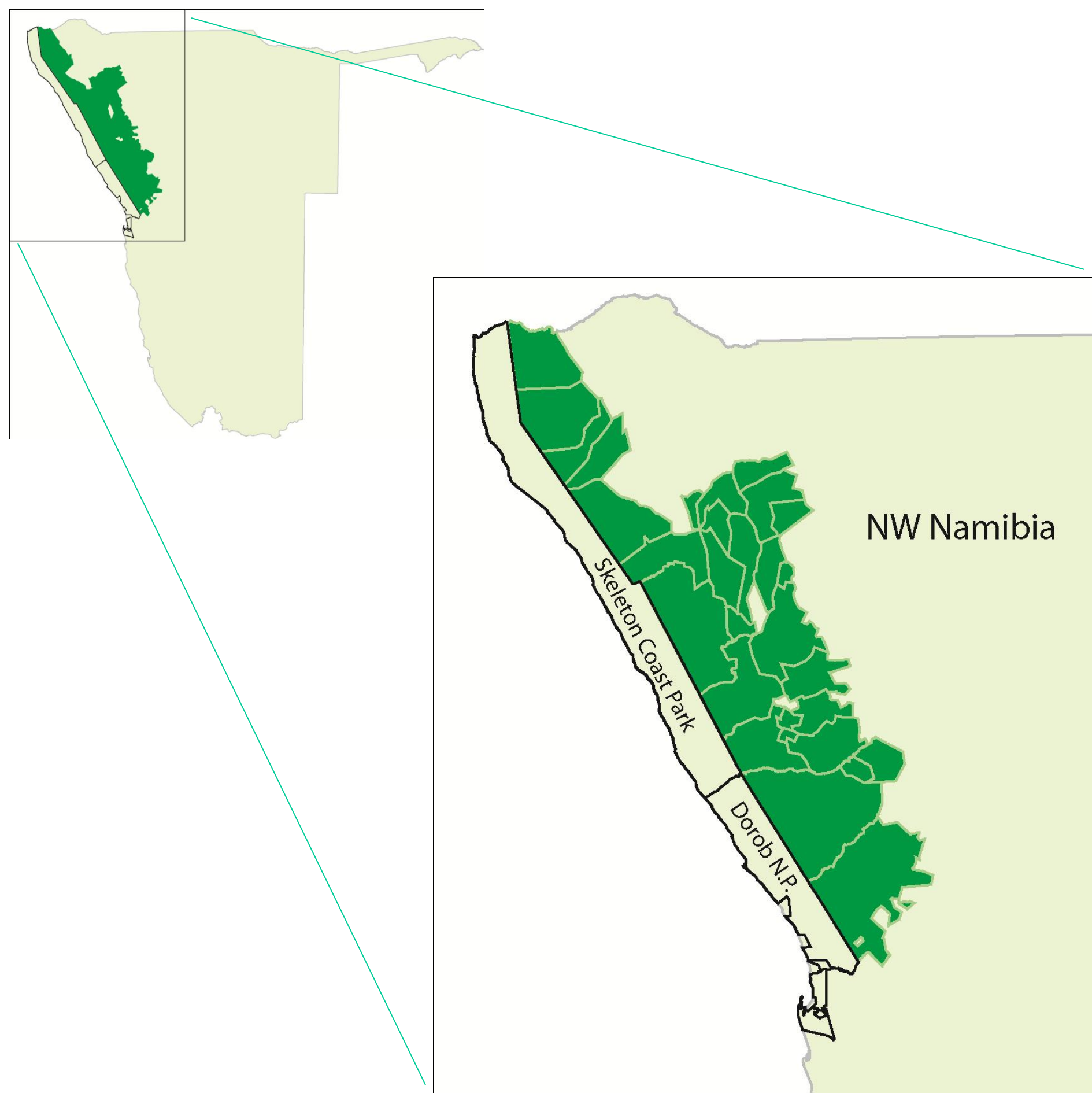


# GAME COUNTS IN NORTH-WEST NAMIBIA



## Methodology

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Members of the Namibian Natural Resource Working Group



Implemented by  
NACSO, a partnership  
between Namibian  
NGO's and Government

## OBJECTIVES OF COUNTING

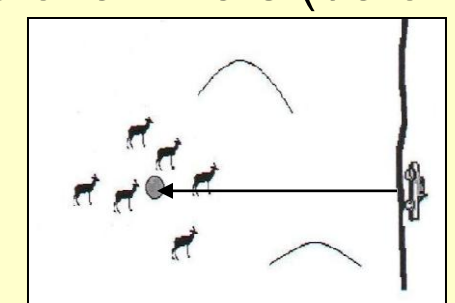
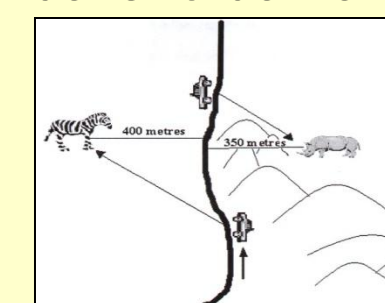
Objective	Reasons why information is needed
1. Estimate the <u>Numbers</u> of game  <b>How many?</b>	For: <ul style="list-style-type: none"><li>• setting reasonable hunting/capture quotas;</li><li>• estimating stocking rates to manage competition with livestock and protect veld;</li><li>• determining the value of wildlife in the Conservancy.</li></ul>
2. Produce <u>Game Distribution</u> maps.  <b>Where are they?</b>	For land-use planning (Zonation), it is important to identify areas of high game concentrations. Also to see how these distributions change in future years in reaction to rainfall or human factors such as water distribution or settlement .
3. Monitoring <u>Population Change</u>  <b>Is wildlife increasing or decreasing?</b>	With successive censuses, graphs can be drawn showing population changes of each species (e.g. are springbok increasing or decreasing?). This will tell managers whether or not they are achieving their game management goals and consequently indicate if it is necessary to change management strategies.



## FIELD RULES

### For determining game NUMBERS

1. Centre line (the road and immediately next to the road) are priority areas for searching.
2. Distance must be to the animal before it runs away
3. Distance must be at right angles to the road
4. Distance is to center of groups of animals (before the group moves away)



5. Where the route travels next to a fence only the animals inside the fence are counted (the route distance is then halved for that section of the route)
6. Routes must represent all habitats proportionally (i.e. also count low density areas)
7. Only count adults and sub-adults - make a note of numbers of newly born juveniles (or newly hatched chicks – ostriches)

### For TREND analysis, a number of additional rules were added:

8. Fixed routes will be used for subsequent counts
9. Start time is at sunrise
10. No binoculars to be used (knowing that leads to underestimation of numbers)
11. Always count from the back of an open bakkie
12. Speed must never exceed 35 km/hr

### For Game distributions, an additional rule was added:

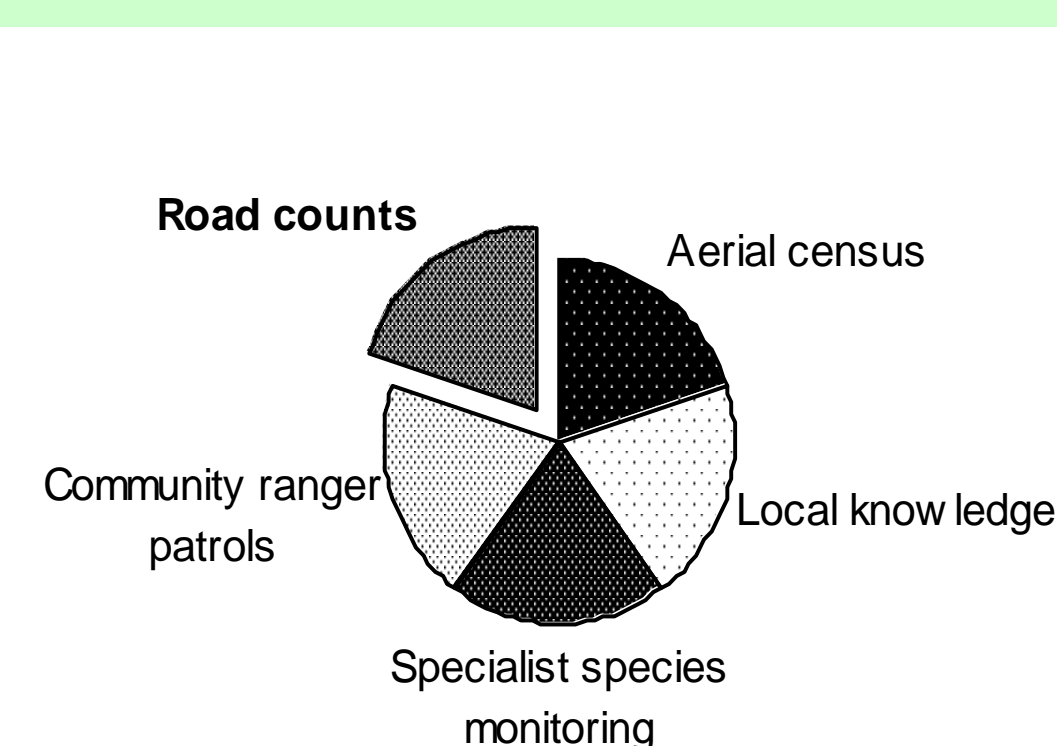
13. Location of each sighting is mapped using the 2km x 2km grid map



Training using coloured tokens to represent animals

## METHODS

A vehicle-based road count method is being used. This method works well for common plains game but will not give good results for all species; especially smaller secretive animals, nocturnal animals, and animals in mountainous areas. Other monitoring methods (e.g. aerial census, foot patrols, specialist species monitoring) and local knowledge are also important. This means that the road counts will add value rather than replace these other methods – i.e. the methods all work together each providing a piece of the 'pie'.



The road-count has been designed so that local people can do this count with minimum outside assistance (e.g. borrowing a few vehicles with drivers once a year).

To achieve both local ownership and scientific accuracy, the road-count is conducted in a manner that allows the data to be analysed in two different ways:

1. The Field method provides a quick estimate of population numbers that is ideal for the Conservancies or concession holders and draws on Effective Strip Widths (ESWs) derived from DISTANCE © analysis.
2. Full Distance analysis takes more time and is done back in Windhoek when more statistically robust estimates are required for target areas.

The field approach is considered suitable for providing adequate local and regional estimates of game numbers at the time of the count



North-West Game Count 2002		Conservancy: SESFONTEIN GMP		Start km: 234876
Date: 10-06-02		Observer/Spott: JAN ANDREES		End km: 234916
Name of Patrol Route: G51		Start Time: 06:25		End Time: 09:20
Start Locality: ROUTE 9 END POINT		End Locality: ROUTE 9 END POINT		Route length: 40 km
Start Locality: 31.05 N 15.05 E		End Locality: 31.05 N 15.05 E		
SPECIES	NUMBER	DISTANCE	BLOCK	REMARKS
	Actual	from road	Numbers	
			East/Bo	South/Order
SPRINGBOK	1	300	607	112
SPRINGBOK	1	200	607	112
ZEBRAS	5	250	607	111
GEMSBOKKE	16	300	607	111
ZEBRAS	7	300	607	111
SPRINGBOK	1	300	607	111
OSTRICHES	8	300	606	111
ZEBRAS	4	400	606	111
SPRINGBOK	1	500	606	111

Example of a data sheet

## Routes, Zonation & Correction Factors



Transect statistics	
#Khoadi //Hoas	
Year	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Duration	
2001	4.3 4.3 4.30
2002	4.07 4 4.07 4.07 4.07 4.07 4.07 4.07 4.07 4.07 4.07 4.07 4.07 4.07 4.07
2003	2.50 4 5.00 2.50 4.00 4.00 4.00 4.00 4.00 4.00 4.00 4.00 4.00 4.00 4.00
2004	4.24 5.00 4.75 3.25 3.50 4.00 4.00 4.00 4.00 4.00 4.00 4.00 4.00 4.00 4.00
2005	3.5 4.12 5.30 3.2 5.1 7.45 5.11 5.34 5.24
2006	4.1 4.5 5 3 4 5 3.5 4 2.7
2007	4 5.3 4.30 5.00 3.3 5.1 3.31 3 3.43
2008	4 5.30 4.5 3.3 4.11 5.15 4.20 5.4 5.42
2009	5.08 5.08 5.41 3 3 5.4 5.03 5.42 4
2010	4.7 5 5.5 2.45 4.72 5 5.5 4.25 3
Length (km)	
2001	36.5 48 46.5 36.5 61.5 42 47 36
2002	54.1 48 48 48 47 63.1 60.7 46 57
2003	52 48 48 47 67 63.1 60.7 46 57
2004	54 50 48 50 67 66.1 64 52 60
2005	50 50 48 48 50 59 63 40 59
2006	54 48 47 40 69 59 62 62 59
2007	51 50 48 47 66 71 62 44 59
2008	51 50 48 47 66 71 62 44 59
2009	53 47 47 47 66 66 62 45 59
2010	53 48 48 48 67 64 61 46 60
Area (km <sup>2</sup> ) Represented	
2008	106 128 90 194 284 266 151 245
Correction Factor	
Expected:	2.04 2.02 2.11 4.13 4.13 4.12 5.79 5.96 4.2
Used 2010:	
Divide the population estimate for each species by: 36.9 to get numbers per 5000 ha	

Rough field population estimates												Year: _____		Conservancy: #Khoadi //Hoas			
Route	1	2	3	4	5	6	7	8	9	10	11	12					
Route G: Fieker	2.0	2.7	2.1	4.1	4.3	4.1	5.7	5.8	4.2								
Species	Population Estimate												Species	Population Estimate	Trends		Local Estimate
Gemsbok	1.83												Gemsbok	1.83	1.83	1.83	1.83
Giraffe	2.45												Giraffe	2.45	2.45	2.45	2.45
Klipspringer	7.48												Klipspringer	7.48	7.48	7.48	7.48
Kudu	2.47												Kudu	2.47	2.47	2.47	2.47
Ostrich	1.85												Ostrich	1.85	1.85	1.85	1.85
Steenbok	10.55												Steenbok	10.55	10.55	10.55	10.55
Zebra	1.60												Zebra	1.60	1.60	1.60	1.60
Dukker	9.00												Dukker	9.00	9.00	9.00	9.00
Springbok	2.42												Springbok	2.42	2.42	2.42	2.42
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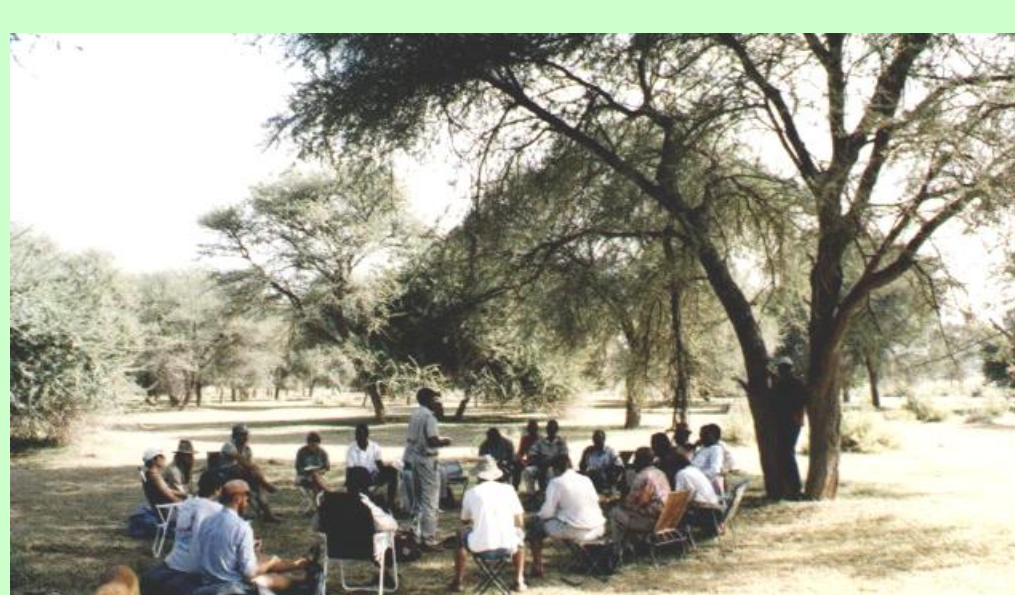
Each conservancy is divided up into count zones represented by routes. In addition, certain areas are excluded on the basis that no route adequately covers such terrain - i.e. no extrapolation is made to these areas

From DISTANCE © analysis it was determined that transects represent a strip (belt) width of 500m on either side of the line.

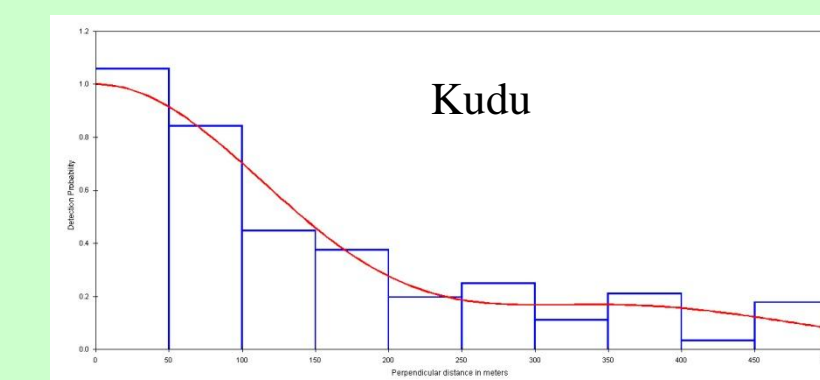
Route correction factors are used to estimate numbers per count route zone. The sum of each zone estimate provides a minimum total estimate for each conservancy

Species correction factors are then used to take account in drop-off in detection of animals with distance from the transect line. These are calculated using DISTANCE © . Large groups are excluded from extrapolations and added later.

## POPULATION ESTIMATES

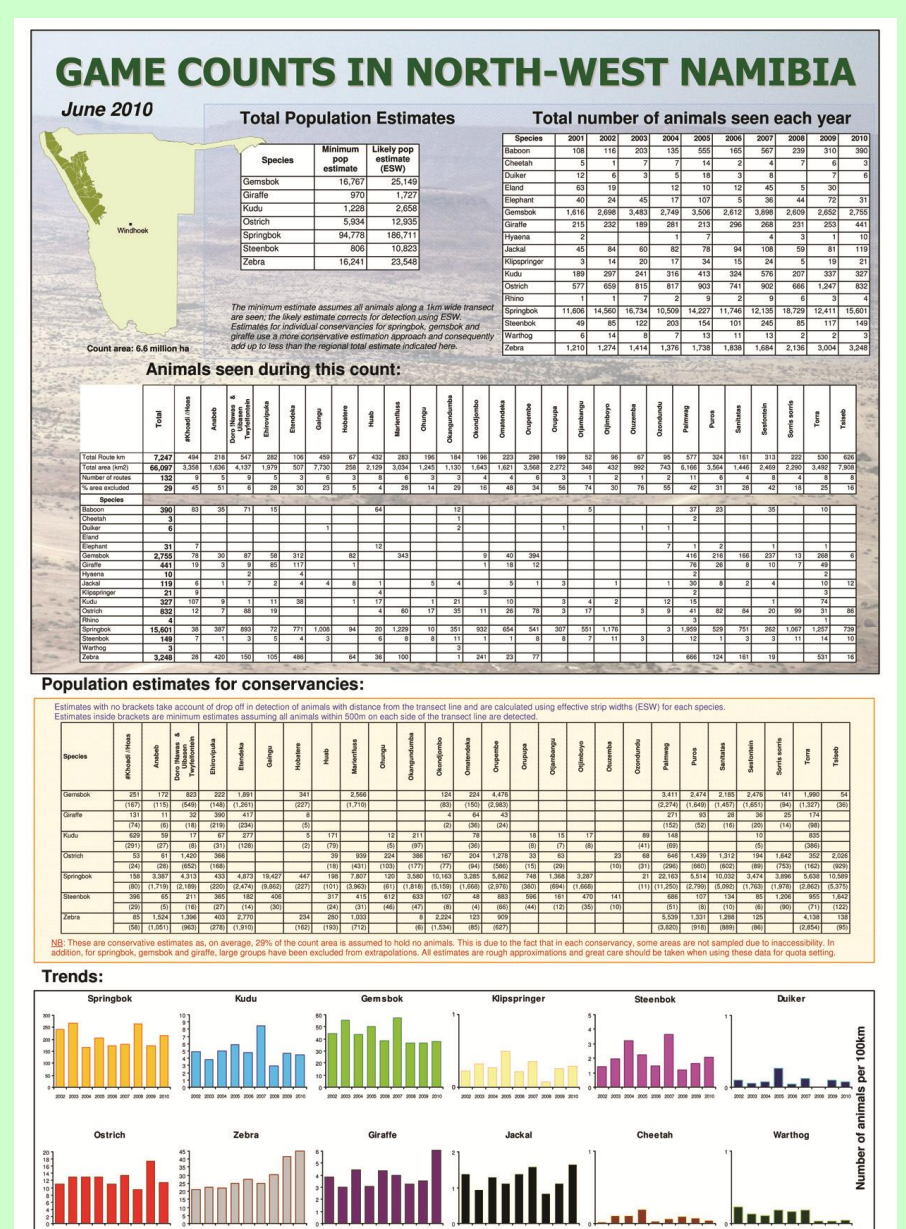


Population estimates are determined from transect correction factors and discussed in the field immediately following each count.



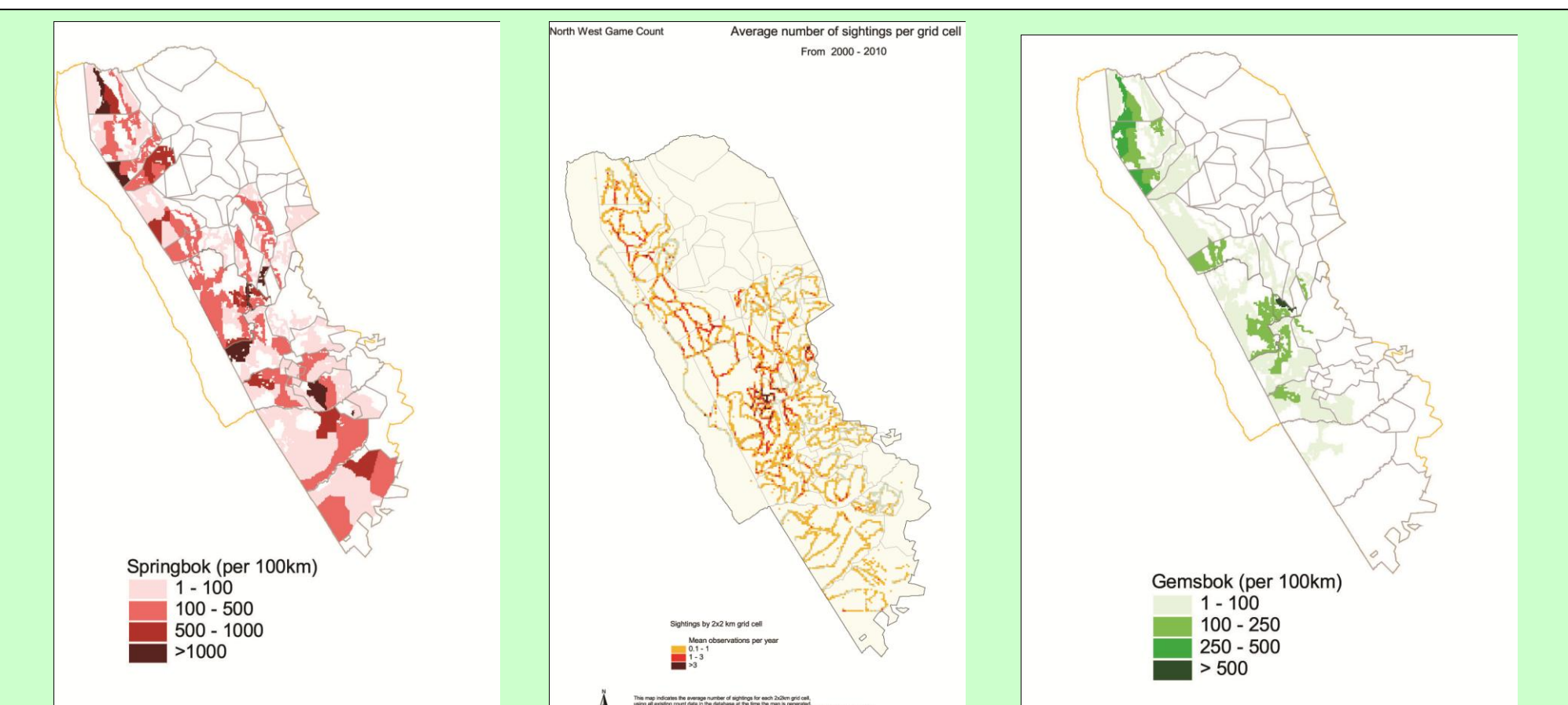
Sighting profiles in DISTANCE © analysis are used to estimate populations and to determine ESWs for use in the Field estimates method.

## RESULTS



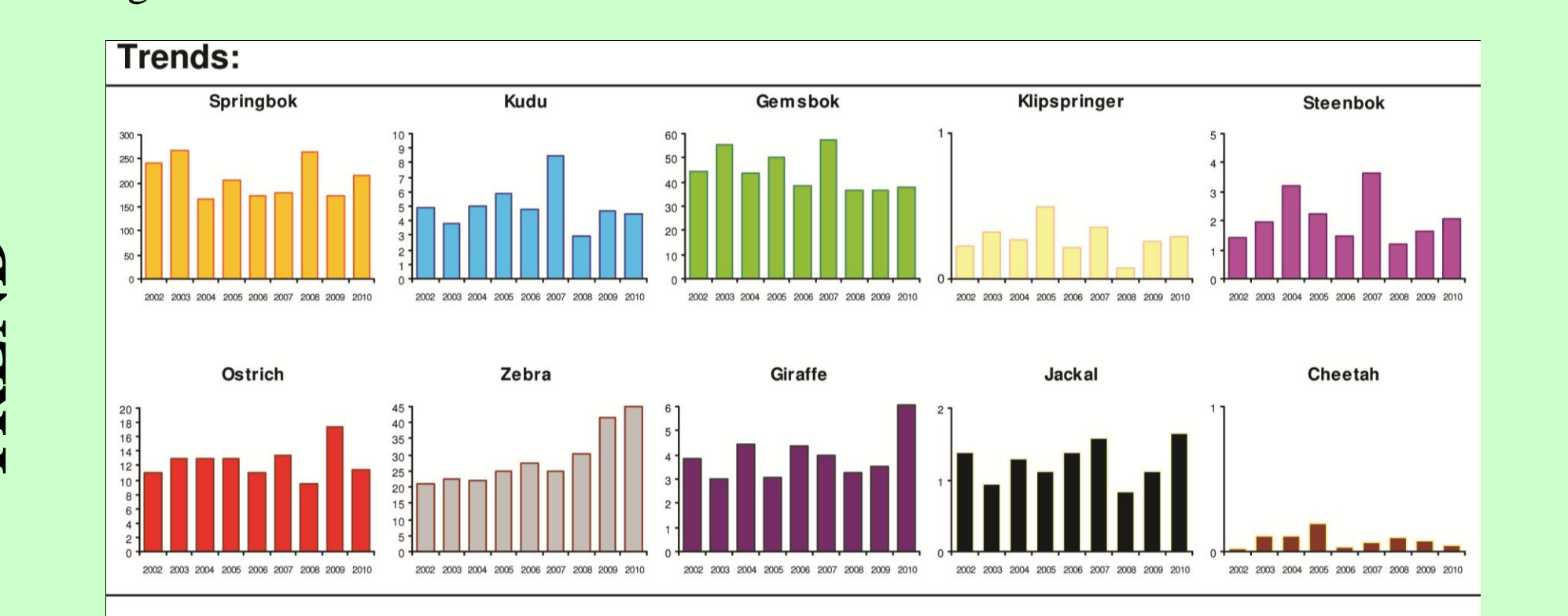
A summary poster is produced after each count and made widely available.

## POPULATION DISTRIBUTION



Distribution and density maps are produced using GIS based on the 2km X 2km grid.

## POPULATION TREND



The actual numbers sighted (expressed as animals per 100km driven) provide the data for trend analyses.

Caution: it is the activity rather than numbers which are the key as sustained droughts could have big impacts on numbers but as long as conservancies are monitoring it is an indication of good management.