



Transboundary Elephant Research Programme

December 2009

by

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With this newsletter we would like to wish you a wonderful festive season with your family and friends. We hope that 2010 will bring you joy and contentment.

Rivers of Mercy

When I close my eyes I can imagine being at the sea, as the sound of rushing water fills the moisture-laden air. However, I am on the banks of the Nhlralumi River at Tanda Tula Safari Camp where rivers of mercy are gushing through the heart of the arid Bushveld. The early summer rains have blessed the thirsty earth with abundance. Here in our corner of Africa another year draws to an end. It is time to reflect on the past years of elephant research that we have conducted and to look towards the future.

We have had the privilege of spending time in the shadow of giants and have spent time piecing together their social lives based on our identification study which started more than a decade ago. Since 1998, Save the Elephants - South Africa (STE-SA) has conducted 64 elephant collaring operations (which includes the recollaring of selected study animals) in order to track elephant movements over the 35 000 km² that make up the Great Limpopo Transfrontier Conservation Park. We have been surprised and humbled by the extent of their range, with bulls having home ranges of between 500 and 6000 km² with an average of 2419 and 3839 km² for older and younger bulls respectively. Cows, anchored by their fierce concern for their young which have a limited ability to roam over large areas, move over smaller ranges of between 300 and 1500 km² with an average home range size of 1255 km². We have seen that older bulls are capable of respecting geological divides more so than fences, with the western bulls occupying the granites and the eastern bulls rarely leaving the vegetation types that define the underlying basaltic soils. We have watched individual musth bulls in their breeding prime abandon their sedentary habits within their bull areas to wander widely and amorously in search of females. Over the years we have witnessed elephants gently and

mournfully caress the bones of deceased next of kin and have seen the tottering movements of new born calves.

Studying a long-lived species has made us realise that there is still so much that we need to discover despite our many findings since 1996. Our understanding of elephants over the past couple of years may not be applicable in the future when global climate change and escalating poaching may paint a very different future for elephants. One of the effects that global climate change can bring about is a predicted loss of area covered by current biomes in South Africa by up to 50% in 50 years¹. Alarming evidence points to a poaching holocaust worse than the peak in 1980. Based on confiscated ivory records as many as 38,000 elephants are presently estimated to be poached each year, which indicates that elephants could disappear in as little as 15 years from most of sub-Saharan Africa².



As we look toward the future we should not be lulled into a false sense of security concerning the future of our 'well protected' elephants. Ever-increasing human populations and monetary systems that are dependent on sustained growth shape human society and threaten fragile ecosystems worldwide. With economics defined as the study of the way in which people satisfy their needs,

which are unlimited, with limited (scarce) resources available to them³, there is little wonder as to why our planet needs protection, Has the time not come for us to reconsider the two concepts that are central to economics (*scarcity* and *choice*) in order for us to learn to curtail our needs and value and protect our limited resources?

I watch a procession of elephants walk past in the soft rain. Countless drops of mercy wash the arid dust of seasons past from their bodies. Slowly their large gleaming bulks are swallowed up by the mist ahead. I hope that mercy will accompany our research efforts on elephants in future. Yes, we all need mercy and wisdom to navigate the uncertainty ahead.

Thank you

The STE-SA Transboundary Elephant Research Programme receives a substantial portion of its funding from Marlene McCay and Tanda Tula Safari Camp. We are very grateful for the recent financial support that we have received from the US Fish and Wildlife's Services African Elephant Conservation Fund. Additional significant funding has been received from ConservAfrica, Intel, Toyota, The Gower Trust, The University of South Africa, the Wasteman group, the Wildlife and Environmental Society of South Africa, Wilderness Safari Trust and YSA technology. A number of elephant collars have been sponsored by individuals (Barry Mence, Brian and Claire Makare, Irving and Yvonne Tucker, Joubert de Lange, Lonnie Strickland, Martin and Sophie Haupt, Stefan Bruer and Tony McClellan). Peter Smelting has been a longstanding supporter of the project who kindly makes quarterly contributions towards the work we are doing. Numerous smaller donations have been made by private individuals since the inception of the project. Last but not least, we appreciate the support of SANParks, the landowners and managers of the Timbavati, Klaserie, Umbabat and Balule Private Nature Reserves.

¹ Wasser, S.K., Clark, B.S. & Laurie, C. 2009. The Ivory Trail. *Scientific American* 68-76.

² DEAT, September 2004. A National Climate Change Strategy for South Africa. 48pp.

³ Gouws, E. 2003. *Economic Literacy and Entrepreneurship*, Study Guide 2 for PFC103-S, University of South Africa, Pretoria.

Quote:

To be rich is to have wants simpler than our incomes can afford

David G. Myers

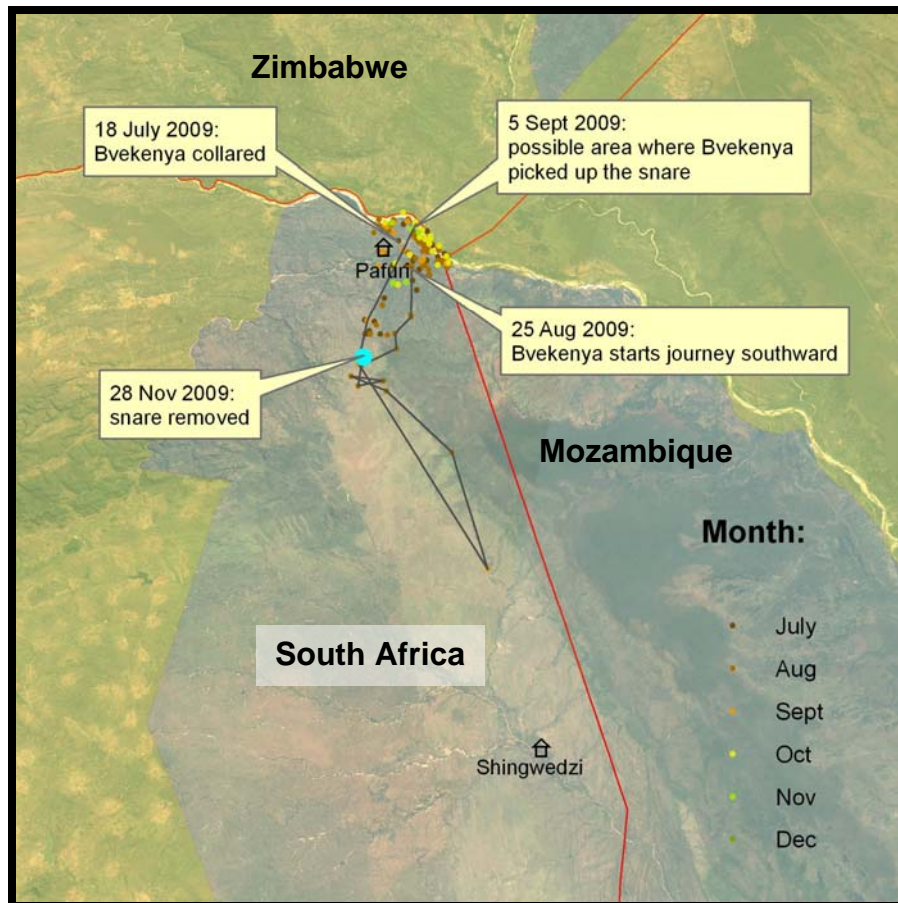
Up North with Bvekenya

by
Steve Henley

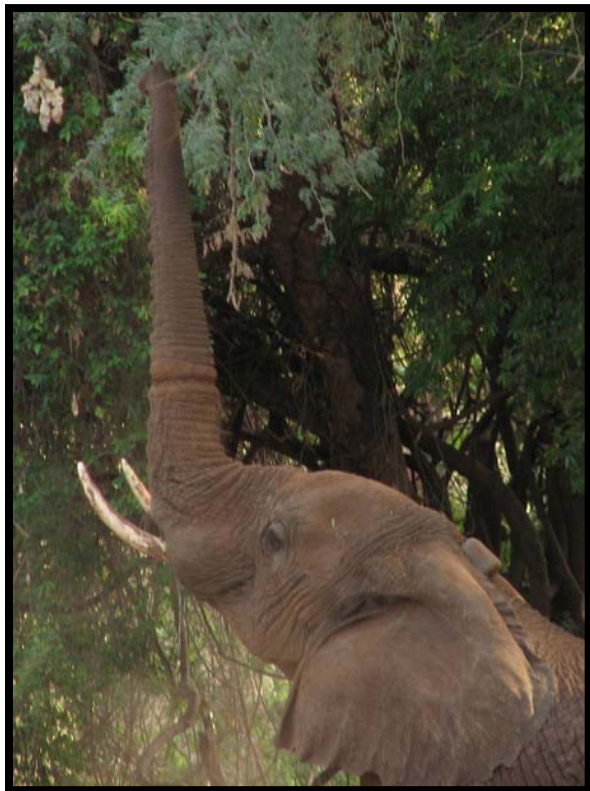
The bull KNM04 first came to our attention in July this year when he was collared as part of our research programme in the far northern Kruger National Park. The name Bvekenya originates from the local Shangane name given to Stephanus Barnard, which means 'one who swaggers when he walks'. Barnard was a notorious character who hunted elephants in this region in the early 1900's avoiding the authorities by moving between South Africa, Zimbabwe and Mozambique in the area of Crook's Corner.

Initially we had no reason to assume that our relationship with Bvekenya, the elephant, was going to be any different to that of the eleven other elephants being tracked in the Pafuri area. However, a month after being fitted, his collar changed its data recording interval and, instead of recording its location three times a day, started to do so only once a day. Around the same time he left the Pafuri area and headed southward. A couple of weeks later the collar readings became erratic, going for days without revealing its position. Around the same time the collar changed its schedule, Bvekenya left the Pafuri area and moved southward. The excursion was relatively short-lived however, and in less than ten days he was back. His return journey took him straight to the Limpopo River where we recorded his position on 5th September. Two days later Walter Jubber, the Wilderness Safari Head

Ranger assisting the research programme, reported that the elephant had been seen with a snare around his trunk.



We are not sure what inspired Bvekenya's trip to the south before the rains, or why it was of such short duration, but we surmise that on his return to the Limpopo River he picked up the snare. The snare was buried into the tissue quite high up on his trunk, which meant that if he lost the use of the portion of his trunk below the wound his chances of surviving would be severely compromised. To lose the tip of the trunk is an inconvenience for an elephant, to lose more than half is really life threatening. Sandra Basson,



the SANParks Section Ranger based at Pafuri, made arrangements for a veterinarian to be on stand by to treat the wound, but without radio tracking equipment it was almost impossible to find the bull in the thick riverine woodlands of the far northern Kruger National Park. We arrived at the area on 10th September with a receiver and soon tracked Bvekenya to Crooks Corner. Unfortunately he moved into Mozambique, and although we were able to track him within Limpopo NP with the assistance of SANParks and the Mozambican Field Rangers, we could not immobilise him in this area. We were, however able to ascertain that the snare had not compromised the use of his trunk and that the wound was not septic. We resolved to wait a couple of weeks, until we returned to the Pafuri area with a SANParks veterinarian and a helicopter to fit collars on another five elephants.

On 10th October we collared the last five elephants for our research project in the northern Kruger National Park. ConservAfrica sponsored the flying costs when we set out in the helicopter to find Bvekenya. Unfortunately his collar was still behaving erratically, and the strongest signal was coming from north of the Limpopo River, in Zimbabwe, and we had to abandon the operation. Four days later he returned, and we were able to track him and get a resighting. We were comfortable that the wound had not worsened, but it had not improved either. Although he still had full use of his trunk Bvekenya was clearly irritated by the wound and was constantly dusting it.

The next opportunity to treat the wound came in November, when Markus Hofmeyr, a senior SANParks veterinarian was in the northern Kruger National Park. Bvekenya was resighted a few days prior to Markus' arrival and it was noted that he had now twisted his collar so that satellite unit was inverted on the back of his neck. This served as an added motivation to immobilise the bull, not that one was needed. With the assistance of Walter Jubber we kept



Dr. Markus Hofmeyr clipping the snare

track of him for the next few days, but at this time Bvekenya was not moving much. He remained in the vicinity of the Nkovakulu water hole, not far from the main road between Punda Maria and Pafuri. Early in the morning of 28th November a small team consisting Markus Hofmeyr, Walter Jubber, Willem Schaener and myself tracked Bvekenya on foot to a location not far from the road. Markus darted the bull and we waited a short while for the drugs to take effect. We followed him to the point where he lay and were able to cut off the snare, treat the wound and correct his collar. The whole operation went very smoothly and when Markus gave the immobilised elephant the reversal, he got to his feet without hesitation and calmly walked off. We continued to keep an eye on Bvekenya for the next five days and are pleased to report that the wound is looking clean and the collar is sitting well.

It would seem that something of the character of Bvekenya the hunter is reflected in Bvekenya the elephant. They share an inclination toward risk taking. Both have a history of moving between South Africa, Mozambique and Zimbabwe when under pressure, and both were lucky enough to get away with it.

Thank you

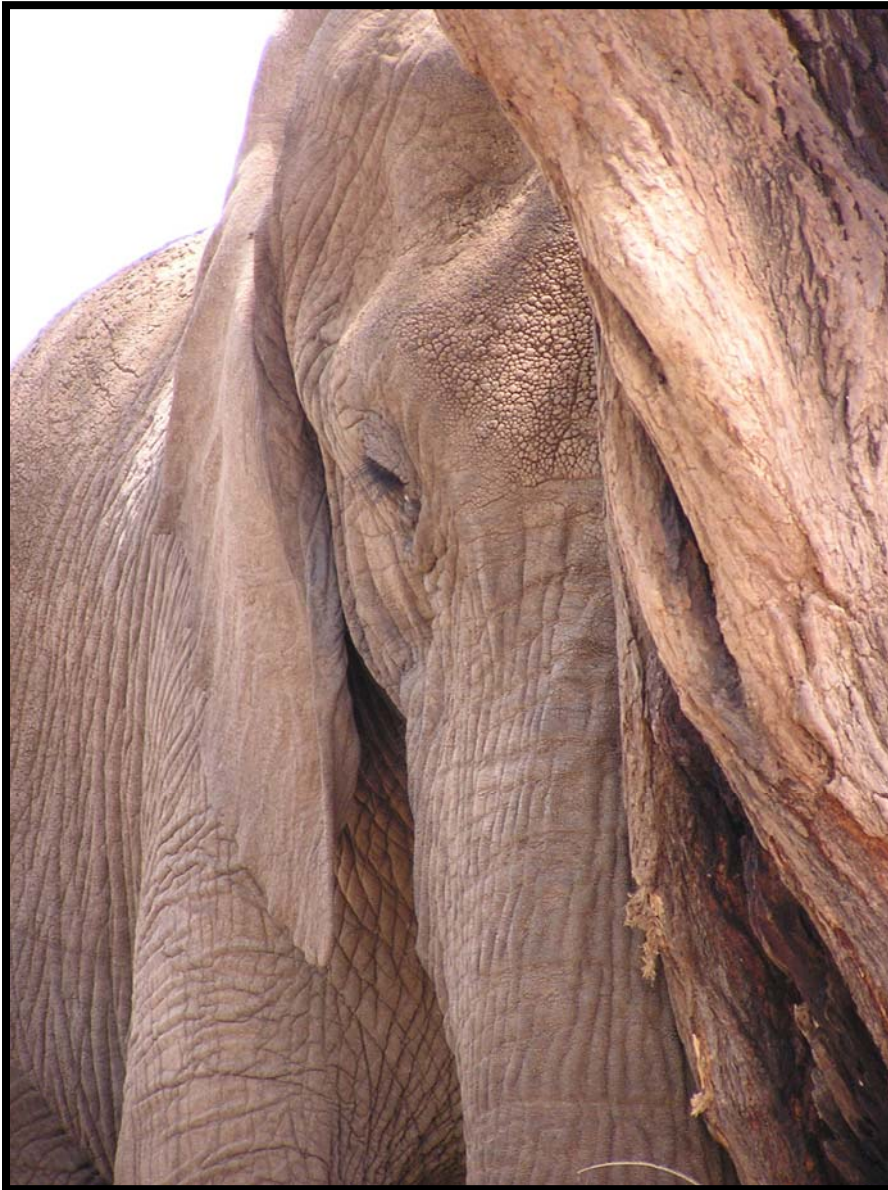
We are very grateful to the African Elephant Conservation Fund of the United States Fish and Wildlife Services for financially supporting this project for the next two years. We would like to take this opportunity to express our gratitude to SANParks, Sandra Basson, her Field Rangers and the Kruger NP Veterinarian Services for their support and commitment; Wilderness Safari Camp and Walter Jubber for the effort they have made and continue to make in the research programme. ConservAfrica and the Wilderness Safaris Wildlife Trust have sponsored collars and collaring costs as well as accommodation respectively. The Wildlife and Environmental Society of South Africa have also kindly covered the cost of one of the collars that were deployed. Tanda Tula Safari Camp is thanked for their support of the Research Headquarters within the Timbavati Private Nature Reserve.

FACT-FILE: Tusks and Ivory *

- Preceding the permanent **tusks** is a pair of milk tusks which measure less than 5cm in length and which have a solid, tapering root and a small cap tipped with enamel.
- The *Tso Chwan* of 548 BC remarked that elephants have **tusks** which lead to the destruction of their bodies because the **tusks** are used as gifts.
- Ancient Egyptians used **ivory**, presumably before 6000 BC
- **Ivory** as a substance is brittle, fairly weak and only moderately elastic.
- Elephant **ivory** has a characteristic structure in which it differs from all other ivory. In a cross section it is built up of layers of fine concentric rings superimposed upon which may be alternating light and dark bands. An unmistakable 'mathematical daisy' pattern is caused by crossing elliptical or decussating lines.
- It has been estimated that at least a million elephants were killed between 1830 and 1930 in Central, East and West Africa for their **ivory**.
- The estimate around 1880 was 60 000-70 000 a year; for 1894 it was 65 000 and from 1895 to 1900 at least 40 000 elephant were killed annually for their **ivory**.
- Between 1979 and 1989, 691 000 elephants died in Africa due to **ivory** poaching.

*Spinage, C. 1994. *Elephants*. T& A D Poyser Natural History, London.

Sentience and senescence in an elephant herd



We struggle as humans to understand our own actions. How can we begin to understand and provide possible interpretations for the actions of other species? Yet elephants have recently been acknowledged as ‘sentient’ beings in the National Norms and Standards for the Management of Elephants in South Africa according to which ‘....interventions to manage an elephant should seek to minimise any resultant pain or trauma to the elephant’¹.

‘Sentience’ refers to an ability to feel or be aware of feelings². But how has science assisted us to arrive as such an abstract conclusion? To name but a few of the latest findings: Not only are elephants capable of engaging in effective tool-use³ but they have also passed the

mirror self-recognition test as have apes and dolphins⁴. Elephants’ brains have a relatively large hippocampus compared to primates which may explain their long social and chemical memories⁵. Consequently they can keep track spatially of where other individuals are relative to themselves⁶ and it has even been shown that elephants can classify subgroups of humans that pose different degrees of danger⁷. Humans still represent the biggest threat to elephants and their stress hormone responses to particular human activities (hunting, immobilisation, translocation or tourism) have successfully been quantified^{8,9}. Elephants are known to exhibit concern for deceased individuals or to offer assistance to conspecifics in distress¹⁰. Research has shown us that elephants show higher levels of interest in elephant skulls and ivory than in other natural objects¹¹. We now know that the oldest individuals in a group have enhanced social discrimination and consequently function as important repositories of social knowledge¹². Gradually it has become permissible to talk about elephant cognition¹³ or the empathy of elephants¹⁴, and with this in mind we would like to

introduce you to an elephant and her family which typifies these traits which have recently been bestowed upon elephants.

We have known the Grass herd for a number of years and have always been struck by their level of habituation. All the individual females within this family unit have been given the genus names of Southern African grass species. Some individuals in the herd are more familiar to us than others. *Eragrostis* (Love grass) was one such individual. She was an old cow who had stopped lactating and had the habit of bringing up the rear of the herd. With time we realised that *Eragrostis* was blind. Despite her handicap which slowed her down considerably, her daughter *Themeda* (Red grass) made sure that she was never far from her and usually only an audible rumble away. The old great-grandmother of the herd seemed to have lost her fear of man. She habitually used the roads as walkways, presumably because they represented easier walking as opposed to stumbling through the bush. Consequently she frequently encountered humans traversing the roads and must have gradually realised that they mean her no harm. As *Eragrostis* seemed particularly habituated, we had the privilege of watching and experiencing the level of patience with which her daughter would wait for her. On wind-still days, *Eragrostis* would stand still and spread her ears slightly after emitting a contact rumble which she knew that one of her closest of kin would answer. The appropriate response would help her move in the right direction. On more challenging days, *Themeda* made sure that she was never too far from her mother to prevent her from rushing back to her and offering her a comforting greeting or a gentle touch of the trunk which was usually sufficient for *Eragrostis* to orientate herself again.

Sadly, we no longer see *Eragrostis* and we presume that she has died. Given what research has revealed in terms of elephants' consciousness and intelligence, we can well imagine that *Themeda* will remember where in the sea of bush her mother's bleaching bones are slowly decaying. We have, on occasion, seen the ghostly silence and seriousness that befalls an elephant when they find the bones of another although we have not known the degree of relatedness amongst them. If you were fortunate enough to witness the care with which *Themeda* used to assist her mother, you would also not find it hard to imagine how she would probably tenderly fondle her mother's bones when she came upon them. Is *Themeda* paying respect toward the social repository that her mother's skull represents or is she merely remembering her?.....We may never know but as researchers strive to understand the consciousness of certain species experimentally, we may well one day look back with humility.

Suggested reading

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- ³Hart, B.L., Hart, L.A., McCoy, M., and Sarath, C.R. 2001. Cognitive behaviour in Asian elephants use and modification of branches for fly switching. *Animal Behaviour* **62**: 839–847.
- ⁴Plotnik, J.M., deWaal, F.B.M. and Reiss, D. 2006. 'Self-recognition in an Asian elephant', *Proceedings of the National Academy of Sciences* **103**: 17053–7.

- ⁵Hakeem, A. Y., Hof, P. R., Sherwood, C. C., Switzer, R.C., Rasmussen, L. E. L. and Allman, J. A. 2005. Brain of the African elephant (*Loxodonta africana*): neuroanatomy from magnetic resonance images. *The Anatomical Record* **287A**:1117–1127.
- ⁶Bates, L.A., Sayialel, K., Njiraini, N., Poole, J.H. Moss, C.J., and Byrne, R.W. 2007. Elephants have expectations about the locations of out of- sight family members. *Biological Letters* **4**: 34–36.
- ⁷Bates, L.A., Sayialel, K.N., Njiraini, N.W., Poole, J.H., Moss, C.J., and Byrne, R.W. 2007. Elephants classify human ethnic groups by odour and garment colour. *Current Biology*. **17**: 1938–1942.
- ⁸Burke, T. 2005. The effect of human disturbance on elephant behaviour, movement dynamics and stress in a small reserve: Pilansberg National Park. MSc thesis, University of KwaZulu Natal, Durban.
- ⁹Viljoen, J.J., Ganswindt, A., du Toit, J.T. and Langbauer, W.R. 2008. Translocation stress and faecal glucocorticoid metabolite levels in free-ranging African savanna elephants. *South African Journal of Wildlife Research* **38 (2)**: 146-152.
- ¹⁰Douglas-Hamilton, I., Bhalla, S., Wittemyer, G. and Vollrath, F. 2006. 'Behavioural reactions of elephants towards a dying and deceased matriarch', *Applied Animal Behaviour Science*, **100 (1–2)**: 87–102.
- ¹¹McComb, K., Baker, L., and Moss, C. 2006. African elephants show high levels of interest in the skulls and ivory of their own species. *Biological Letters* **2**: 26–28.
- ¹²McComb, K., Moss, C., Durant, S.M., Baker, L., and Sayialel, S. 2001. Matriarchs as repositories of social knowledge in African elephants. *Science* **292**: 491–494.
- ¹³Bates, L.A., Poole, J.H., and Byrne, R.W. 2008. Elephant cognition. *Current Biology* **18**: R544-R546.
- ¹⁴Bates, L.A., Lee, P.C., Njiraini, N., Poole, J.H., Sayialel, K., Sayialel, S., Moss C.J. and Byrne, R.W. 2008. Do elephants show empathy? *Journal of Consciousness Studies*, **15**: 204–25.

WHO'S-WHO.....?

This regular feature will serve as an introduction to individual elephants with which we have become familiar in the APNR. Here we feature a bull named Austere who has a very inquisitive nature....



Austere was first sighted shortly after Christmas in 2006 close to Ingwelala airstrip. He was then sighted again in April of 2006 Subsequently Austere has been sighted in February 2008 and recently in November 2009. With each sighting his tusks seem to get visibly thicker and longer. This bull is not afraid of people and appears to be quite fascinated by his onlookers as he edges closer in an inquisitive manner. We have not sighted Austere in musth before and we would welcome any sightings that you may have of this bull.

SPECIAL REQUESTS

We will be unable to meet the objectives of this study without your input and support. We therefore have the following requests and appeals to make...

ELEPHANT IDENTIFICATION KIT:

If you are keen to assist in collecting elephant ear patterns or if you have taken any elephant photos and would like to make these available, we would be most appreciative. Please contact us at (015) 7930369 or email us at michelephant@woldonline.co.za

NEWSLETTER:

If you would like to contribute to the newsletter in any way please contact us, especially if you have come to know specific elephants over the years and have some interesting stories to tell. Your stories will appear in the section entitled 'Your Thoughts'.

RAINFALL DATA:

We want to investigate patterns in rainfall variability within the APNR and are looking for reliable records from as many different locations as possible. In particular we are looking for daily rainfall data. Our thanks to all those who have supplied us with rainfall data. Please let us know if anybody else is able to make such data available.

VEGETATION MONITORING AND TRAINING

We have noticed that many landowners have started wire-netting trees. Please could you notify us if you have done so as data will need to be collected in these areas. As the numbers of trees that need to be monitored are growing, we would need to train and employ a local person to become involved in the vegetation work for the entire APNR. If you think that you would be prepared to sponsor such a person financially, please contact us.

DONATIONS AND CONTRIBUTIONS:

We are very grateful to all the landowners and interested parties that have submitted photographs and made financial contributions towards the project. A comprehensive list of all contributors will be periodically updated on our website. Please visit www.savetheelephants.org, navigate to 'Regions' then go to 'South Africa'.

As this costly project is dependent on donations any financial contributions can be made to:

Save the Elephants – South Africa (STE-SA)

Account number: 331632284

Standard Bank

Hoedspruit branch Code 0572752

Swift code SBZAZAJJ

NPO number: 055-871-NPO

PBO number: 930030852