Status of Wildlife Populations and Land Degradation in Botswana’s Forest Reserves

Presented to: Stakeholders Meeting
Tlootoa Gaborone
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Elephants Without Borders

Forest • Conservation • Botswana
JUSTIFICATION – Study

- Concern about the status of wildlife in Botswana
- There are no estimates for wildlife numbers in Forest Reserves
- What is the current population status of Wildlife?
- Tourism congestion along the Chobe Riverfront
- Wildlife tourism is important to the economy of N. Botswana
- Determine key drivers of land degradation
  - Construct enclosure plots
OBJECTIVES - Aerial Survey

- To provide relatively accurate and precise wildlife estimates
- Survey flown within a reasonable time and cost
- Repeatable and technically robust
- First wildlife aerial survey over the Forest Reserves
- Survey provide baseline for monitoring future trends
METHODS – Aerial Survey
DWNP – Survey Method

DWNP Aerial Transects

DWNP Survey Strata
METHODS – Data Analysis

- Jolly’s Method II (1969) to calculate population estimates and
- Linear regression, Caughley (1977) was used to conduct our trend analysis, calculate growth rates ($r$)
RESULTS - Aerial Transects

Survey Statistic
- Survey Area: 21552 km²
- Transects: 243 (Av.26)
- Length: 2500 km over 120hrs
RESULTS – Elephant Population Estimates

Chobe District Elephant Trends

Chobe NP Elephant Trends

Stratum | 2011 Dry Estimate | No. Seen | Variance | CI | % CI | Lower CL | Upper CL | Density (km²)
--- | --- | --- | --- | --- | --- | --- | --- | ---
Elephant Family | 35578 | 5988 | 13723843 | 7292 | 20% | 28280 | 42875 | 1.64
Elephant Bull | 4942 | 757 | 229263 | 943 | 19% | 3999 | 5885 | 0.23
Chobe District | 40517 | 6745 | 14891623 | 7601 | 19% | 32915 | 48113 | 1.89

Sex ratio of 2:3 bulls to cows within family groups, suggests there were 14231 bulls in family groups.
ELEPHANTS – Dry Wet Season Estimates

**Wet/Dry Season Elephant Survey Estimates**

- CH2: Chobe FR
- CH3: Chobe FR
- CH4: Kubu FR
- CH7: Mokolodi FR
- CH4: Kasane FR
- CH5: Seloko

![Graph showing elephant survey estimates for dry and wet seasons](image)

![Elephants at waterhole](image)
01/11/2012 12:00 PM
Air temperature = 38.5 °C
Relative Humidity = 26.2 %
CHOBÉ DISTRICT – Wildlife Estimates
WILDLIFE DISTRIBUTION – Chobe Riverfront, Wet vs Dry Season

**Chobe River Stratum Wet/Dry Season Wildlife Aerial Survey Estimates**

- **Dry**:
  - Impala: 527
  - Zebras: 13
  - Elephants: 144
  - Buffaloes: 3,527
- **Wet**:
  - Buffalo: 241
  - Zebras: 224
  - Impala: 2,515
  - Elephants: 92

**Survey Estimates of Key Wildlife Species along the Chobe River**

- **Giraffes**: 322, 322, 322, 322, 322
- **Hippos**: 123, 123, 123, 123, 123
- **Lions**: 123, 123, 123, 123, 123
- **Leopards**: 123, 123, 123, 123, 123
- **Chacma Baboons**: 123, 123, 123, 123, 123
- **Tigers**: 123, 123, 123, 123, 123
- **Cheetahs**: 123, 123, 123, 123, 123
- **Vultures**: 123, 123, 123, 123, 123

- **Dry 2010**
  - Buffalo: 241
  - Zebras: 224
  - Impala: 2,515
  - Elephants: 92

- **Dry 2011**
  - Buffalo: 322
  - Zebras: 322
  - Impala: 3,527
  - Elephants: 241

- **Dry 2012**
  - Buffalo: 322
  - Zebras: 322
  - Impala: 3,527
  - Elephants: 241

- **Dry 2013**
  - Buffalo: 241
  - Zebras: 224
  - Impala: 2,515
  - Elephants: 92
WILDLIFE – Forest Reserves

**Elephant Estimates**

- Chobe FR
- Kasane FR
- Kazuma FR
- Sibuyu FR
- Maik. FR
- Chobe River

**Buffalo Estimates**

- Chobe FR
- Kasane FR
- Kazuma FR
- Sibuyu FR
- Maik. FR
- Chobe River

**Giraffe Estimates**

- Chobe FR
- Kasane FR
- Kazuma FR
- Sibuyu FR
- Maik. FR
- Chobe River

**Sable Estimates**

- Chobe FR
- Kasane FR
- Kazuma FR
- Sibuyu FR
- Maik. FR
- Chobe River
ZEBRA – Where do they move to?
While several factors limit livestock farming, there is an increase in cattle farming activity:

- Shortage of grazing land
- Declared a Foot and Mouth Disease red zone
- Small market, long distance, and
- Livestock predator conflict

Despite these limitations, there is an increasing application and allocation of cattle posts.

“To date, more than 20 applications for boreholes in KM 256 have been received by Chobe Land Board, but not allocated awaiting a land use plan for the area.”
THREATS – Predator Livestock Conflict

- Habitat preference by cattle owners and large carnivores
- Farmers kill problem lions
- Land being allocated in wildlife habitat and corridors

‘Reduction in carnivore population due to extermination by farmers can lead to decreased revenue from safaris and related activities’. S. Nijhawan, 2008
SUMMARY

- Basis for wildlife numbers needed to follow population trends
- Similar estimates for elephants over a 10 year period
- Hands off management approach to FR
- FR critical wet season habitats for wildlife
- Wildlife numbers in Chobe District appear to be stable
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