

GAME COUNTS IN NORTH-WEST NAMIBIA

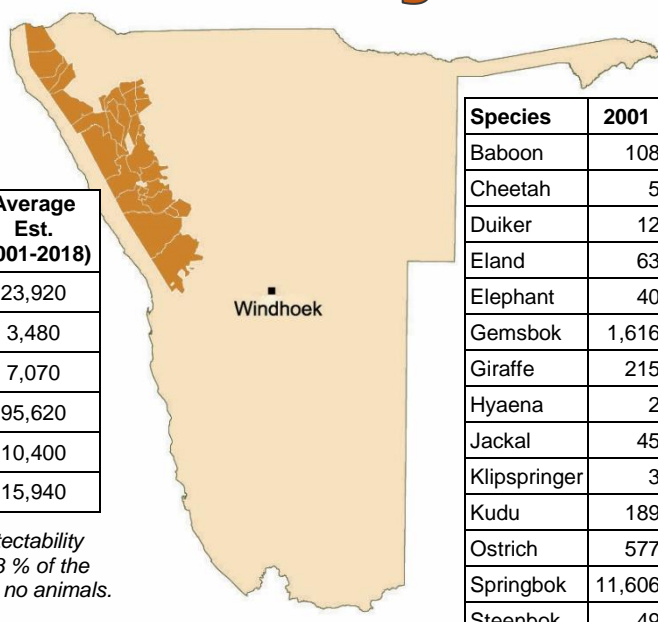
Regional Summary

May 2019

Total Population Estimates

Species	Population estimate	Lower 95% CL	Upper 95% CL	Estimate 2018	Average Est. (2001-2018)
Gemsbok (U)	6,605	4,600	9,500	5,900	23,920
Kudu (HN)	2,035	1,120	3,670	730	3,480
Ostrich (U)	8,120	6,050	10,880	4,910	7,070
Springbok (HN)	61,190	46,450	80,615	59,750	95,620
Steenbok (HN)	8,220	6,025	11,200	4,240	10,400
Hartmann's Zebra (HN)	8,695	5,700	13,280	15,260	15,940

Estimates are derived using DISTANCE analysis which takes account of drop-off in detectability with distance from the transect line. They are conservative estimates as, on average, 28% of the count area is not sampled (due to inaccessibility) and is consequently assumed to hold no animals. Model selection: U = uniform; HN = half normal.

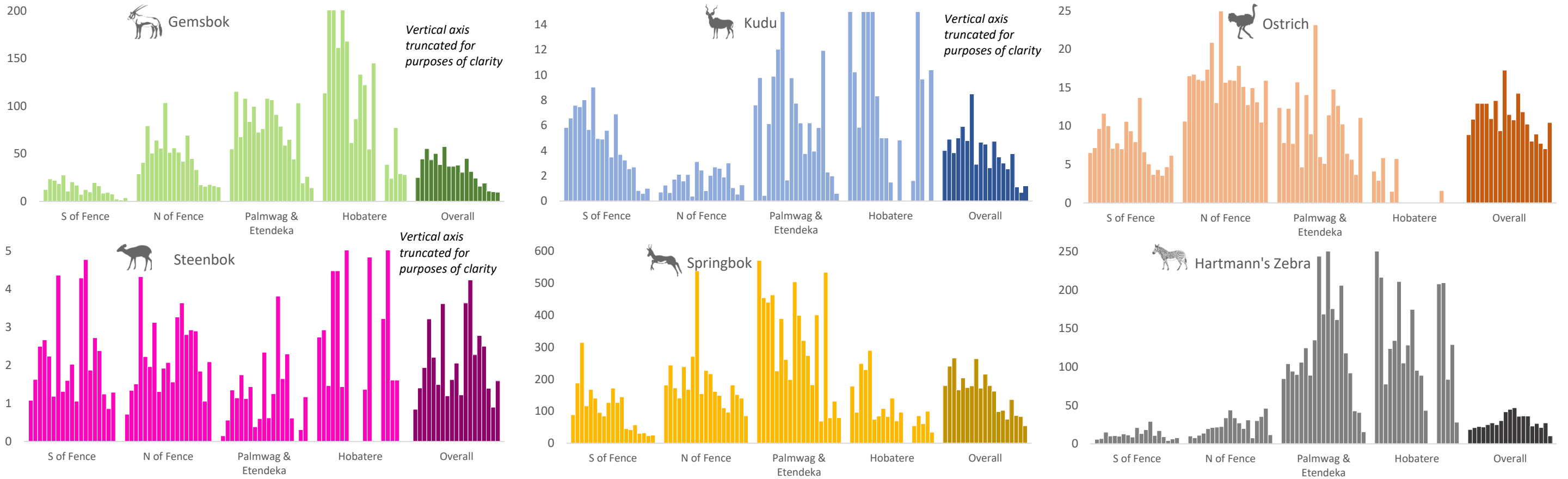


Count area: 6.9 million ha

Total number of animals seen each year

Species	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Baboon	108	116	203	135	555	165	567	239	310	390	172	510	548	192	334	667	302	356	443
Cheetah	5	1	7	7	14	2	4	7	6	3		5	3	11	5		6	1	2
Duiker	12	6	3	5	18	3	8		7	6	11	3	14	9	6	11	2	5	8
Eland	63	19		12	10	12	45	5	30		13	2		5	45	21	5	9	26
Elephant	40	24	45	17	107	5	36	44	72	31	73	39	34	74	64	41	94	31	95
Gemsbok	1,616	2,698	3,483	2,749	3,506	2,612	3,898	2,609	2,652	2,755	2,238	3,244	2,413	1,791	1,247	1,510	856	782	774
Giraffe	215	232	189	281	213	296	268	231	253	441	362	420	336	256	346	504	354	418	509
Hyaena	2			1	7		4	3	1	10	2	1	9	1	5	4	8	3	3
Jackal	45	84	60	82	78	94	108	59	81	119	68	91	104	83	89	87	86	51	40
Klipspringer	3	14	20	17	34	15	24	5	19	21	10	45	27	21	9	20	14	11	6
Kudu	189	297	241	316	413	324	576	207	337	327	190	329	269	221	200	296	88	53	95
Ostrich	577	659	815	817	903	741	902	666	1,247	832	772	1,027	911	752	630	706	610	545	842
Springbok	11,606	14,560	16,734	10,509	14,227	11,746	12,135	18,729	12,411	15,601	12,818	11,711	7,586	7,531	5,876	10,744	6,823	6,456	4,384
Steenbok	49	85	122	203	154	101	245	85	117	149	88	261	325	167	218	197	110	70	128
Warthog	6	14	8	7	13	11	13	2	2	3	6	8	12	3	8	4	5	4	
H. Zebra	1,210	1,274	1,414	1,376	1,738	1,838	1,684	2,136	3,004	3,248	3,361	2,583	2,790	2,648	1,812	2,084	1,671	2,105	830

Trends - Number of animals per 100km (2001-2019)



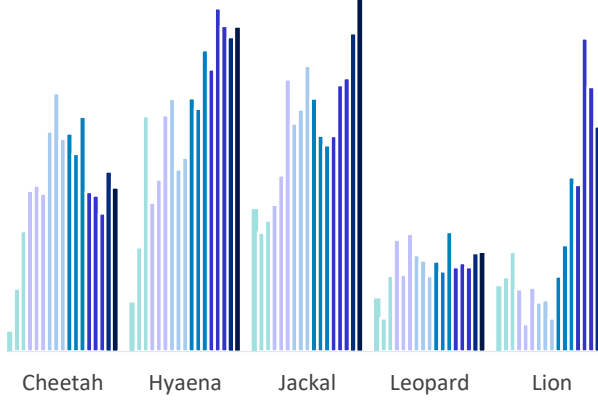
Synopsis

Wildlife populations in north-west Namibia were severely impacted in the 1980s by a combination of severe drought and poaching. Community conservation, formalised in 1996 through conservancies facilitated an increase in wildlife numbers through controlled utilisation and effective control of poaching. Between 1996 and 2012 most species experienced stable or growing population trends. However, a subsequent 8-year long dry phase, together with low level harvesting, has resulted in a steady decline in populations of many game species. The most recent rainy season recorded the lowest rainfall for many decades. Predator numbers have also increased contributing to recent wildlife declines. In response to the decline in numbers, harvesting through controlled hunting has been reduced since 2014 to enable populations to recover.

The North-west comprises 4 distinct sub-areas: conservancies south of the veterinary fence, conservancies north of the fence and the concession areas (where no utilisation is permitted) of Palmwag & Etendeka and Hobatere. There are clear differences in animal density between these areas with the concession areas having highest densities and the southern area having the lowest.

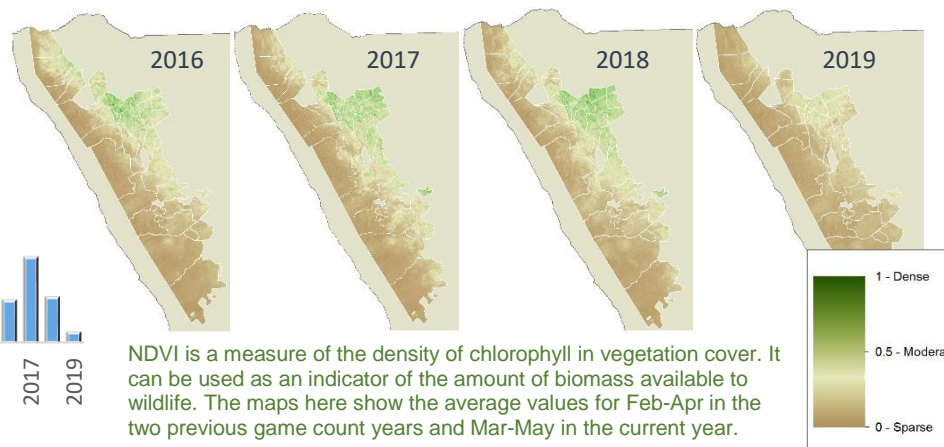
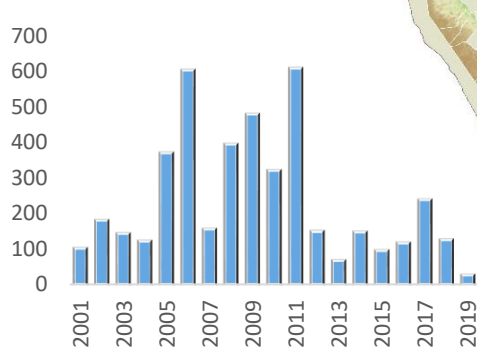
Species	Estimates by sub-area			
	South of Vet. Fence	North of Vet. Fence	Palmwag & Etendeka	Hobatere
Gemsbok	1,812	3,823	865	112
Kudu	1,066	733	176	55
Ostrich	2,668	5,067	377	
Springbok	13,371	39,948	7,654	219
Steenbok	3,818	3,918	479	
H. Zebra	3,855	3,713	1,011	120

Predator sighting index 2002-2018



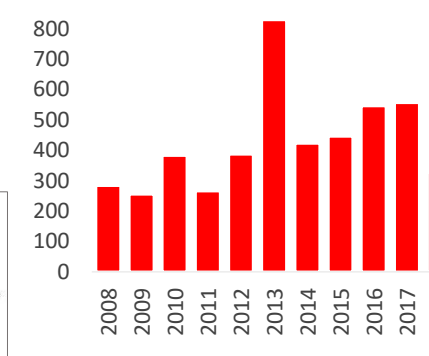
Species	Harvesting offtake				
	2014	2015	2016	2017	2018
Gemsbok	572	208	163	131	43
Giraffe	16	9	6	11	2
Jackal	14	5	15	12	13
Klipspringer	5	5	7	5	4
Kudu	120	49	91	86	54
Ostrich	95	75	100	55	27
Springbok	1727	821	768	719	76
Steenbok	8	3	13	3	4
H. Zebra	350	288	150	234	72

Average rainfall (mm)



NDVI is a measure of the density of chlorophyll in vegetation cover. It can be used as an indicator of the amount of biomass available to wildlife. The maps here show the average values for Feb-Apr in the two previous game count years and Mar-May in the current year.

Mortalities: number of animals



The latest count suggests that despite the harsh conditions, population trends for several species may have levelled off. For some like kudu, ostrich and steenbok there have been promising increases in numbers seen. Of interest is the dramatic drop in numbers of Hartmann's zebra recorded. This may at first seem cause for alarm however it is most likely a result of sampling deficiency. These animals are highly arid adapted and retreat into the mountainous areas, which lie away from transect routes, when there is little to lure them onto the plains. A similar drop in numbers, and subsequent spike, was seen in the north sub-area (which contains most zebras) between 2015 and 2018.

The concession areas of Palmwag and Etendeka (which represent only slightly more than 9% of the region) are important natural refuges for many wildlife species, containing an estimated 32%, 26% and 17% of the region's springbok, gemsbok and Hartmann's zebra respectively. Trends in these areas often show radical spikes between years reflecting animal movements within the concessions and eastward or westward movements between concessions, conservancies and freehold land. Many animals may also be missed due to under-sampling in counts; 43% of this area is excluded.

Estimates for the 4 sub-areas are indicated opposite. There is also a poster available for each sub-area, depicting trends, sightings and wildlife estimates in these areas.

Animals seen(*) during this count and minimum estimates (**)

	Total	Ikhorro IGoreb	#Kkoadi //Hòas	Anabab	//Audi	Doro //Nawas & Utihasen Twyfelstein	Eh-Rovipuka	Etendeka	#Gangu	Hobatere	//Huab	Marientluss	Ohungu	Okangundumba	Okonjombi	Onatendeka	Ombujokanguindil	Ongongo	Orupembe	Orupupa	Oujambangu	Oujikondivirongo	Oujimboyo	Oujju-west	Ouzemba	Ozondundu	Palmwag	Puros	Samilatias	Sestfontein	Sorris sorris	Torra	Tsiseb
Total Route km	8,048	188	481	233	48	520	273	135	734	96	441	281	175	139	192	211	158	64	292	159	56	135	93	88	102	77	549	328	151	307	206	495	641
Total area (km2)	69,489	1,337	3,358	1,636	335	4,137	1,979	633	7,756	258	2,129	3,034	1,245	1,130	1,613	1,613	657	619	2,616	1,775	348	1,067	432	1,208	741	743	5,891	3,564	1,446	2,469	2,290	3,492	7,908
Number of routes	158	4	9	5	2	9	5	3	10	3	8	6	3	3	4	4	3	5	6	3	1	4	2	2	3	2	11	6	4	4	4	8	8
% area excluded	28	30	45	51	0	6	28	44	17	5	4	28	14	29	16	48	26	53	10	44	74	58	30	71	26	55	43	31	28	42	18	25	16
NDVI Difference (%) (***)	-47.3	-43.0	-40.1	-38.9	-14.0	-44.7	-39.8	-26.2	-42.3	-43.7	-26.1	-43.5	-39.9	-33.8	-41.2	-39.8	-41.6	-27.6	-44.5	-40.8	-42.2	-34.8	-41.2	-38.9	-38.0	-22.7	-19.0	-28.7	-23.4	-35.8	-24.6	-19.5	
Average Rainfall (mm)	41	46	40	74	14	49	38	32	53	36	10	32	70	18	52	47	45	8	52	64	31	23	34	50	64	14	9	11	24	19	20	14	
Species																																	
Gemsbok	36	97			84	19	27	87	5	1	197															79	70	78	53	11	27		
					635		86	837	40	4	1,549															357	354	736	213	84	128		
Giraffe	19	21			8	110	63	23	7	125									6	3							25	22	23	17		36	
	51	42			16	372	102	44		6					14	250			12	18							46	44	46	34		72	
Kudu	16	5	1		2	7	1	10	6	1									4	2						3	14	3				14	1
	66	24	5		9	26	3	36	38	7									23	13						17	40	13				61	14
Ostrich	15	9			27	10	7												81	26	25	2	19	35	1	7	76	54	19	76	9	139	28
	31	19			197	65	55												156	40	7	56	138	3	31	252	117	106	233	70	604	291	
Springbok	138	338	8		85	104	252	247	33	14	143	46	57	773	122	131	7	233	42	156	36	150	1			187	293	56	45	355	20	258	54
	291	653	67		533	384	2,116	93	99	900	301	317	3,498	486	590	35	1,756	270	248	120	540	4				923	847	77	205	1,581	153	1,176	667
Steenbok	12				3	5	1	2			10	1	5	4	3	5	9	1	9	18	3	1	3			3	2	7				8	4
	46				18	36	9	2	13		52	7	30	22	23	20	39	4	79	116	5	3	10			17	6	33				43	53
Hartmann's Zebra	132	52			48	49	77		27	16	21				37				69							4	30	56	6	88	9	84	25
	328	121			368	144	154		77	115	152				137				580							11	232	323	42	451	69	380	241

(*) Values in bold are numbers of animals seen along transects.

(**) Values shaded yellow are minimum estimates assuming all animals within 500m on each side of the transect line are detected i.e. there is no adjustment for drop off in detection with distance from the transect line. In addition, for springbok, gemsbok and giraffe, large groups were excluded from extrapolations and added afterwards. The sum of these values will be significantly lower than the totals indicated in the top left table as the total estimates take account of species detection curves.

(***) NDVI is a measure of 'greenness' or biomass cover. The value presented is the % difference between the current year and the long term average (2003-18). A negative value (red or orange) indicates there was less biomass cover than average while a positive value (green) indicates there was more cover.