

Results of the NamibRand Nature Reserve Bi-annual Game Count

2 – 3 June 2006



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Summary

This paper provides feedback and results of the bi-annual game count as held on the NamibRand Nature Reserve on 2 - 3 June 2006.

This “end of wet season” vehicle-based game count was conducted as an in-house event, with assistance provided by those willing and able to do so. The count of Route 1 and 3 were conducted on the morning of 2 June 2006, while all other routes were counted on the morning of 3 June 2006.

Results of this game count are very interesting. With reference to the Reserve’s three objectives an executive summary of data can be describe as follows:

Objective 1: Population Estimates

The overall wildlife population has risen by 22%. While the oryx population is significantly lower than recorded at the last game count (November 2005), the springbok population has almost doubled.

Low oryx numbers are attributed to their east-west migration. Most oryx move west into the neighboring Namib Naukluft park during the wet season. At the time of this count only very few oryx had returned to NamibRand as green grass and standing water was still available west of the Reserve.

The population explosion of springbok is attributed to the exceptional rainy season of 2006. Observations indicate that female breeding springbok dropped at least two calves this season, easily doubling the springbok numbers.

Objective 2: Wildlife Distribution

Wildlife densities are highest in the western and central parts of the Reserve, while areas in the east and south of the Reserve, which had the highest wildlife distribution at the last game count (November 2005), had significantly less wildlife sightings. This can also be explained by the east-west migration of wildlife.

Objective 3: Population Change

The overall wildlife population on the NamibRand Nature Reserve has risen by 22%. The oryx population has decreased by 73%, while the springbok population has increased by 91%.

The impact of this year’s exceptional rainy season, during which the Reserve received at least three times its annual average rainfall, is clearly reflected in the data obtained from this year’s census. Late rains delayed the return of oryx to the Reserve, while the abundance of grazing significantly contributed to the huge increase in springbok numbers.

Methodology

Game counts are conducted as a management tool to obtain information about wildlife population estimates, densities and population change. As it is impossible to physically count every animal on the Reserve, a sample survey technique is used in which all animals in a sample area of the Reserve are counted. This data is then extrapolated over the whole Reserve (area correction factor), while the likelihood of counting 100% of every species of animal is also taken into consideration (species correction factor).

This paper will not provide a detailed description of the count methodology used. For more information on this please refer Odendaal & Shaw, 2005.

A major change in the methodology used in this year's analysis is the adjustment of the species correction factor. Species correction factors have been decreased. Data collected in previous game counts was used to determine a more accurate correction factor. This adjusted factor more accurately reflects the increased rate of sighting of individual species in our wide open, desert environment.

Table 1 below lists area and species correction factors used.

Table 1:

Correction Factors

Route	Area Correction Factor
1	3.10
2	3.03
3	4.2
4	4.38
5	2.21
6	5.09
7	4.65
8	3.74

Species	Species' Correction Factor
Gemsbok	1.4
Springbok	1.6
Kudu	2.6
Steenbok	10.0
Burchells Zebra	1.2
Ostrich	1.1
Red Hartebeest	1.5

Results

Route Results

Tables 2 - 9 list the data collected on each route. Numbers seen within the strip width (under 500m) have been multiplied by the relevant correction factor for each route. See Table 1 for the relevant correction factor for each route.

Table 2:

Route 1			
Species	Numbers seen - Total	Number seen under 500m	No. Corrected For Area - June 2006
Gemsbok	52	23	71
Springbok	474	299	926
Kudu			-
Steenbok			-
Burchells Zebra			
Ostrich	43	4	12
Blesbok			
Red Hartebeest			-
Total	569	326	1,009

Table 3:

Route 2			
Species	Numbers seen - Total	Number seen under 500m	No. Corrected For Area - June 2006
Gemsbok	10	10	30
Springbok	344	344	1,042
Kudu			-
Steenbok			-
Burchells Zebra	14	14	42
Ostrich			
Blesbok			
Red Hartebeest			
Total	368	368	1,115

Table 4:

Route 3			
Species	Numbers seen - Total	Number seen under 500m	No. Corrected For Area - June 2006
Gemsbok	218	78	330
Springbok	470	461	1,950
Kudu			-
Steenbok			-
Burchells Zebra	33	21	89
Ostrich	44	26	110
Blesbok			-
Red Hartebeest			
Total	765	586	2,479

Table 5:

Route 4			
Species	Numbers seen - Total	Number seen under 500m	No. Corrected For Area - June 2006
Gemsbok	81	81	355
Springbok	96	96	420
Kudu			-
Steenbok	1	1	4
Burchells Zebra			-
Ostrich	4	4	18
Blesbok			-
Red Hartebeest			
Total	182	182	797

Table 6:

Route 5			
Species	Numbers seen - Total	Number seen under 500m	No. Corrected For Area - June 2006
Gemsbok	42	42	93
Springbok	500	447	988
Kudu			-
Steenbok			-
Burchells Zebra			-
Ostrich	24	5	11
Blesbok			-
Red Hartebeest			
Total	566	494	1,092

Table 7:

Route 6			
Species	Numbers seen - Total	Number seen under 500m	No. Corrected For Area - June 2006
Gemsbok	3	3	15
Springbok	497	478	2,435
Kudu	49	44	224
Steenbok			-
Burchells Zebra	168	46	234
Ostrich	15	2	10
Blesbok			-
Red Hartebeest	3	0	50
Total	735	573	2,969

Table 8:

Route 7			
Species	Numbers seen - Total	Number seen under 500m	No. Corrected For Area - June 2006
Gemsbok	30	10	46
Springbok	613	436	2,027
Kudu			-
Steenbok			-
Burchells Zebra			-
Ostrich	33	4	19
Blesbok			-
Red Hartebeest			
Total	676	450	2,092

Table 9:

Route 8			
Species	Numbers seen - Total	Number seen under 500m	No. Corrected For Area - June 2006
Gemsbok	179	20	93
Springbok	312	301	1,399
Kudu			-
Steenbok			-
Burchells Zebra			-
Ostrich	19	3	14
Blesbok			-
Red Hartebeest			
Total	510	324	1,506

Population Estimate

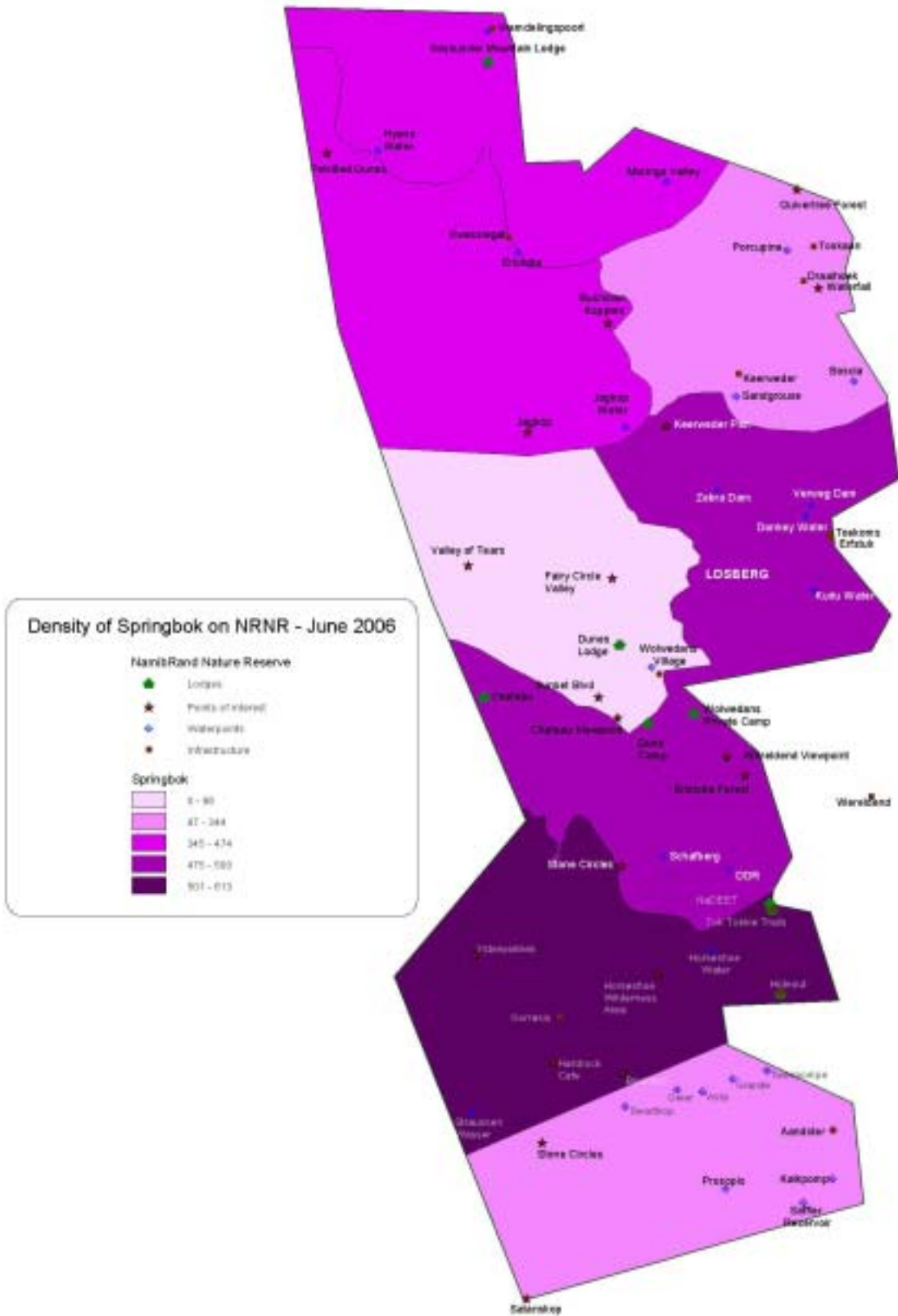
Table 10 presents the total population estimate for plains game on the NamibRand Nature Reserve. Final figures have been determined by multiplying all sightings under 500m by both the area and species correction factors.

Table 10:

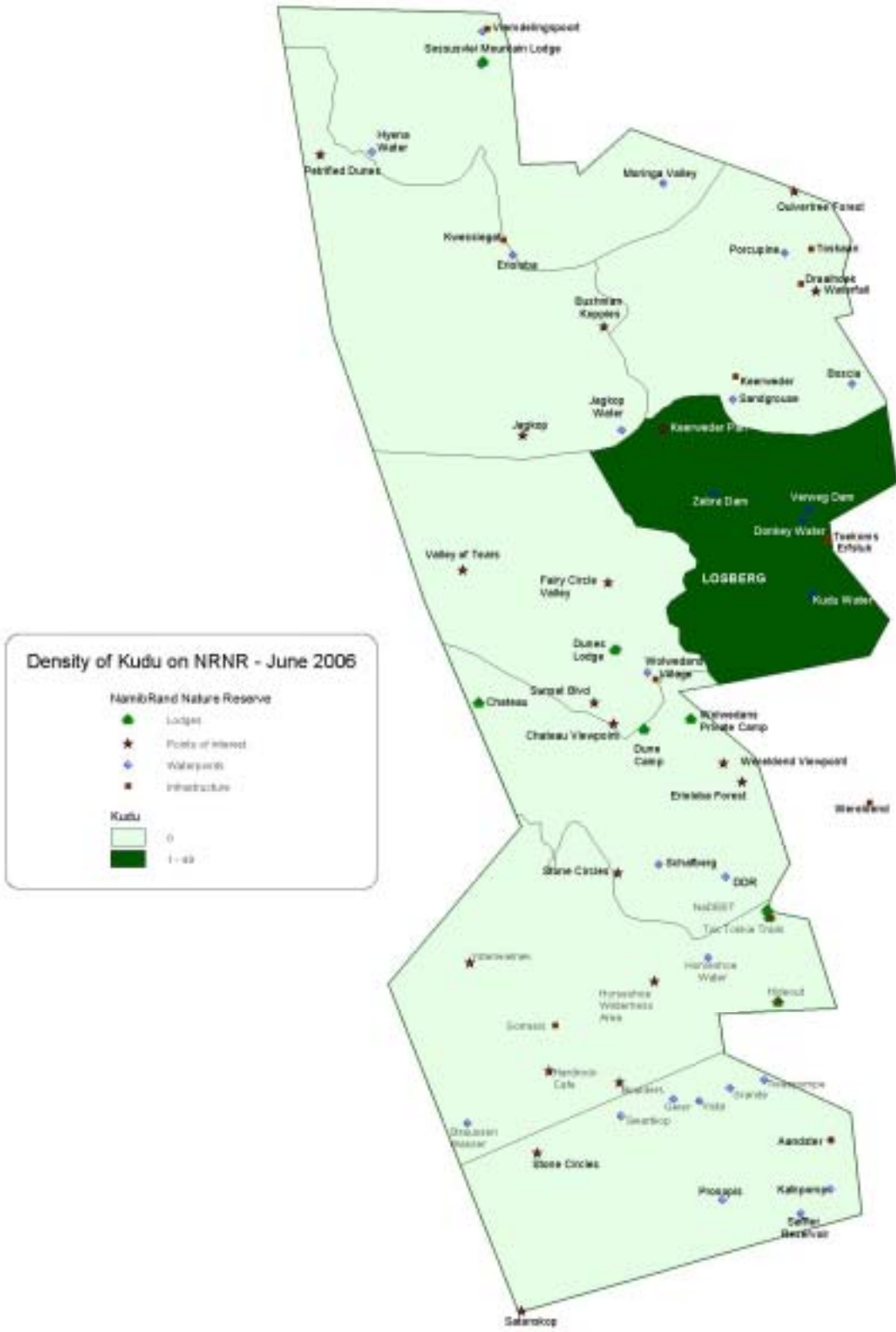
Total Numbers Of Game			
Species	No. seen under 500m	No. corrected for Area	Total no. corrected - June 2006
Gemsbok	267	1,034	1,447
Springbok	2,862	11,188	17,900
Kudu	44	224	583
Steenbok	1	4	44
Burchells Zebra	81	366	439
Ostrich	48	194	213
Blesbok	-		15*
Red Hartebeest	-		70*
Total	3,303	13,009	20,625

* numbers of these species are known

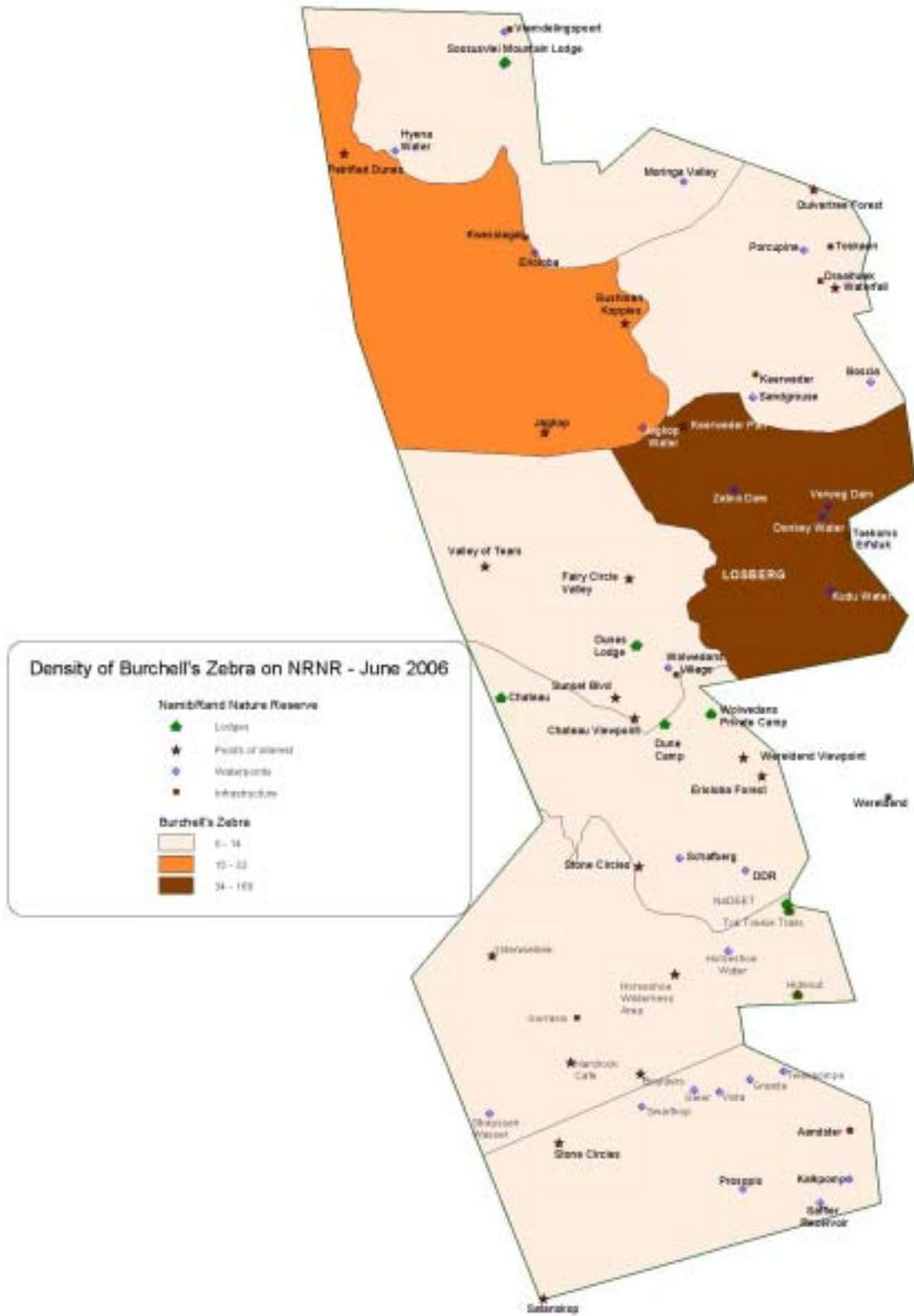
Map 2: Distribution of Springbok



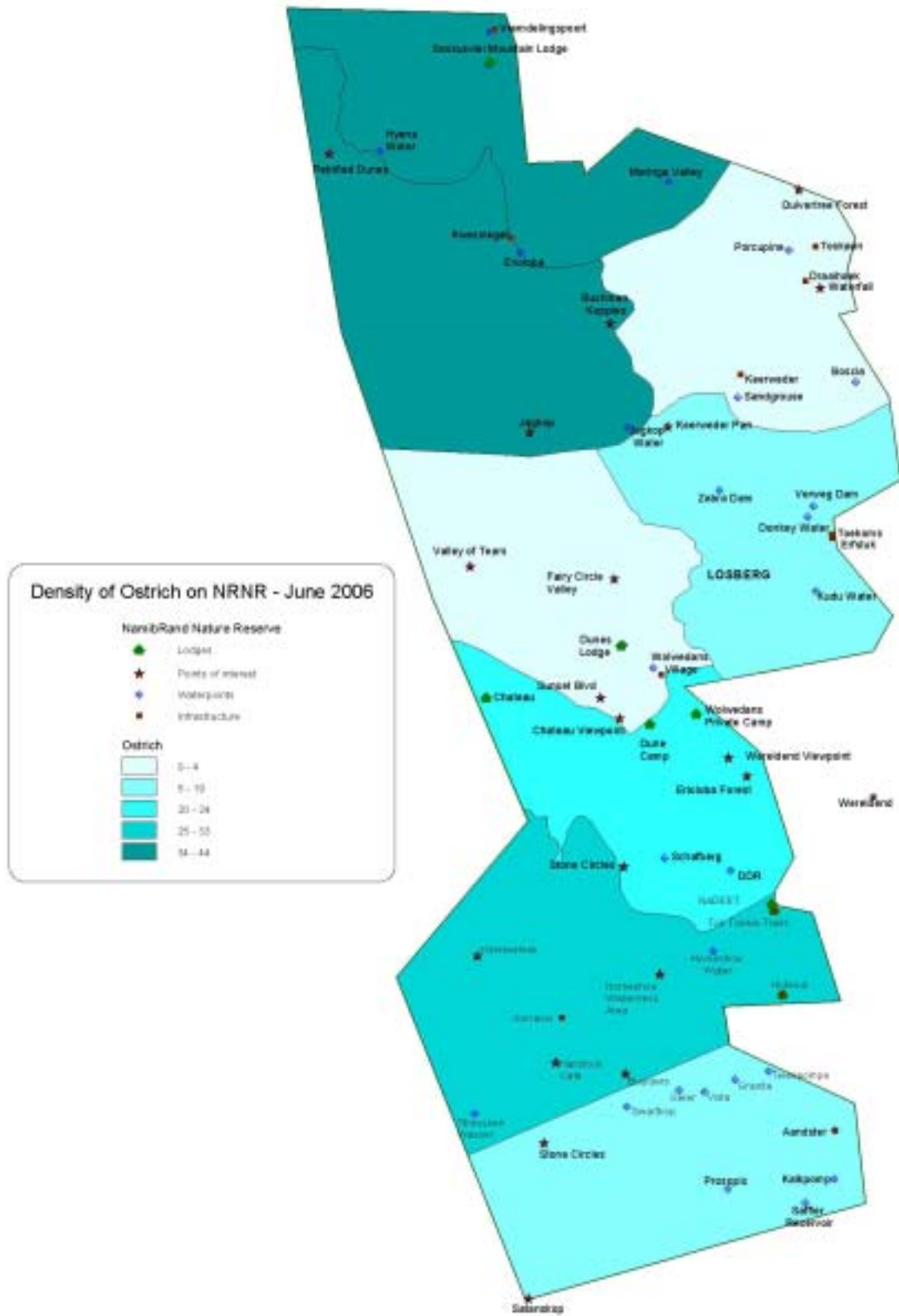
Map 3: *Distribution of Kudu*



Map 4: *Distribution of Burchell's Zebra*



Map 5: Distribution of Ostrich



Data Analysis

This section provides some analysis of the data as listed above.

Population Estimates

Table 11 shows comparative data from the last three game counts. Percentage change is calculated between June 2006 and November 2005. This data is illustrated in Figure 1.

Table 11:

Species	Jun-06			Nov-05			Jun-05			% Change Nov05 & Jun06
	No. Seen under 500m	No. Corrected For Area	Total No. Corrected For Species Jun 2006	No. Seen under 500m	No. Corrected For Area	Total No. Corrected For Species Nov 2005	No. Seen under 500m	No. Corrected For Area	Total No. Corrected For Species June 2005	
Gemsbok	267	1,034	1,447	982	3,988	5,583	801	3,085	4,320	-73%
Springbok	2,862	11,188	17,900	1,498	5,754	9,207	1,351	4,833	7,733	91%
Kudu	44	224	583	64	318	827	25	112	290	-31%
Steenbok	1	4	44	2	10	100	2	5	53	-50%
Burchells Zebra	81	366	439	59	259	311	29	145	174	37%
Ostrich	48	194	213	102	403	443	89	371	409	-53%
Blesbok*	0	15	15	1	11	11	10	10	10	36%
Red Hartebeest*	0	70	70	4	55	55	3	50	50	27%
Total	3,303	13,009	36,689	2,712	10,733	16,538	2,310	8,602	13,039	22%

* Number are known

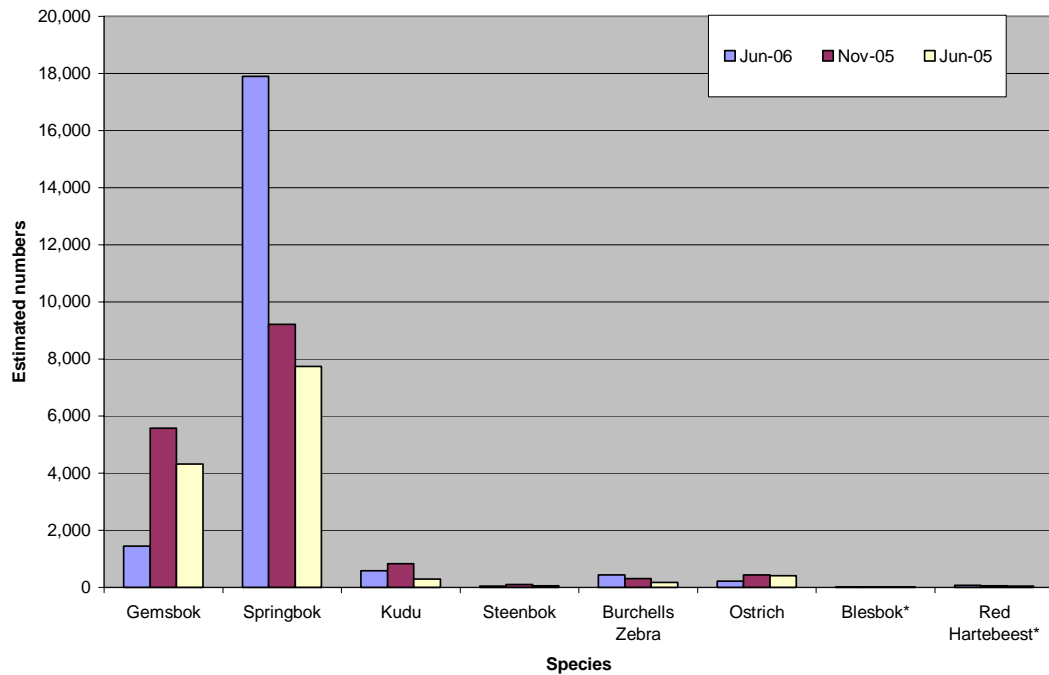
Comparing the data from the June 2006 count to November 2005 we note that the overall population estimate has increased by 22%.

The oryx population has decreased by 73%. This can be attributed to the east-west migration of these animals. Due to late rains in May 2006, green grass and water was still available in the neighboring Namib-Naukluft Park, which resulted in oryx herds not migrating on to the Reserve. Once the grass and water dry up in the Park, we expect to see oryx returning to the Reserve.

Springbok numbers have increased by 91%, almost doubling the population. Springbok were observed to lamb twice this year alone. This prolific breeding is as a result of the abundance of grass and resources from the extraordinary 2006 rainy season.

Figure 1:

NamibRand Nature Reserve Game Count - Comparative Totals



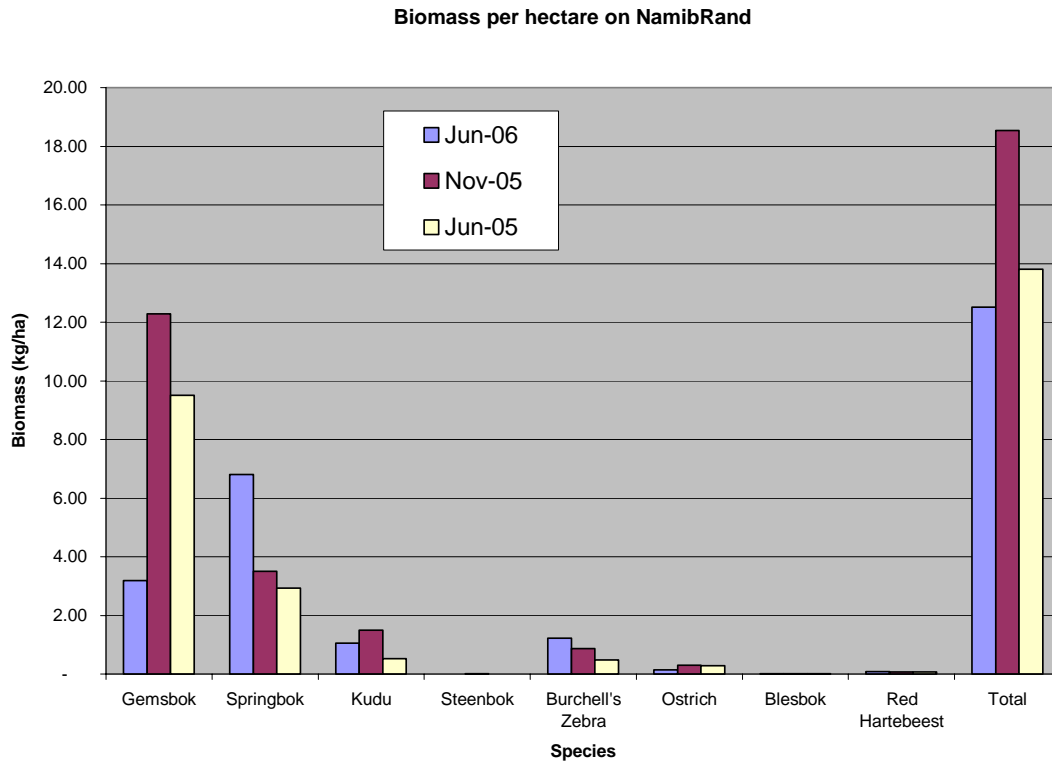
Biomass Estimates

Table 12 and Figure 2 below show wildlife biomass on the NamibRand Nature Reserve.

Table 12: Wildlife numbers and wildlife biomass on NamibRand

Wildlife species	Mean mass (kg)	Jun-06			Nov-05			Jun-05		
		Estimated wildlife numbers Jun 06	Species biomass (kg)	Biomass per ha (kg) Jun 2006	Estimated wildlife numbers Nov 05	Species biomass (kg)	Biomass per ha (kg) Nov 2005	Estimated wildlife numbers June 05	Species biomass (kg)	Biomass per ha (kg) Jun 2005
Gemsbok	220	1,447	318,358	3.18	5,583	1,228,312	12.28	4,320	950,300	9.50
Springbok	38	17,900	680,203	6.80	9,207	349,871	3.50	7,733	293,861	2.94
Kudu	180	583	104,904	1.05	827	148,941	1.49	290	52,205	0.52
Steenbok	11	44	482	0.00	100	1,101	0.01	53	587	0.01
Burchell's Zebra	280	439	122,836	1.23	311	87,118	0.87	174	48,776	0.49
Ostrich	68	213	14,485	0.14	443	30,125	0.30	409	27,784	0.28
Blesbok	100	15	1,500	0.02	11	1,100	0.01	10	1,000	0.01
Red Hartebeest	130	70	9,100	0.09	55	7,150	0.07	50	6,500	0.07
Total		20,710	1,251,867	12.52	16,538	1,853,718	18.54	13,039	1,381,013	13.81

Figure 2:



Comments

12.5kg per hectare is an acceptable stocking rate for our desert environment. As can be seen from the table above this is significantly lower than the pressure on the land as recorded at the last game count (November 2005). However, it is important to bear in mind that oryx have not yet returned to NamibRand from the west. The return of large herds of oryx later in the year will certainly raise this figure considerably.

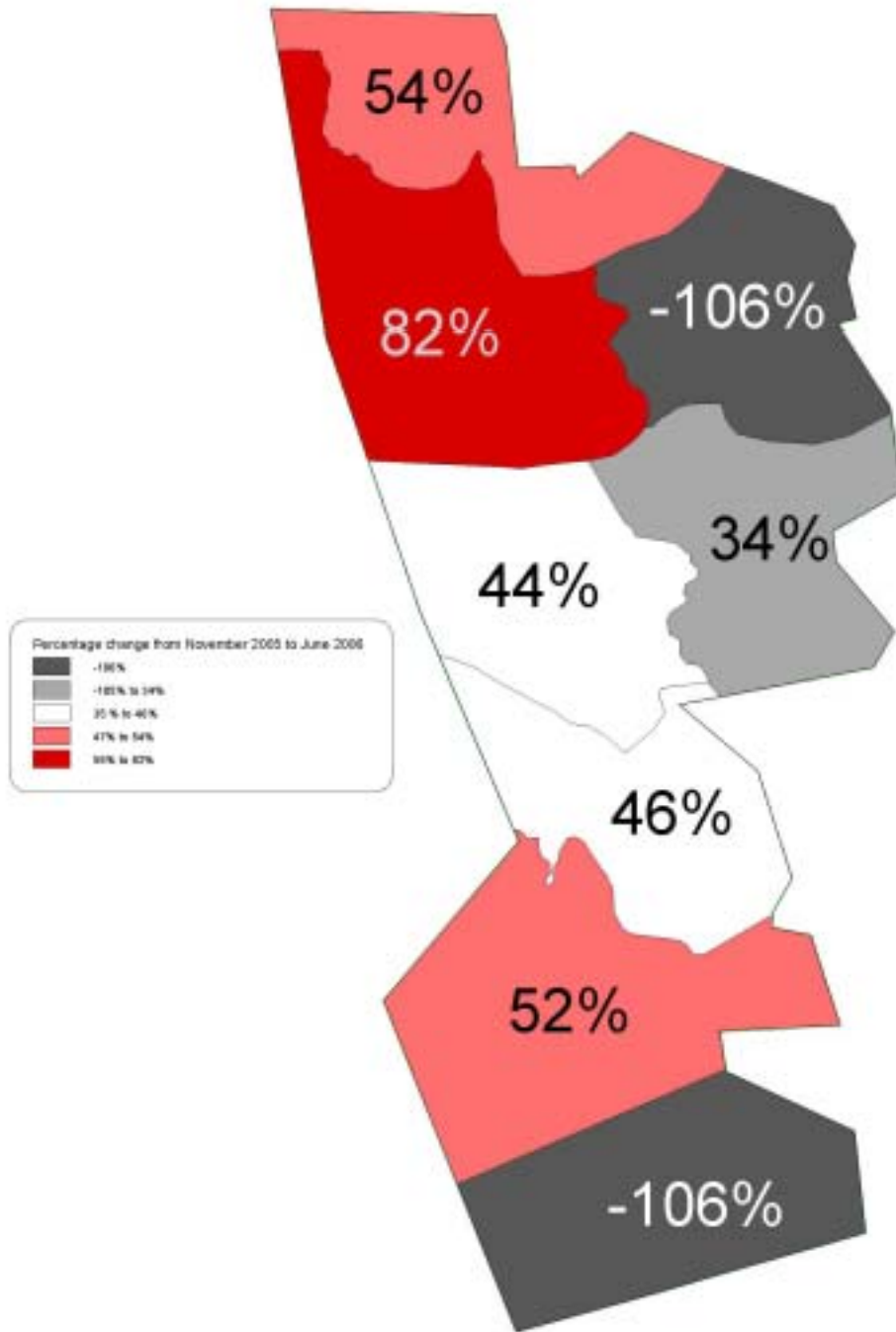
Plenty of grazing is currently on hand to sustain the current wildlife population, however the current high is not sustainable. Drier rainy seasons are bound to follow and grass production will return to normal within the next few years. In order to maintain a healthy carrying capacity and to prevent a population crash, which would follow a return to normal climatic conditions, the Reserve is pro-actively implementing solutions to reduce wildlife numbers.

Eighty Burchel's Zebra are to be captured in July 2006 and large numbers of oryx and springbok are scheduled for live capture in 2007. Some of these animals will be donated to emerging communal area conservancies, as a gesture of good will toward our southern communities.

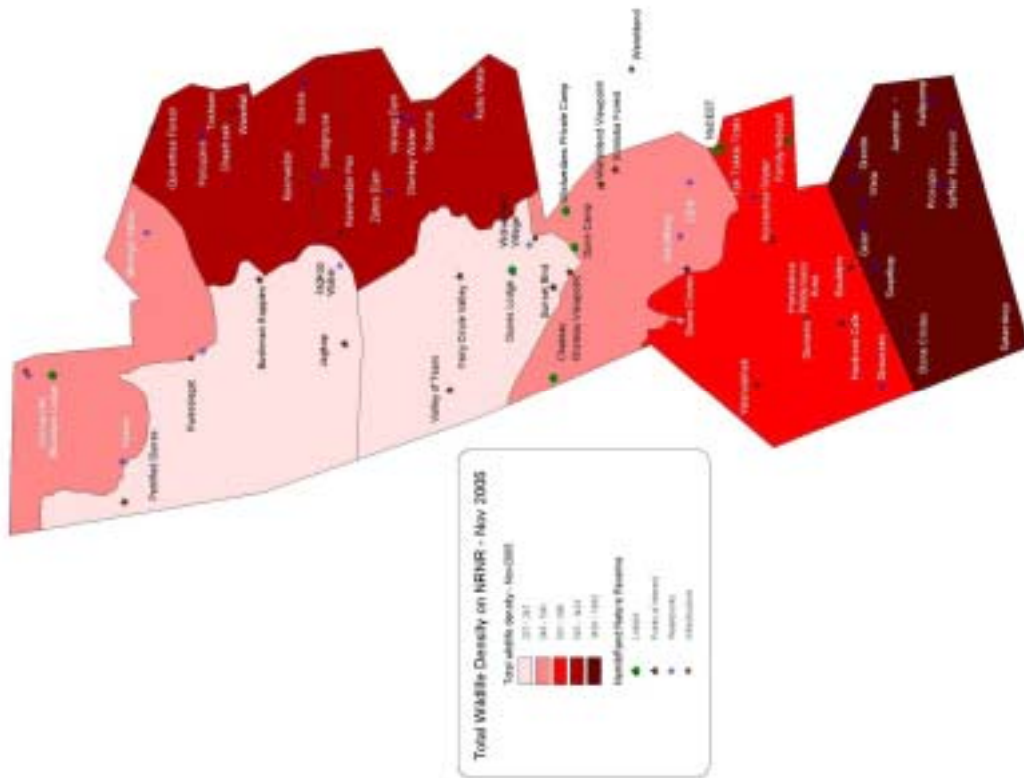
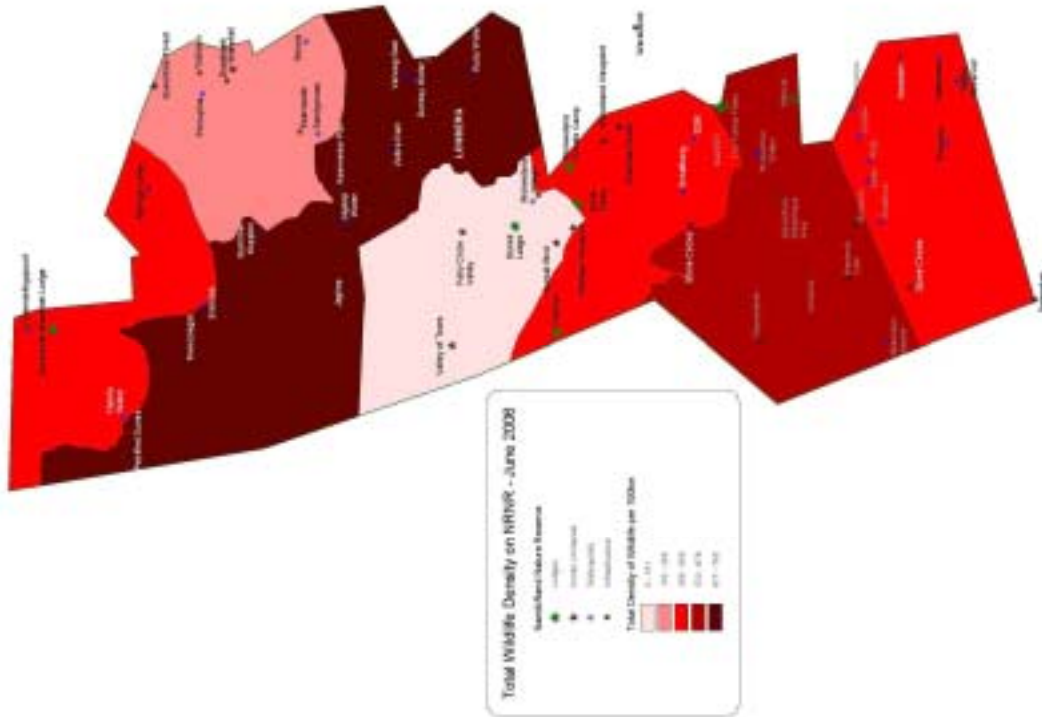
Wildlife Distribution

Map 7 illustrates the change in wildlife distribution between November 2005 and June 2006.

Map 7:



For the sake of comparing the total wildlife distribution, Map 7 is compared to the total wildlife density from November 2005.



Population Change

In order to make comparisons, data needs to be standardized. Data is standardized into sightings per 100km. Table 13 below shows the data for animals seen per 100km driven

Table 13:

June 2006 - Species sightings per 100km

Route	Length Of Route (km)	Species											
		Gemsbok		Springbok		Kudu		Steenbok		B.Zebra		Ostrich	
		No	P/100km	No	P/100km	No	P/100km	No	P/100km	No	P/100km	No	P/100km
1	52	52	100	474	912	0	0	0	0	0	0	43	83
2	53.9	10	19	344	638	0	0	0	0	14	26	0	0
3	57	218	382	470	825	0	0	0	0	33	58	44	77
4	42.9	81	189	96	224	0	0	1	2	0	0	4	9
5	72.9	42	58	500	686	0	0	0	0	0	0	24	33
6	33.9	3	9	497	1466	49	145	0	0	168	496	15	44
7	54.6	30	55	613	1123	0	0	0	0	0	0	33	60
8	54	179	331	312	578	0	0	0	0	0	0	19	35
Total	421.2	615	146	3306	785	49	12	1	0	215	51	182	43

Table 14 compares the total number of animals seen per 100km driven for consecutive game counts held.

Table 14:

Sightings per route

Route	length of route	June 05	November 05	June 06	% Change (Jun06 -Nov05)
1	52	608	500	1094	54%
2	53.9	1491	1407	683	-106%
3	57	387	247	1342	82%
4	42.9	239	237	424	44%
5	72.9	480	416	776	46%
6	33.9	875	1423	2159	34%
7	54.6	714	596	1238	52%
8	54	822	1943	944	-106%
Total	421.2	579	794	1037	23%

Tables 13 and 14 put the game count data into a different perspective and help us to equate the data in a more manageable and understandable format. We can, for example, determine that if we drive 100km, or from the top to the bottom of the Reserve, we will see 785 springbok in that distance. This is the true test of the data and helps us put the large numbers into perspective.

Figures 3, 4 and 5 translate the data listed in Tables 13 and 14 into graph format for easy interpretation.

Figure 3:

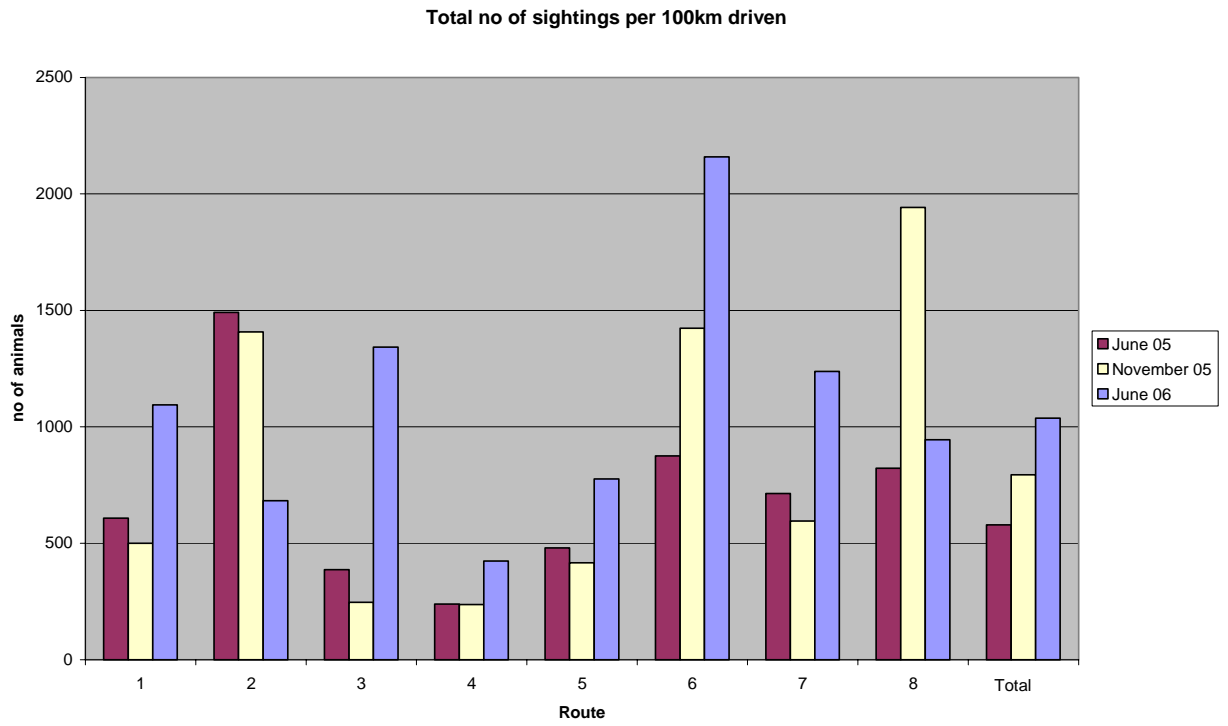


Figure 4:

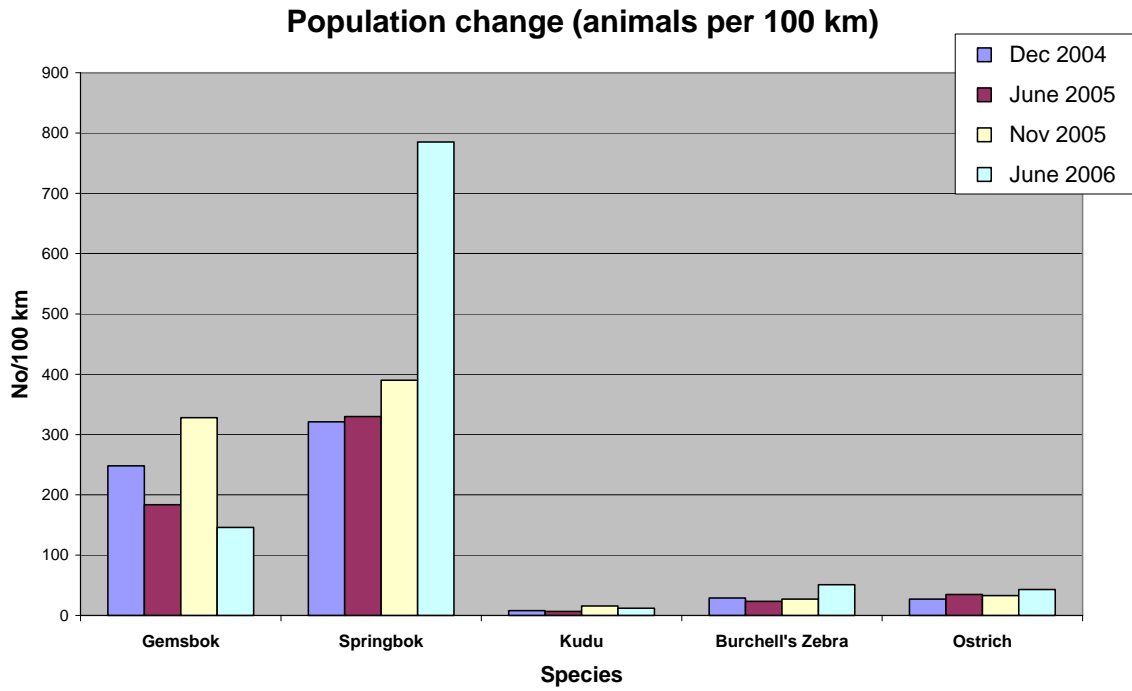
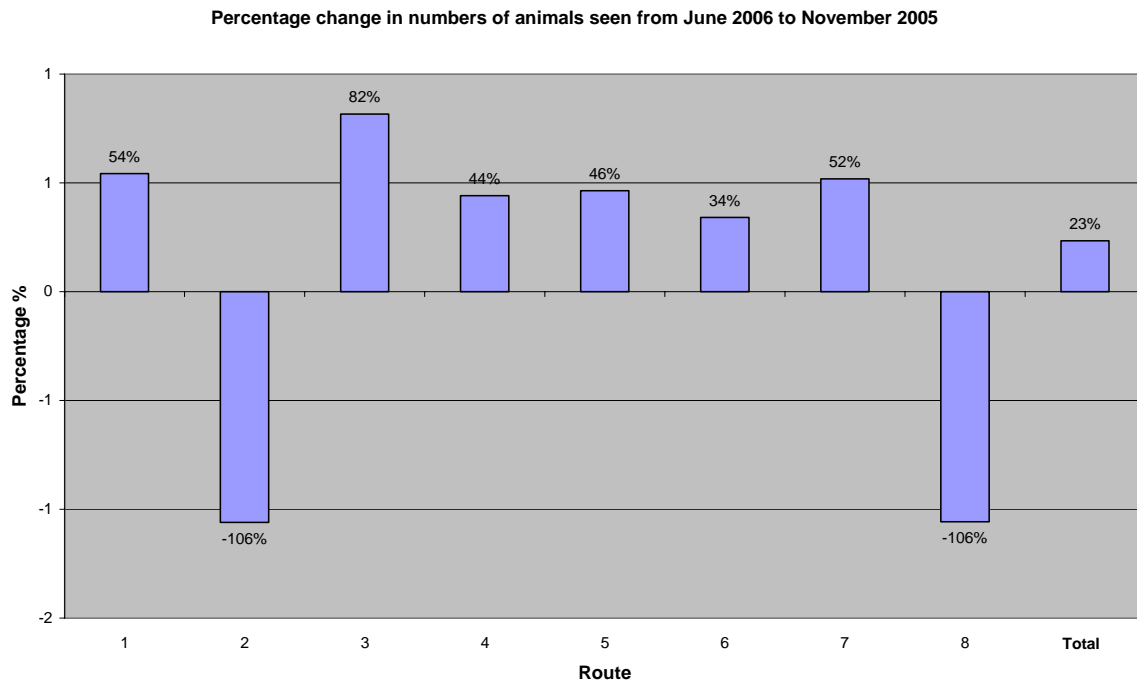


Figure 5:



Comments

Although species correction factors have been adjusted for NamibRand, the data collected from all game counts can still be compared because the data is based on the actual number of sightings.

The fluctuation in orxy numbers between the November and June counts proves that there is a definite and measurable east-west migration occurring with the rains.

Acknowledgements

NamibRand staff would like to thank all those who helped with this game count. Although this census was conducted as an “in-house” affair we would not have been able to conduct the count over only two days without their help. Special mention is thus extended to Wolwedans for making three teams available, NaDEET and TokTokie Trails for making one team available and to Albi and Antje Brückner for helping on both days of the count. In addition, we would like to thank Senior Ranger, Andreas Keding for training new comers to the count at Die Duine.