



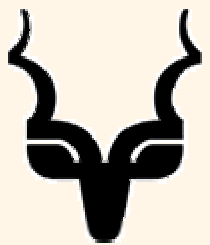
Rodent and Shrew diversity and abundance in and out the Nwashitsumbe enclosure site in the Kruger National Park

The 4th KNP Science Networking Meeting
16th March 2006

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Broad Objectives

- **To determine the species richness and diversity of rodents and shrews at the Nwashitsumbe enclosure site**
 - Comparisons between the three management activities
 - Movement of animals
 - Representative species i.e. *Graphiurus*
 - Rodents as indicators of management practices i.e. fire
 - Trends with small mammals with the decrease in large trees



Study Area

- **The Nwashitsumbe enclosure site occurs in the northern plains of the KNP**
 - Lies on a flat basaltic landscape
 - Up lying areas dominated by Mopane/Combretum
 - Low lying areas grasses, seasonally inundated vlei
 - Constructed in 1968/into vlei in 1986
 - Site currently 306 ha
 - Large browsers been excluded for 38 and 20 years respectively
 - Fire also limited



The Nwashitsumbe Enclosure Site fence line...

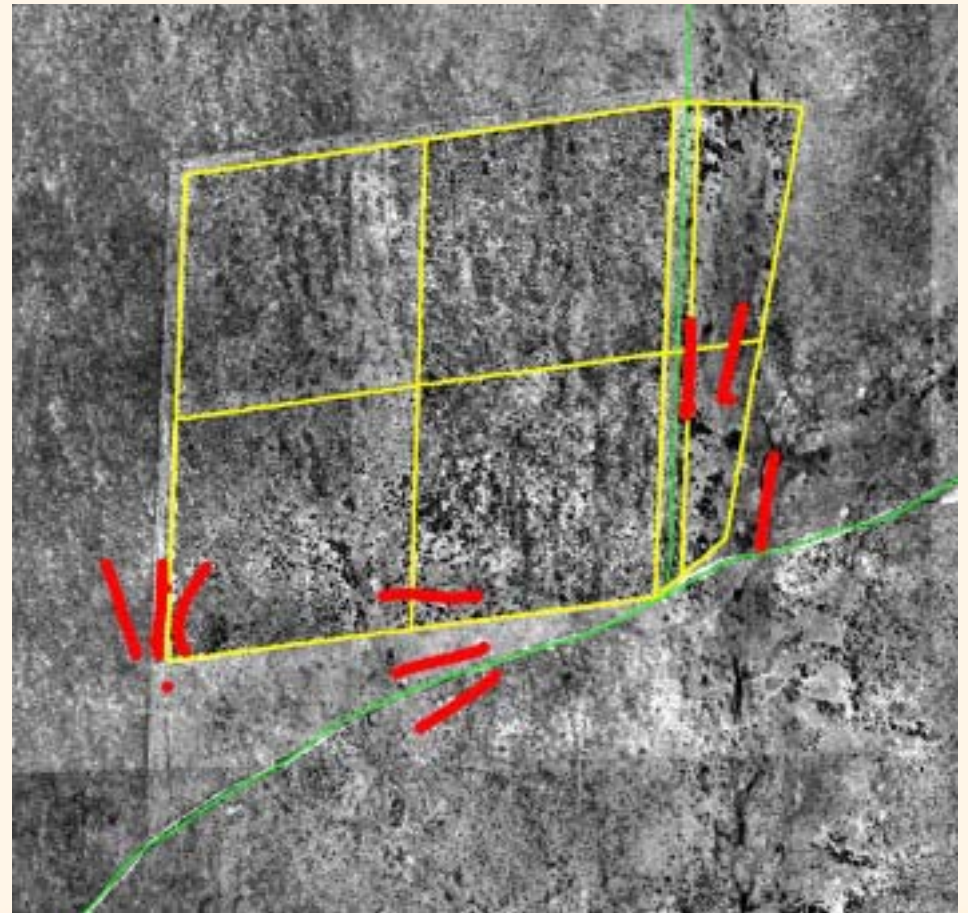


Stands of Zebra wood (*Dalbergia melanoxylon*) outside and inside the Nwashitsumbe enclosure site



Capture Methodology

- Three grids (top, middle and bottom slope A, B, & C)
- Nine transects lines (in, fire break & around)
- 30 traps each (270)/300m



Continue...

- Traps were baited
- Traps were checked and re-baited daily



Capture...

- Animals were first sedated with ethyl acetate
- Measurement taken i.e. hind foot, ear, total & tail length and mass
- Animals sexed and aged



Toe clipping...

- New specimens marked according to the digit and foot the toes was clipped
- Up to 9999 per species (1, 2, 4 & 7)
- Recapture numbers recorded with recaptured specimens



- Toes were collected in 70% alcohol with corresponding information
- Once off heart, muscle, and liver samples of *Mastomys* were collected and placed in liquid N²
- Ticks were also collected and sent to Onderstepoort



Vegetation Surveys

- Summer and Winter vegetation surveys conducted around each of the 270 traps
- 5m² grid placed over each trap
- Disc pasture = basal cover
- 1m² total count diagonal corners
- 10m radius trees recorded/height classes



Results

- The results recorded are from 270 traps per night/over 45 traps night
- These surveys were done over two years IN the enclosure site, in the fire break AROUND the site and OUTSIDE the site.
- One transect line placed in a SODIC area



	Number of Animals	Total %
Outside Nwashitsumbe		
Transect A1	340	14.7 %
Transect B1	310	13.5 %
Transect C1	315	13.7 %
Fire break Outside Nwashitsumbe		
Transect A2	334	14.5 %
Transect B2	297	12.9 %
Inside Nwashitsumbe		
Transect A3	201	8.7 %
Transect B3	202	8.8 %
Transect C2	171	7.4 %
Transect C3	132	5.7 %
Sodic site Inside Nwashitsumbe		
Transect C2	171	7.4 %
Total	2302	100 %

- A1 outside/mid-slope

Transect A1	Number	%
<i>Mastomys</i>	247	10.73%
<i>Saccostomys</i>	62	2.69%
<i>Tatera</i>	28	1.22%
<i>Lemniscomys</i>	0	0.00%
<i>Aethomys</i>	1	0.04%
<i>Mus</i>	1	0.04%
<i>Graphiurus</i>	0	0.00%
<i>Steatomys</i>	1	0.04%
<i>Suncus</i>	0	0.00%
<i>Paraxerus</i>	0	0.00%
Total	340	14.77%
Overall Total	2302	100.00%



- B1 outside/top slope

Transect B1	Number	%
<i>Mastomys</i>	248	10.77%
<i>Saccostomys</i>	38	1.65%
<i>Tatera</i>	19	0.83%
<i>Lemniscomys</i>	0	0.00%
<i>Aethomys</i>	5	0.22%
<i>Mus</i>	0	0.00%
<i>Graphiurus</i>	0	0.00%
<i>Steatomys</i>	0	0.00%
<i>Suncus</i>	0	0.00%
<i>Paraxerus</i>	0	0.00%
Total	310	13.47%
Overall Total	2302	100.00%



- C1 outside/bottom slope

Transect C1	Number	%
<i>Mastomys</i>	260	11.29%
<i>Saccostomys</i>	23	1.00%
<i>Tatera</i>	8	0.35%
<i>Lemniscomys</i>	19	0.83%
<i>Aethomys</i>	4	0.17%
<i>Mus</i>	0	0.00%
<i>Graphiurus</i>	0	0.00%
<i>Steatomys</i>	0	0.00%
<i>Suncus</i>	1	0.04%
<i>Paraxerus</i>	0	0.00%
Total	315	13.68%
Overall Total	2302	100.00%



- A2 fire break/mid slope

Transect A2	Number	%
<i>Mastomys</i>	292	12.68%
<i>Saccostomys</i>	41	1.78%
<i>Tatera</i>	1	0.04%
<i>Lemniscomys</i>	0	0.00%
<i>Aethomys</i>	0	0.00%
<i>Mus</i>	0	0.00%
<i>Graphiurus</i>	0	0.00%
<i>Steatomys</i>	0	0.00%
<i>Suncus</i>	0	0.00%
<i>Paraxerus</i>	0	0.00%
Total	334	14.51%
Overall Total	2302	100.00%



- B2 fire break/top slope

Transect B2	Number	%
<i>Mastomys</i>	228	9.90%
<i>Saccostomys</i>	38	1.65%
<i>Tatera</i>	12	0.52%
<i>Lemniscomys</i>	12	0.52%
<i>Aethomys</i>	1	0.04%
<i>Mus</i>	6	0.26%
<i>Graphiurus</i>	0	0.00%
<i>Steatomys</i>	0	0.00%
<i>Suncus</i>	0	0.00%
<i>Paraxerus</i>	0	0.00%
Total	297	12.90%
Overall Total	2302	100.00%



- A3 inside/mid slope

Transect A3	Number	%
<i>Mastomys</i>	154	6.69%
<i>Saccostomys</i>	31	1.35%
<i>Tatera</i>	10	0.43%
<i>Lemniscomys</i>	0	0.00%
<i>Aethomys</i>	1	0.04%
<i>Mus</i>	3	0.13%
<i>Graphiurus</i>	0	0.00%
<i>Steatomys</i>	0	0.00%
<i>Suncus</i>	0	0.00%
<i>Paraxerus</i>	2	0.09%
Total	201	8.73%
Overall Total	2302	100.00%



- B3 inside/top slope

Transect B3	Number	%
<i>Mastomys</i>	170	7.38%
<i>Saccostomys</i>	15	0.65%
<i>Tatera</i>	12	0.52%
<i>Lemniscomys</i>	0	0.00%
<i>Aethomys</i>	0	0.00%
<i>Mus</i>	4	0.17%
<i>Graphiurus</i>	1	0.04%
<i>Steatomys</i>	0	0.00%
<i>Suncus</i>	0	0.00%
<i>Paraxerus</i>	0	0.00%
Total	202	8.77%
Overall Total	2302	100.00%



- C2 inside/bottom slope

Transect C2	Number	%
<i>Mastomys</i>	152	6.60%
<i>Saccostomys</i>	11	0.48%
<i>Tatera</i>	0	0.00%
<i>Lemniscomys</i>	5	0.22%
<i>Aethomys</i>	3	0.13%
<i>Mus</i>	0	0.00%
<i>Graphiurus</i>	0	0.00%
<i>Steatomys</i>	0	0.00%
<i>Suncus</i>	0	0.00%
<i>Paraxerus</i>	0	0.00%
Total	171	7.43%
Overall Total	2302	100.00%

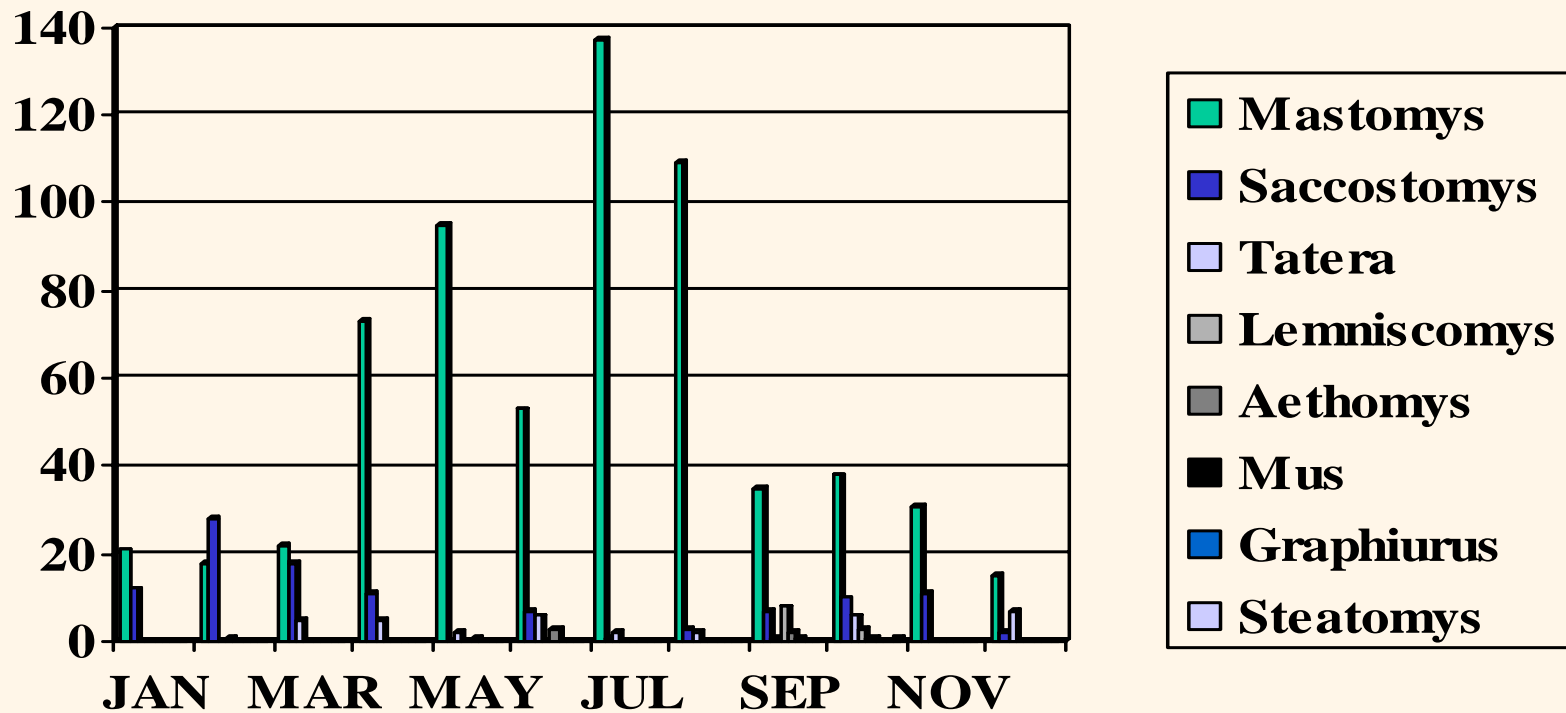


- C3 inside/sodic area

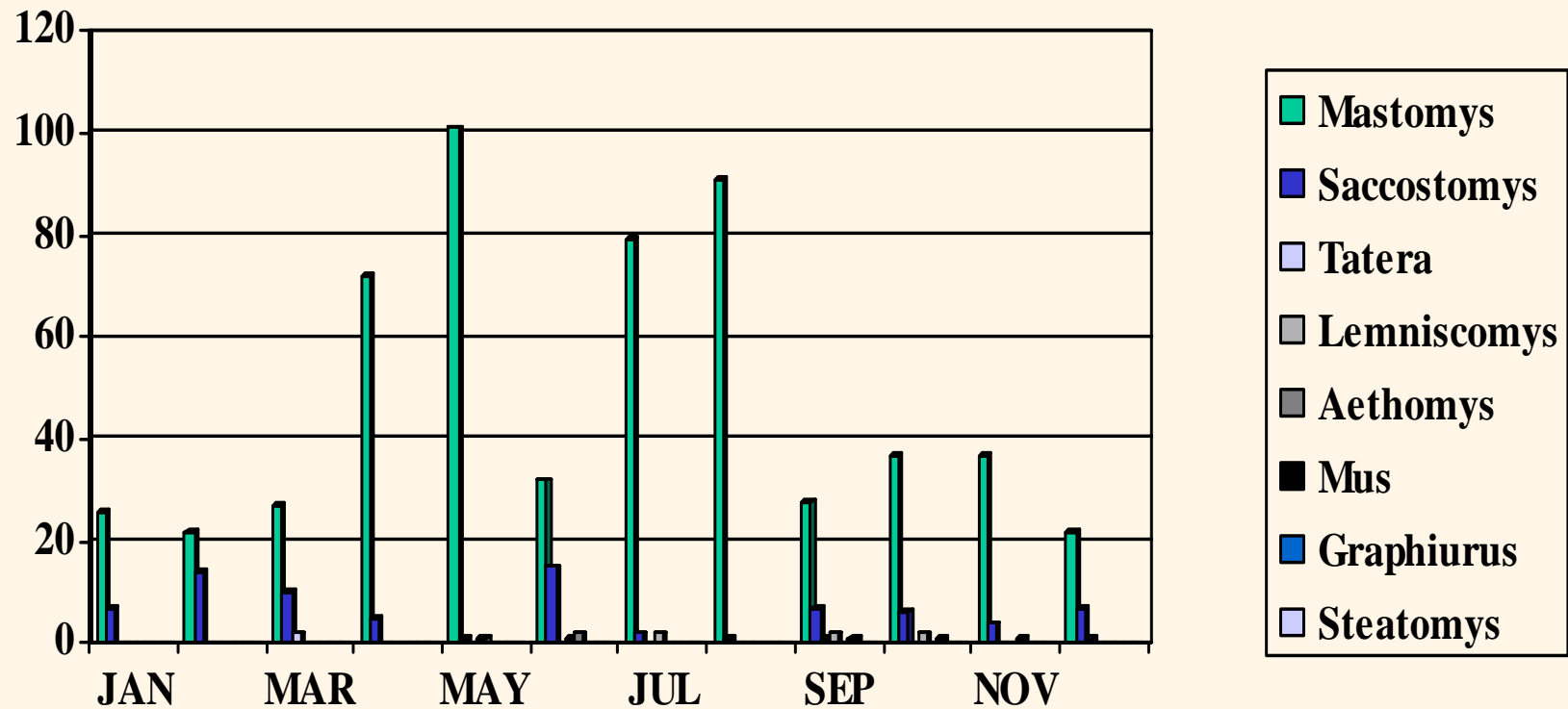
Transect C3	Number	%
<i>Mastomys</i>	100	4.34%
<i>Saccostomys</i>	23	1.00%
<i>Tatera</i>	9	0.39%
<i>Lemniscomys</i>	0	0.00%
<i>Aethomys</i>	0	0.00%
<i>Mus</i>	0	0.00%
<i>Graphiurus</i>	0	0.00%
<i>Steatomys</i>	0	0.00%
<i>Suncus</i>	0	0.00%
<i>Paraxerus</i>	0	0.00%
Total	132	5.73%
Overall Total	2302	100.00%



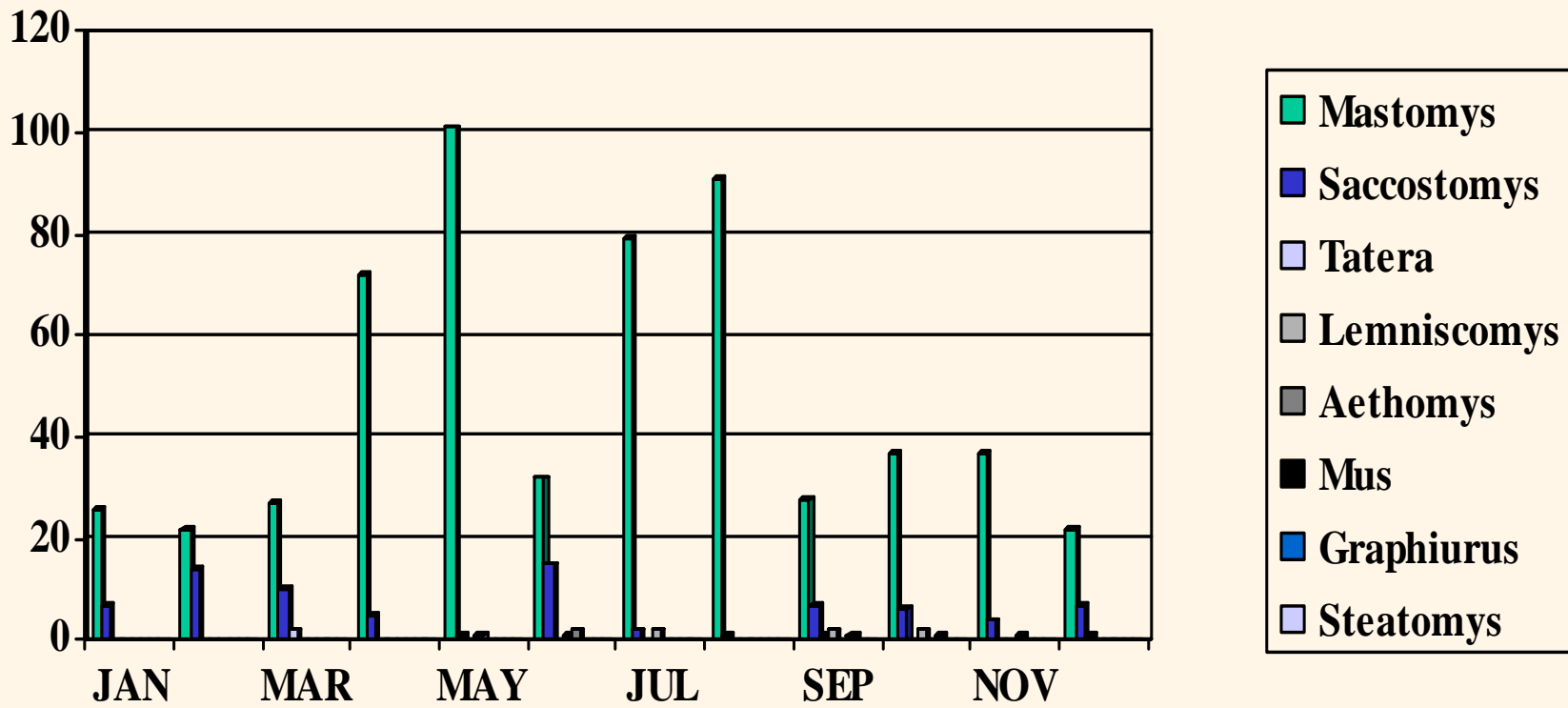
Rodent species collected monthly in the open field outside the fire break around the enclosure site



Rodent species collected monthly in the fire break around the enclosure site



Rodent species collected monthly inside the enclosure site



August 2004 block burn...

- Decrease in *Mastomys* only noticeable in December
- Certain areas 100% burn/close to 100% capture success
- December *Tatera* dominated



Final Points and Conclusions

- Difference in abundance more prevalent than differences in diversity
- Rodent movement restricted in and out the site i.e. only few records/fire breaks
- Some local movements i.e. vlei winter/summer (C1)
- General movement 4/5 traps up/down i.e. relatively permanent



Continue....

- Limited specific species found only in or outside...
- Only one shrew i.e. *Suncus* recorded
- Capture success improved in wet conditions
- Inverse relationship between *Mastomys* numbers and other dominant species i.e. *Tatera* and *Saccostomys*

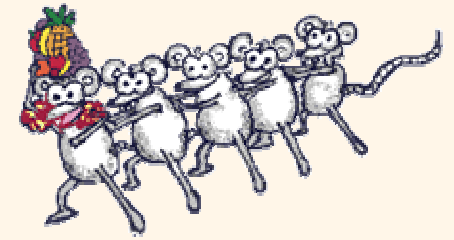


Acknowledgements

I would like to thank Prof. Mac van der Merwe, Prof. George Bredenkamp, Dr Andrew Deacon, Sandra MacFadyen and Dr Rina Biggs for their assistance with this project.

I would also like to thank my many field assistants: Christian van Dyk, Colin Swart, Charlene Gibson, Roan Steyn, Jackie MacFadyen, Tracey MacFadyen, Neil MacFadyen, Mike Roy, Marius Bissett, Stefan Labuschagne, Theo Mostert, Ansie Swanepoel, Liesl Mostert and David Mundell for assistance during the collection of field data. I would also like to thank the various field rangers who assisted in protecting us in the field.





THANK YOU

