

KHAUDUM & NE - PRELIMINARY

Survey of Khaudum /Tsumkwe, Sept 2000: Preliminary results

An aerial sample survey of wildlife in Khaudum Game reserve and Nyae Nyae conservancy took place between 25.9.00 and 27.9.00. The MET C206, V5-PRO was used, crewed by C Craig (Pilot), M Britz, (data recorder), K Sikopo and W Kotze(Observers).

The Main objectives were to update the elephant estimates for the areas and to obtain an estimate for roan antelope in Khaudum.

Methods were standard. Khaudum was sampled at a rate of 15.5% and Nyae Nyae conservancy at 5.8%. A third stratum to the west of Khaudum was also counted..All species seen were recorded. Preliminary results were as follows. These are subject to revision based on the final analysis. 1998 estimates are given for comparison.

	Estimates			1998		
	2000					
	Kaudum	Nyae Nyae	Total	Kaudum	Nyae Nyae	Total
Elephant	1211	755	1966	2224	552	2776
Giraffe	271	86	357	259	47	306
Hartebeest	0	257	257	0	18	18
Kudu	40	172	211	157	283	440
Oryx	113	120	233	59	429	488
Ostrich	20	600	620	29	311	340
Roan	99	0	99	66	0	66
Warthog	7	17	24	0	160	160
Wildebeest	40	103	143	145	204	349

Note that differences between years are not necessarily statistically significant, and that visibility in 2000 was not ideal, as many trees had flushed. The stratum to the west of Khaudum contained little wildlife and the results are not given here.

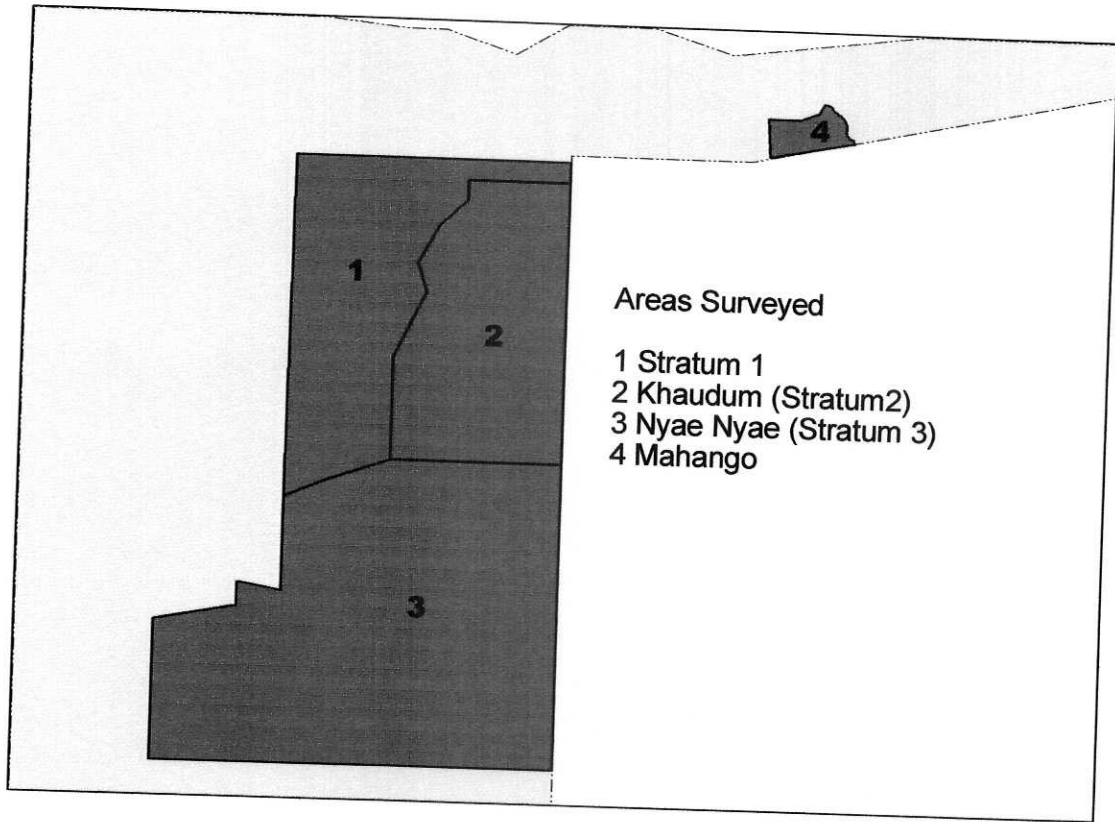
GC Craig 27.09.2000

Survey Estimates for Mahango:

	Estimates	
	2000	1998
Buffalo	500	400
Crocodile	22	
Elephant	238	292
Giraffe	17	4
Hippo	186	95
Impala	4	
Kudu	43	23
Lechwe	26	38
Ostrich	22	2
Reedbuck	17	34
Roan	22	6
Sable	130	35
Tsessebe		27
Warthog	9	17
Wildebeest		40
Zebra		48

KHAUDUM & NE - RESULTS

RESULTS



Stratum NTK1 (West of Khaudum)

BLOCK AREA: 8940 km²

SAMPLING INTENSITY: 1.82 %

ESTIMATES:

SPECIES	Pop. est.	No. seen	Variance	95%cl %est.	95%Range	Dens /km ²
Elephant	55	1	4072	274.3	1<> 206	0.01
Gemsbok	770	14	358595	183.9	14<> 2186	0.09
Kudu	110	2	9495	209.4	2<> 340	0.01
Cattle	880	16	322626	152.6	16<> 2224	0.10

Stratum NTK2 (Khaudum)

BLOCK AREA: 3787 km²

SAMPLING INTENSITY: 15.11 %

ESTIMATES:

SPECIES	Pop. est.	No. seen	Variance	95%cl %est.	95%Range	Dens /km ²
Elephant	1211	183	166680	71.5	346<> 2077	0.32
Gemsbok	113	17	2923	101.9	17<> 227	0.03
Giraffe	271	41	4538	52.6	129<> 414	0.07
Hyaena:spotted	7	1	36	193.2	1<> 19	0.00
Kudu	40	6	442	112.2	6<> 84	0.01
Ostrich	20	3	170	139.4	3<> 48	0.01
Roan	99	15	3029	117.5	15<> 216	0.03
Steenbok	7	1	37	193.7	1<> 19	0.00
Warthog	7	1	37	194.1	1<> 19	0.00
Wildebeest:blue	40	6	1317	193.7	6<> 117	0.01

Stratum NTK3 (Nyae Nyae Conservancy)

BLOCK AREA: 9118 km² SAMPLING INTENSITY: 5.83 %

ESTIMATES:

SPECIES	Pop. est.	No. seen	Variance	95%cl %est.	95%Range		Dens /km ²
Elephant	755	44	79781	80.8	145<>	1365	0.08
Elephant carcass	17	1	281	211.2	1<>	53	0.00
Gemsbok	120	7	4503	120.7	7<>	265	0.01
Giraffe	86	5	4916	176.5	5<>	237	0.01
Hartebeest	257	15	29557	144.3	15<>	629	0.03
Kudu	172	10	8126	113.5	10<>	366	0.02
Ostrich	600	35	95763	111.3	35<>	1269	0.07
Steenbok	17	1	297	216.9	1<>	54	0.00
Warthog	17	1	272	207.7	1<>	53	0.00
Wildebeest:blue	103	6	6852	173.7	6<>	282	0.01
Cattle	120	7	13325	207.6	7<>	369	0.01
Shoats	292	17	78593	207.6	17<>	897	0.03
Horse	34	2	1086	207.5	2<>	106	0.00

Stratum Mahango

BLOCK AREA: 253 km² SAMPLING INTENSITY: 23.13 %

ESTIMATES:

SPECIES	Pop. est.	No. seen	Variance	95%cl %est.	95%Range		Dens /km ²
Buffalo	177*	41	13422	154.6	41<>	451	0.70
Elephant	238	55	12431	110.9	55<>	501	0.94
Elephant carcass	22	5	198	153.8	5<>	55	0.09
Giraffe	17	4	214	200.0	4<>	52	0.07
Hippopotamus	186	43	4508	85.4	43<>	345	0.73
Impala	4	1	14	202.4	1<>	13	0.02
Kudu	43	10	409	110.6	10<>	91	0.17
Lechwe	26	6	123	101.1	6<>	52	0.10
Ostrich	22	5	208	157.9	5<>	56	0.09
Reedbuck	17	4	208	197.1	4<>	51	0.07
Roan	22	5	138	128.6	5<>	49	0.09
Sable	130	30	5082	130.0	30<>	298	0.51
Warthog	9	2	55	202.4	2<>	26	0.03

* although only 41 buffalo were in the strips, 500 buffalo were actually seen, so 500 is taken as the best estimate.

KHAWDOM & NE - APPENDIX

Strata

Stratum	Area km2	Sample Intens.	No. SUs	Sample Area	Count Mins	km2 /Min
Ntk1	3321.800	0.049	8	162.487	108.000	1.505
Ntk2	3787.400	0.151	17	572.255	408.000	1.403
Ntk3	9117.800	0.058	14	531.428	344.000	1.545
Mahango	253.200	0.231	8	58.559	49.000	1.195
	16480.200		47	1324.730	909.000	1.457

Flights

	A/Craft	Duty	Mins Survey	Mins Total	Diff = Commute
24-Sep-00 am	PRO	Windhoek - Tsumkwe		162	162
25-Sep-00 am	PRO	Calibration+ Survey	161	252	91
25-Sep-00 pm	PRO	Survey	157	180	23
26-Sep-00 am	PRO	Survey	257	294	37
26-Sep-00 pm	PRO	Survey	119	150	31
27-Sep-00 am	PRO	Survey	225	252	27
27-Sep-00 pm	PRO	Survey	152	180	28
28-Sep-00 am	PRO	Tsumkwe - Windhoek		120	120
			1071	1590	519

Summary of flying hours by activity

	Hours	Mins	%
Counting	15.15	909	57.17
Positioning	2.70	162	10.19
Commuting	8.65	519	32.64
	26.5	1590	100

CALIBRATION

H	L		R		LW	RW	Tot
	I	O	I	O			
290	7	26	6	23	206.90	186.21	393.10
290	6	26	7	27	217.24	217.24	434.48
310	7	27	6	29	203.23	232.26	435.48
250	4	27	6	27	288.00	264.00	552.00
300	6	27	6	30	220.00	250.00	470.00
310	7	28	7	32	212.90	251.61	464.52
290	6	30	7	29	258.62	237.93	496.55
250	7	31	5	25	300.00	252.00	552.00
300	9	30	6	25	220.00	200.00	420.00
300	7	31	7	28	250.00	220.00	470.00
290	6	27	7	30	227.59	248.28	475.86
270	6	27	7	24	244.44	200.00	444.44
280	7	25	7	27	203.57	225.00	428.57
240	4	22	8	25	237.50	225.00	462.50
280	5	24	9	28	214.29	214.29	428.57
280	6	24	8	29	203.57	235.71	439.29
230	8	22	4	23	195.65	260.87	456.52
Mean					Strip - width		460.229
					variance		1795.460
					SE		10.277
					SE%		4.466