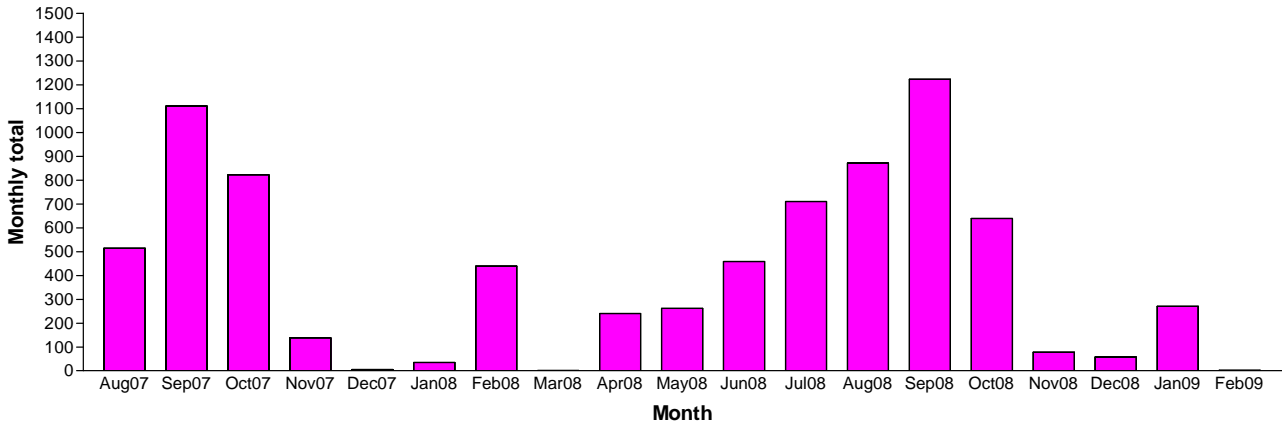


Figure 2. Monthly estimates of the number of individuals within breeding herds based on guide sightings from August 2007 until February 2009.

The mean group size of bulls increased when moving from the wet to the dry season (Fig. 3). No clear pattern could be distinguished for breeding herds which would be expected as the composition of breeding herds is more stable than those of bachelor herds. Although it would appear as if an exceptional number of herd individuals were estimated in January of 2009, these results are similar to estimates in January 2008 when incorporating the variation around the Standard Errors of the Mean (refer to the SEM in Fig.4).

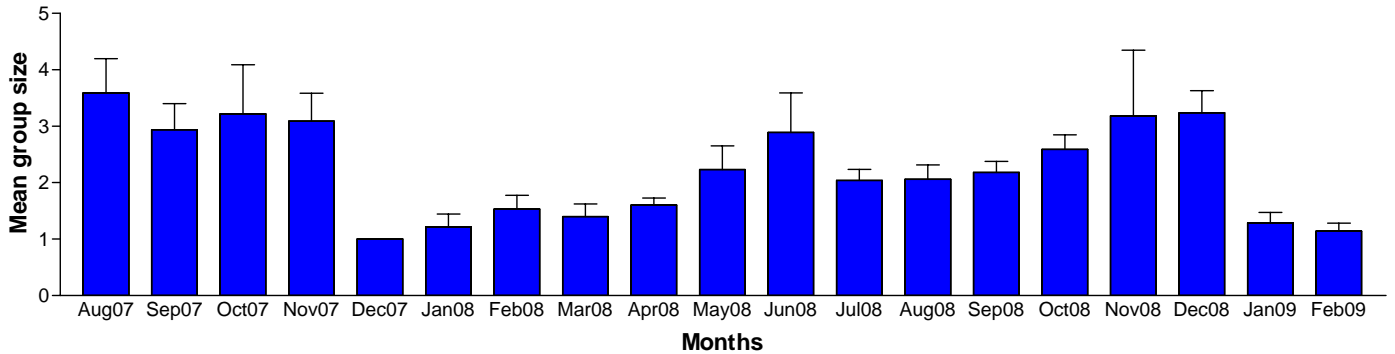


Figure 3. The average group size (\pm SEM) of bachelor herds from August 2007 until February 2009.

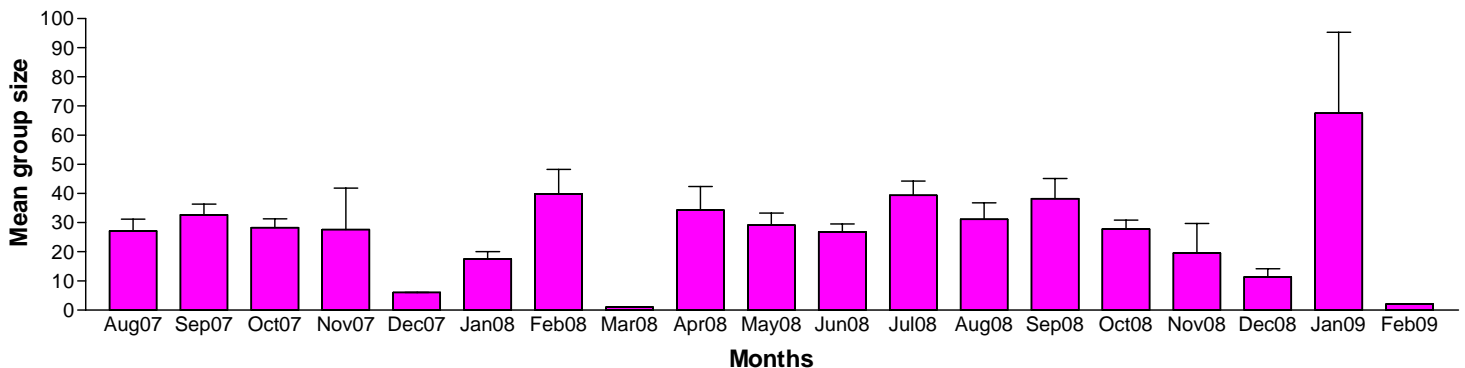


Figure 4. The average group size (\pm SEM) of breeding herds from August 2007 until February 2009.

Seasonal trends in numbers are clearly depicted when considering the number of sightings on a monthly basis for each of the sexes as well as the frequency of days within a month during which no elephants were sighted (Fig. 5 and Fig.6). Although a greater number of bull sightings were recorded on a monthly basis, fewer individuals were estimated per bull sighting when compared to breeding herds (Fig. 6).

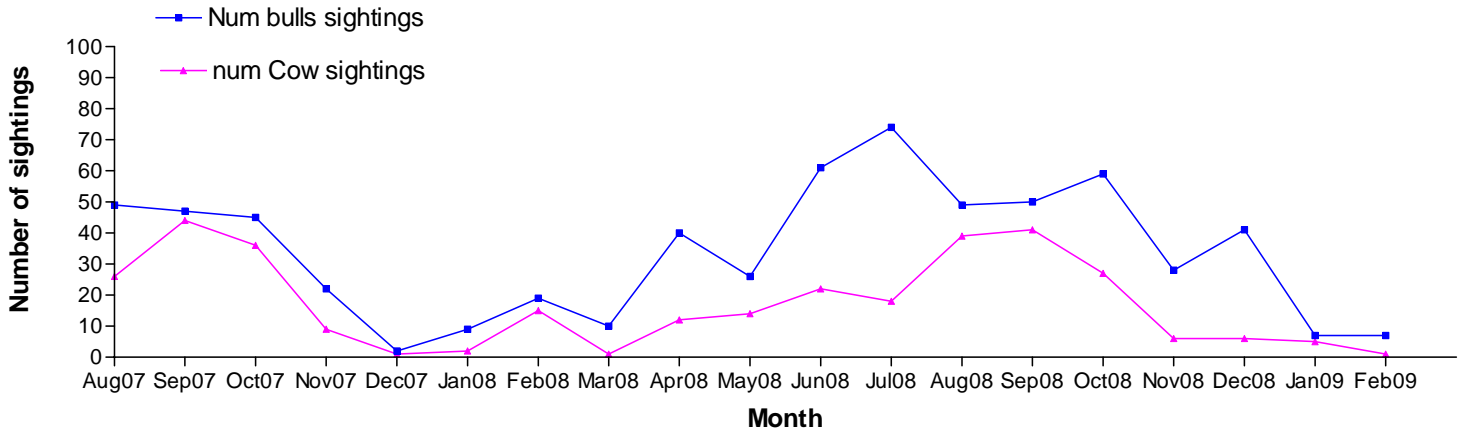


Figure 5. Number of sightings of either bachelor or breeding herds on a monthly basis from August 2007 until February 2009.

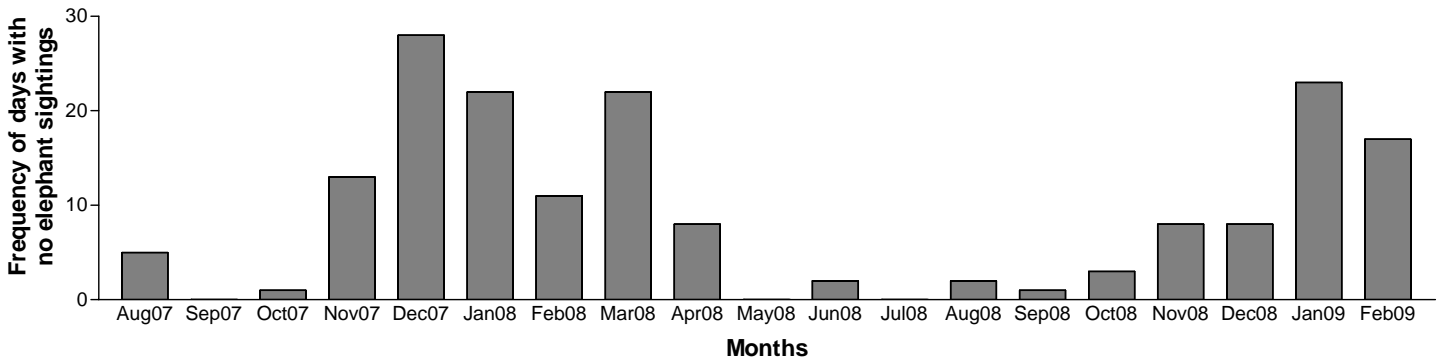


Figure 6. Number of days within a month when no elephant sightings were recorded.

The proportion of bulls sighted in musth on a monthly basis has not delivered any distinctive seasonal pattern but recording sightings of musth bulls in the sightings book, will assist with elucidating any particular trends in future (Fig. 7).

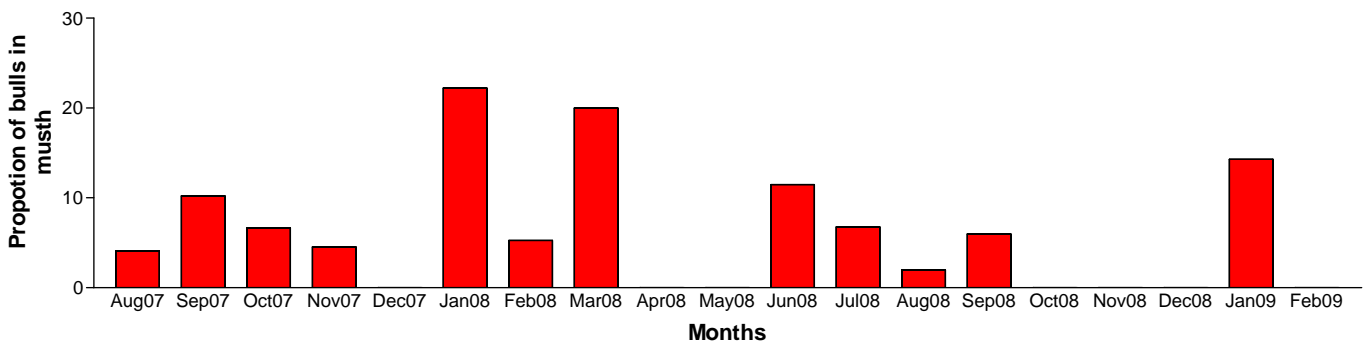


Figure 7. The percentage of bulls found in musth on a monthly basis.

Walter and Callum are making good progress on resighting known individuals and collecting IDs of new individuals over time (Fig. 8). The resighting and new sighting rate could be improved if more guides with cameras are encouraged to part take in the study. Currently IDs are being collected at 9% of all the elephant sightings that are being made.

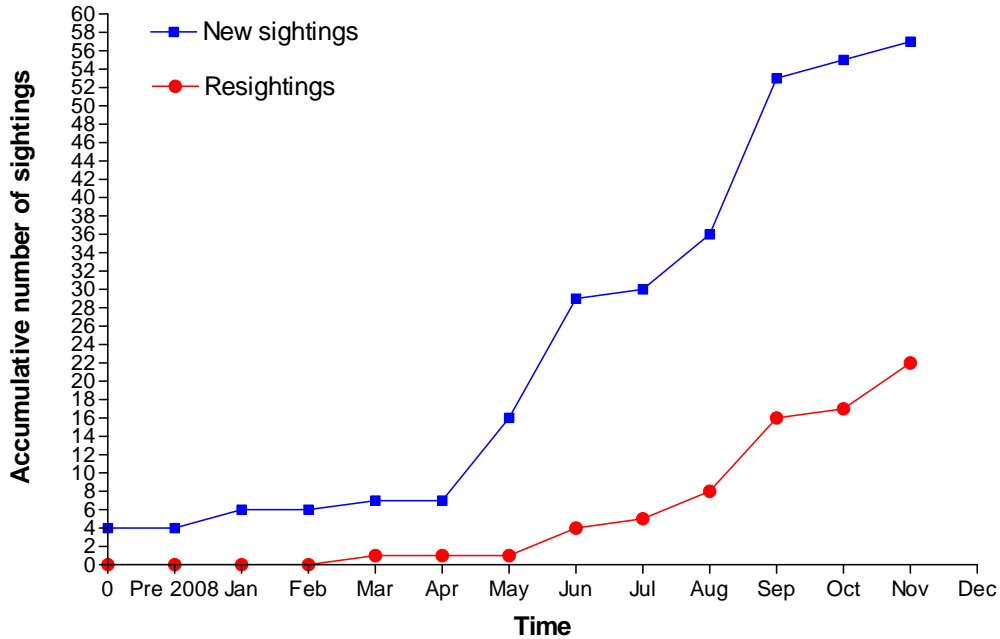


Figure 8. The accumulative resighting and new sighting rate based on the ID study.

The ID study has revealed that the population structure of bulls may be skewed towards the younger age classes (Fig. 9). These preliminary results may be of concern as they indicate that past and present practices (such as trophy hunting of older bulls and poaching of large tusked individuals) may be responsible for the present trends.

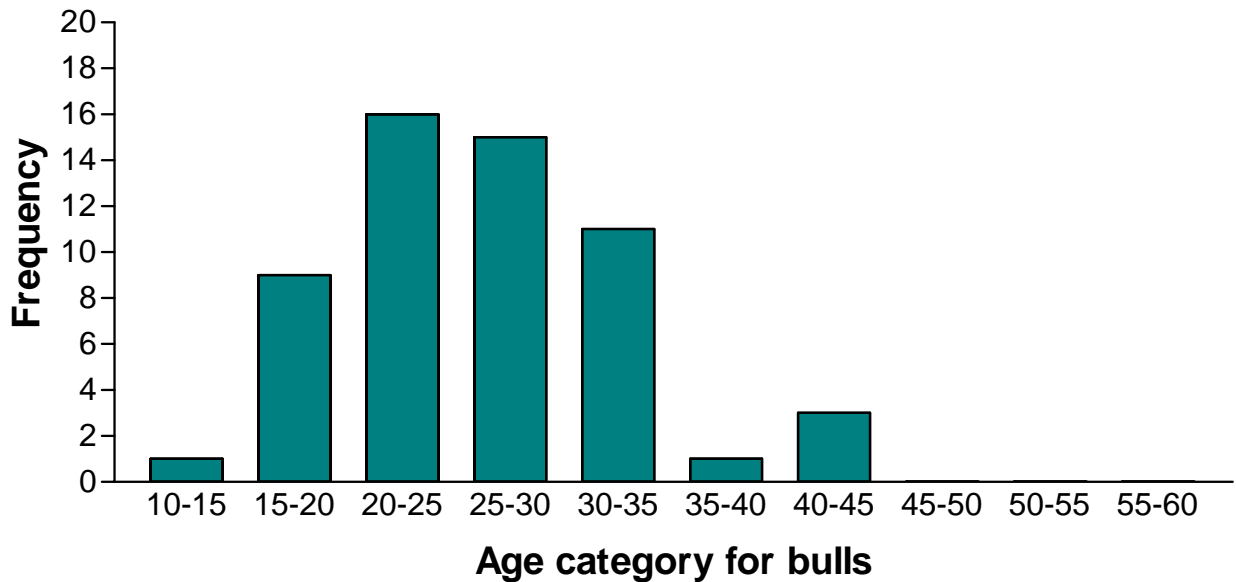


Figure 9. Age structure of bulls based on age estimated collected during the ID study. Please note that all animals in the 40-45 year age class were sighted in 2005 and 2007 (prior to the ID study) and have not been sighted since then.

Mapimbi is slowly moving north towards Pafuri and it will be important to collect as many IDs from individuals that he is associating with as possible (Fig. 10). We hope that he will return to Pafuri with the family unit that he was associating with when he was collared. Monthly updates will be sent on his movements until a Google Earth link can be supplied to Wilderness Safaris.

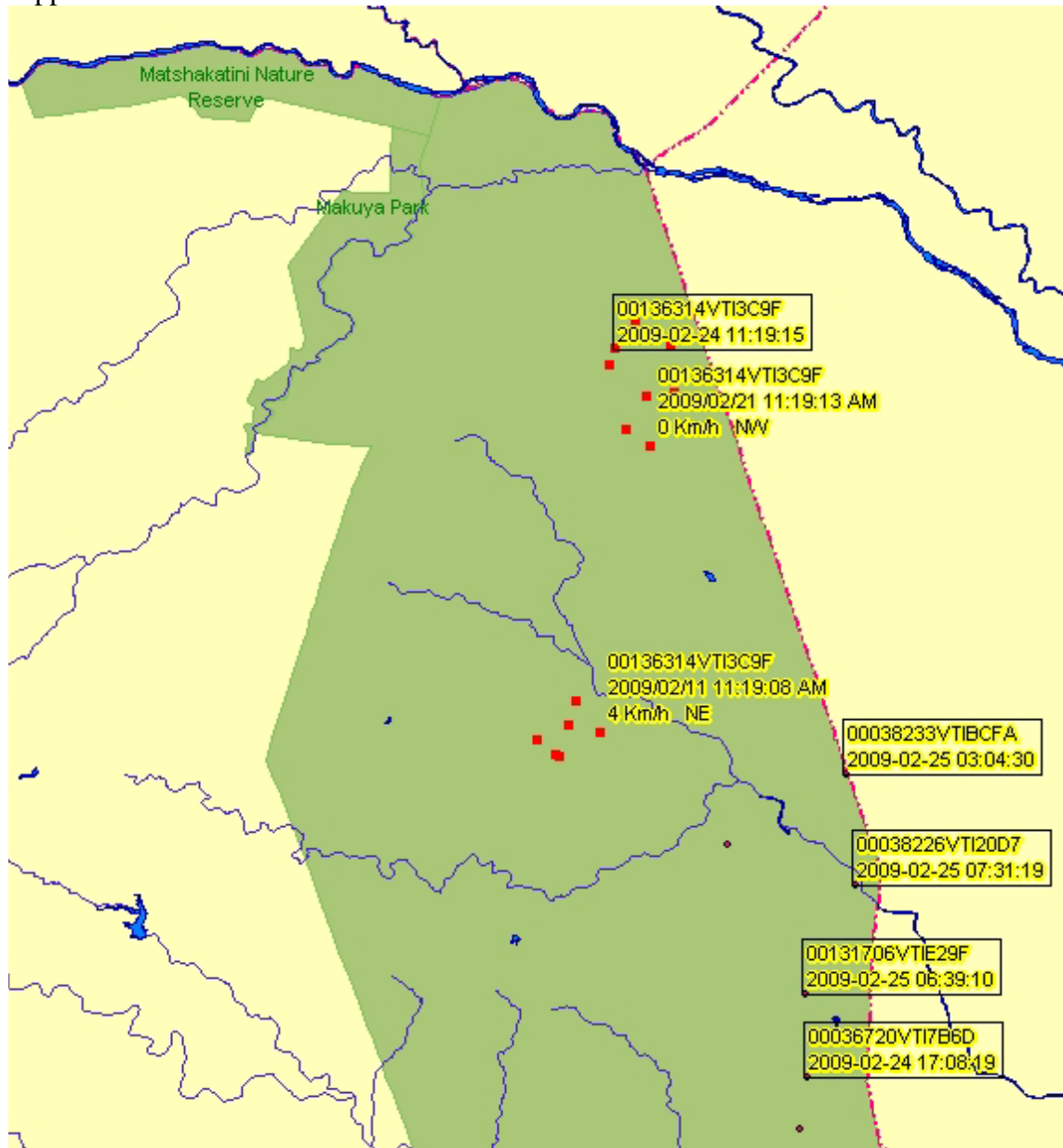


Figure 12. Mapimbi's latest movements in the north are indicated in red. The latest co-ordinate was recorded on the 24th of February 2009. Prior to this he was found further south on the 11th of February 2009.

Acknowledgement:

We appreciate the support of the Kruger National Park and for collaring Mapimbi. We would like to thank Wilderness Safaris for not only all their logistical support but also for their hospitality and dedication towards conservation. Walter and Callum, we are very grateful for the high quality of data that you are presently collecting.