

# Wildlife census of Namibia's North East Rivers - 2009



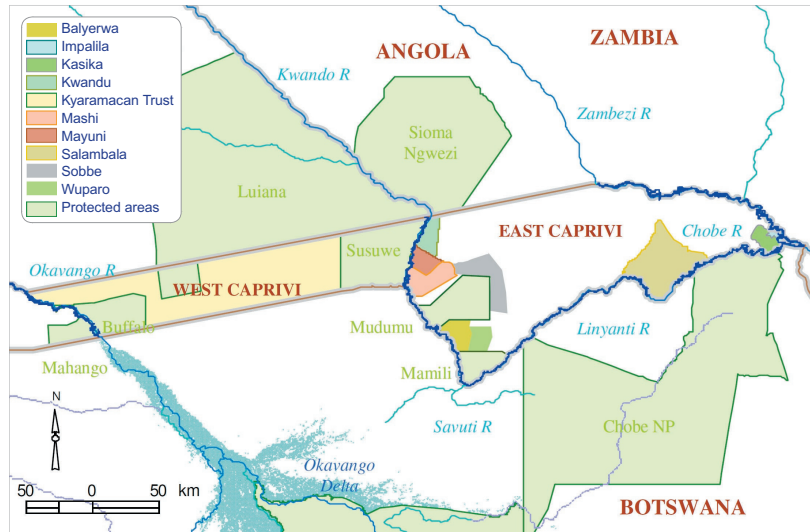
## Introduction and Methods

Caprivi is a key area for wildlife, which moves freely between Namibia and neighbouring countries. Caprivi has a number of community conservancy programmes, in addition to state protected areas. Conservancies have a strong commitment towards conservation, which contributes to rural livelihoods through the development of wildlife-based enterprises.

The third aerial wildlife census of the Caprivi and Kavango river systems in Namibia took place during September 2009. These surveys cover the Kavango, Kwando, Linyanti, Chobe and Zambezi Rivers and their associated wetlands and floodplains. The area (~18,000 km<sup>2</sup>) is surrounded by Angola, Botswana, Zambia and Zimbabwe, lying between the Okavango River in the west, and the Zambezi and Chobe Rivers in the east. The Okavango, Kwando, Linyanti and Zambezi rivers provide perennial water. Extensive, broad floodplains flood seasonally along these rivers and there are also some smaller, permanent wetland within the floodplains.

The strata were slightly modified compared to previous surveys to take account of the high flood levels. Transects were flown at 100 knots in a Cessna plane, typically during the morning. A 250 m strip width was used for recording wildlife from an altitude of around 90 m. Adjoining transects 500m apart were used, providing a 100% sampling coverage of the entire area.

For all strata, standard transect sampling methodology was used. Waypoint number, time, altitude and number of animals was recorded for every observation. Two experienced observers were used throughout. High resolution photos were taken of most observations; these were used to verify herd size and the sighting of herds within the count area. Additional helicopter and boat surveys were used in two areas to supplement and verify the survey data.



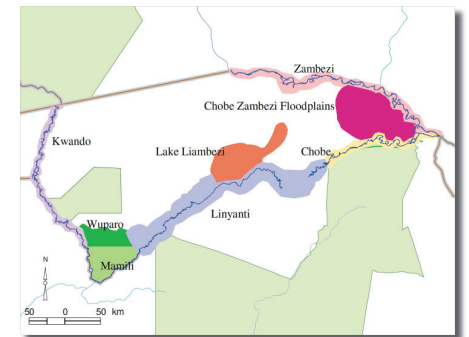
Hippo and crocodile as well as floodplain ungulates such as reedbuck, lechwe, waterbuck, puku and sitatunga were counted. Other large woodland mammals (elephant, buffalo, sable, kudu, zebra and impala) and wetland birds (cranes, pelicans, storks and spur-winged goose) and nesting/breeding sites were also recorded.

The first survey was conducted in August 2004 and the second in September 2007. These surveys provide recent information on the distribution, abundance and trends of wildlife species, including comparisons between protected areas and conservancies. This poster presents the results of the latest survey and compares them with the previous surveys.

The survey was flown over 16 days. As previously, the survey area was divided into five strata and areas within each stratum were assigned to either protected areas or conservancies. The



During this survey, 4,878 km were flown in 44 hours at an average height of 92 m.



East Caprivi strata for the 2009 aerial survey. In West Caprivi, the Kavango River, Mahango, Buffalo and adjacent floodplains were surveyed.

## Results

Species	Animals counted		
	2004	2007	2009
Buffalo	3,262	5,951	9,633
Elephant	860	3,062	3,450
Impala	742	1,361	1,457
Zebra	1,084	1,653	1,689
Hippopotamus	1,387	1,269	1,291
Lechwe	738	767	777
Reedbuck	76	162	105
Crocodile	207	243	151
Giraffe	21	1	11
Kudu	98	134	171
Lion	4	10	24
Roan	0	0	29
Sable	45	102	20
Sitatunga	2	7	19
Tsessebe	25	31	17
Warthog	226	176	173
Waterbuck	60	30	131
Wildebust	6	35	64
<b>Total</b>	<b>8,843</b>	<b>14,994</b>	<b>19,212</b>

Black egret		350	
Openbilled stork		4,200	
Ostrich		20	
Pelican	498	1,924	343
Wattled Crane	8	24	41

A total of 19,212 head of wildlife (excluding birds) were observed. The distribution of wildlife was largely confined to the protected areas, however more species were observed in conservancies than in previous surveys. The highest numbers occurred in the Mamili stratum, and the lowest in the Zambezi stratum. The most abundant species were buffalo and elephant. Of the wetland species, hippo occurred in the greatest numbers. Of the woodland species, buffalo

occurred in the highest numbers, followed by elephants. Wildlife numbers of all species except crocodile, reedbuck and warthog have increased. Most cattle and mokoros were observed along the Zambezi River, while most fishing nets were recorded in the Linyanti stratum, mostly in Lake Liambezi. Two important bird nesting sites were observed.

Protected Area	Area (km <sup>2</sup> )	
	Number	Density
Mahango/Bufferlo	48	
Susuwe	94	
Mudumu	65	
Mamili	377	
Chobe NP	54	
<b>Sub total</b>	<b>638</b>	
<b>Conservancy</b>		
Kwando	56	
Mayuni	25	
Mashi	30	
Balyerwa	106	
Wuparo	115	
Salambala	86	
Kasika	416	
Impalila	78	
<b>Sub total</b>	<b>912</b>	
Undesignated communal	1145	
<b>Total</b>		

Species	Woodland species		Water/Floodplain species	
	Number	Density	Number	Density
Buffalo	519	10.81	5	0.10
Elephant	5	0.10	191	3.98
Impala	191	3.98	12	0.25
Zebra	12	0.25	43	0.46
	283	3.01	202	2.15
	158	2.43	647	9.95
	4,282	11.36	1,227	3.25
	2,351	43.54	576	10.67
	7,353	11.53	2,738	4.29
			1,253	1.96
			1,511	2.37
			3	0.05
			35	0.63
			30	1.00
			379	3.58
			10	0.09
			75	0.18
			795	0.87
			467	0.51
			65	0.07
			178	0.20
			229	0.20
			113	0.10
			15	0.01
			1,256	
			132	
			124	
<b>Total</b>	<b>9,633</b>		<b>3,450</b>	
			<b>1,457</b>	
			<b>1,689</b>	

Species	Hippo		Lechwe		Reedbuck		Crocodile	
	Number	Density	Number	Density	Number	Density	Number	Density
Hippo	409	8.52	169	3.52	55	1.15	33	0.69
Lechwe	62	0.66	206	2.19	8	0.09	1	0.01
Reedbuck	29	0.45	13	0.20	0.00	2	0.03	
Crocodile	230	0.61	240	0.64	27	0.07	31	0.08
	210	3.89	44	0.81	3	0.06	21	0.39
	940	1.47	672	1.05	93	0.15	88	0.14
	8	0.14	23	0.41			1	0.04
			4	0.16	2	0.08	3	0.10
			1	0.03				
	71	0.67						
	9	0.08						
	8	0.02	45	0.11			5	0.01
	41	0.53					1	0.01
	137	0.15	73	0.08	2	0.08	10	0.01
	159	0.14	3	0.00	7	0.01	46	0.04
	55		29		3		7	
<b>Total</b>	<b>1,291</b>		<b>777</b>		<b>105</b>		<b>151</b>	



105 reedbuck were recorded. The only reedbuck observed in conservancies occurred in Mayuni. Most were in Mahango.



This was the first survey to record buffalo on the Chobe/Zambezi floodplains.



Most impala were in the protected areas, primarily Mudumu, with small numbers in Kwando and Mashi conservancies

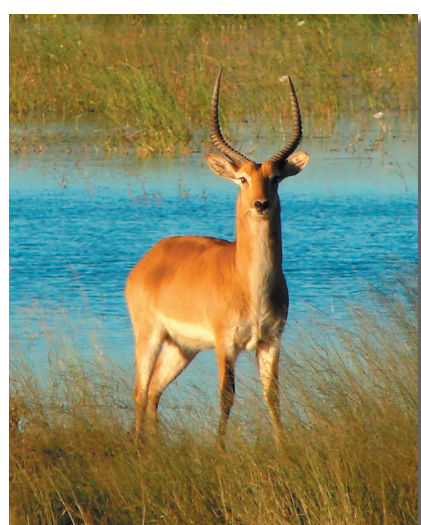


Of the 41 wattled cranes observed, most were in the Chobe/Zambezi floodplains.

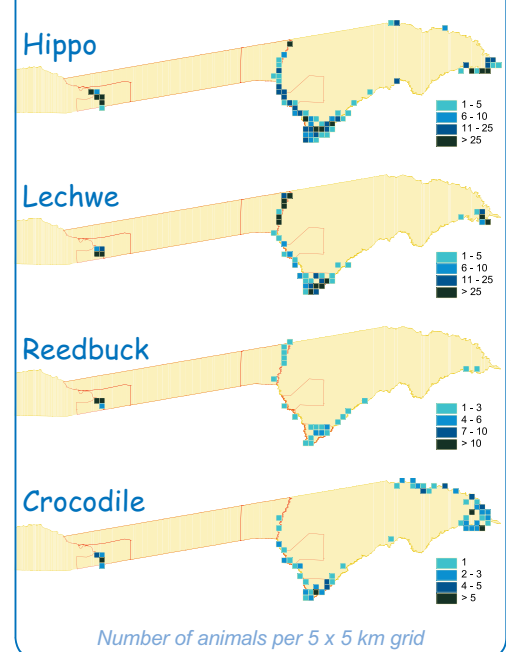
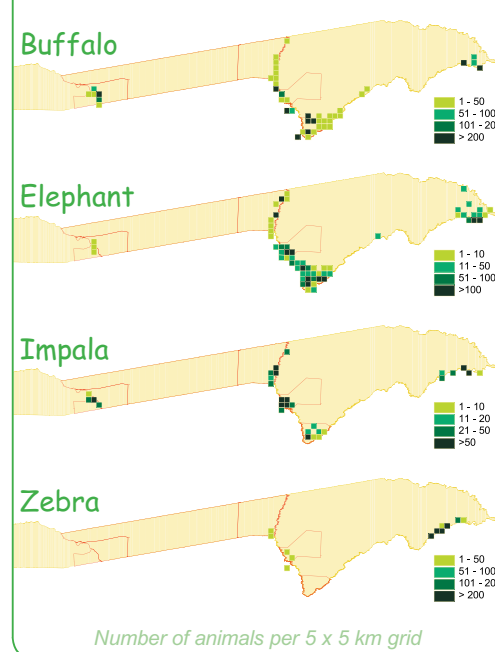
## Cattle, mokoros (traditional canoes), fishing nets:

These observations provide a measure of human activity and can assist in understanding wildlife distributions.

Stratum	Cattle		Mokoros		Nets
	2007	2009	2007	2009	2009
Chobe/Linyanti	2,096	10,769	88	175	255
Kwando	968	2,852	32	81	27
Mamili NP	0	0	0	0	0
Zambezi	7,056	17,476	994	1,062	21
Kavango	0	366	0	1	4
Undesignated		253		8	2
<b>Total</b>	<b>10,120</b>	<b>31,716</b>	<b>1,114</b>	<b>1,327</b>	<b>309</b>



In the 2009 survey fewer lechwe were counted in the protected areas and more were counted in conservancies than in previous surveys.



## Conclusions

In 2009, the Zambezi River reached its highest level since 1969, inundating most of the eastern Caprivi and resulting in many areas becoming flooded for the first time in several decades. This may have affected wildlife distribution and abundance and should be taken into account when comparing counts between the three surveys. Species such as hippo, for example, were recorded in areas further away from major rivers such as the Kwando and Linyanti than previously. The majority of Caprivi's wildlife populations occur along international boundaries and are shared with neighbouring countries; their distribution is variable and transboundary movements in response to environmental fluctuations are common.

This survey recorded 20% more wildlife along the river systems of the Caprivi than in 2007. Wildlife numbers of all species except crocodile, reedbuck and warthog increased. The increase in wildlife both within

protected areas and conservancy areas may be attributed both to the movement of wildlife within the Caprivi and movements between Botswana and the Caprivi as well as the efforts of local conservation initiatives such as conservancies which encourage increased wildlife numbers through reduced poaching and game introductions.

Human factors are important: the most important factor limiting hippo numbers in Caprivi is competition with cattle for grazing. Other human influences such as the increasing areas of floodplain habitat being placed under cultivation also have implications for wildlife. Numbers of cattle, mokoros and fishing nets have increased significantly and the environmental impacts of human activities such as fishing and the harvesting of riparian trees for fuel, construction materials and mokoros, should be studied to assess whether current levels of utilisation are sustainable.

Information shown on this poster comes from the report:

**Fixed-wing aerial wildlife census of the Caprivi river systems. A survey of rivers, wetlands and floodplains. September 2009**

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