

Livestock or wildlife in western Ngamiland, Botswana



A Case of Who Dares Wins

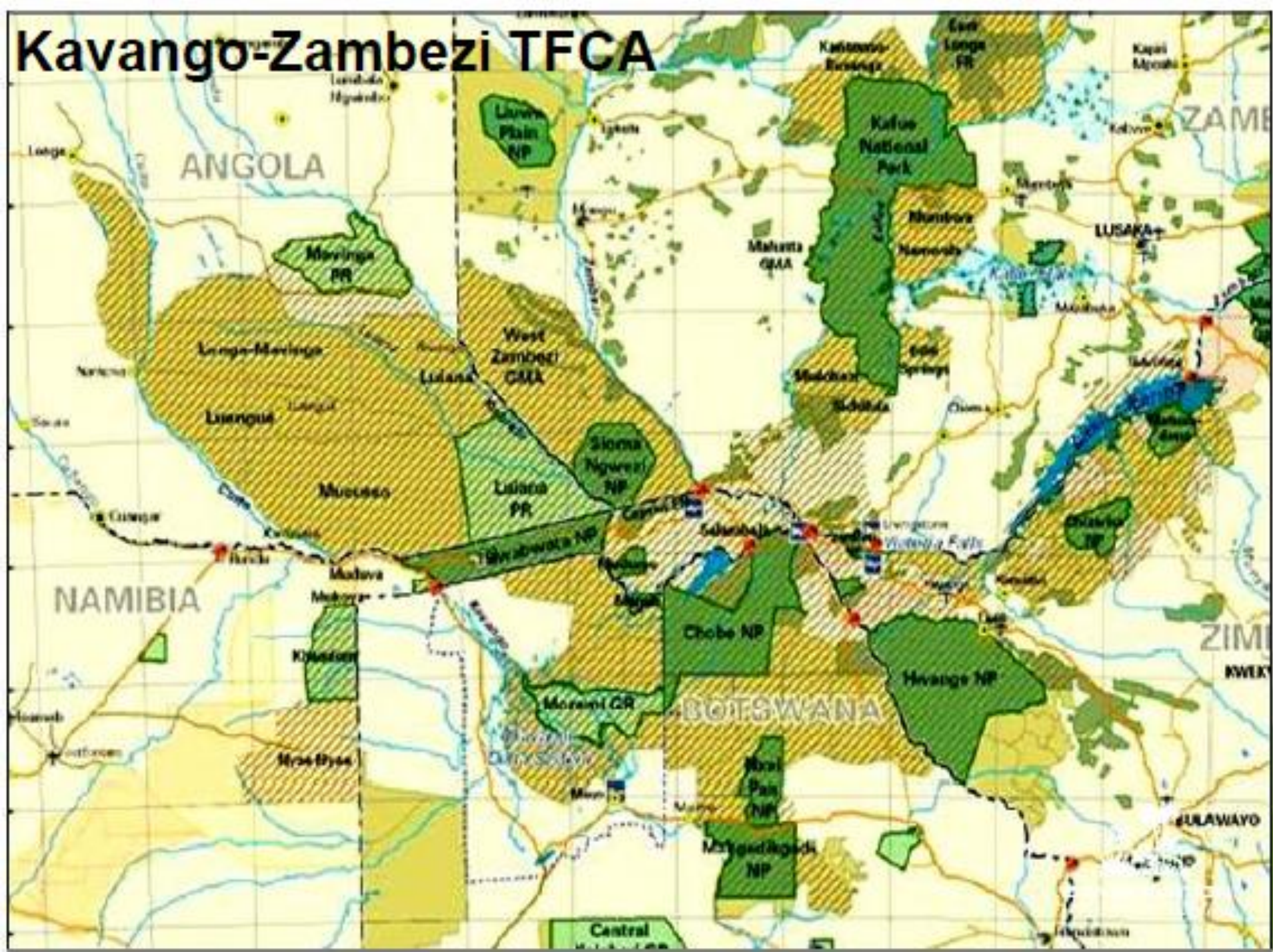
Perkins, J.S., Brooks, C., Bourquin, S. and J. Bradley

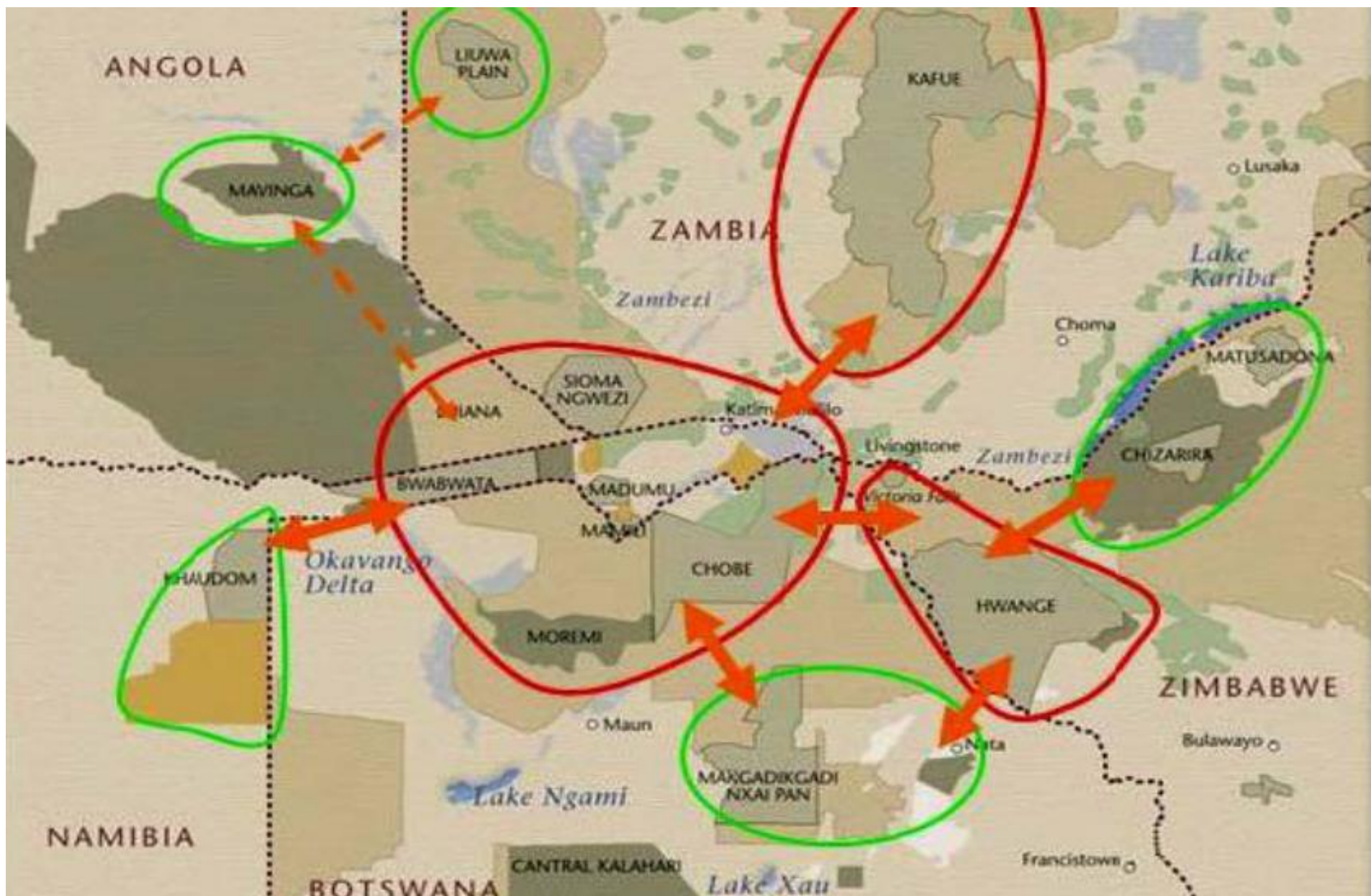
Sept 13th, 2016

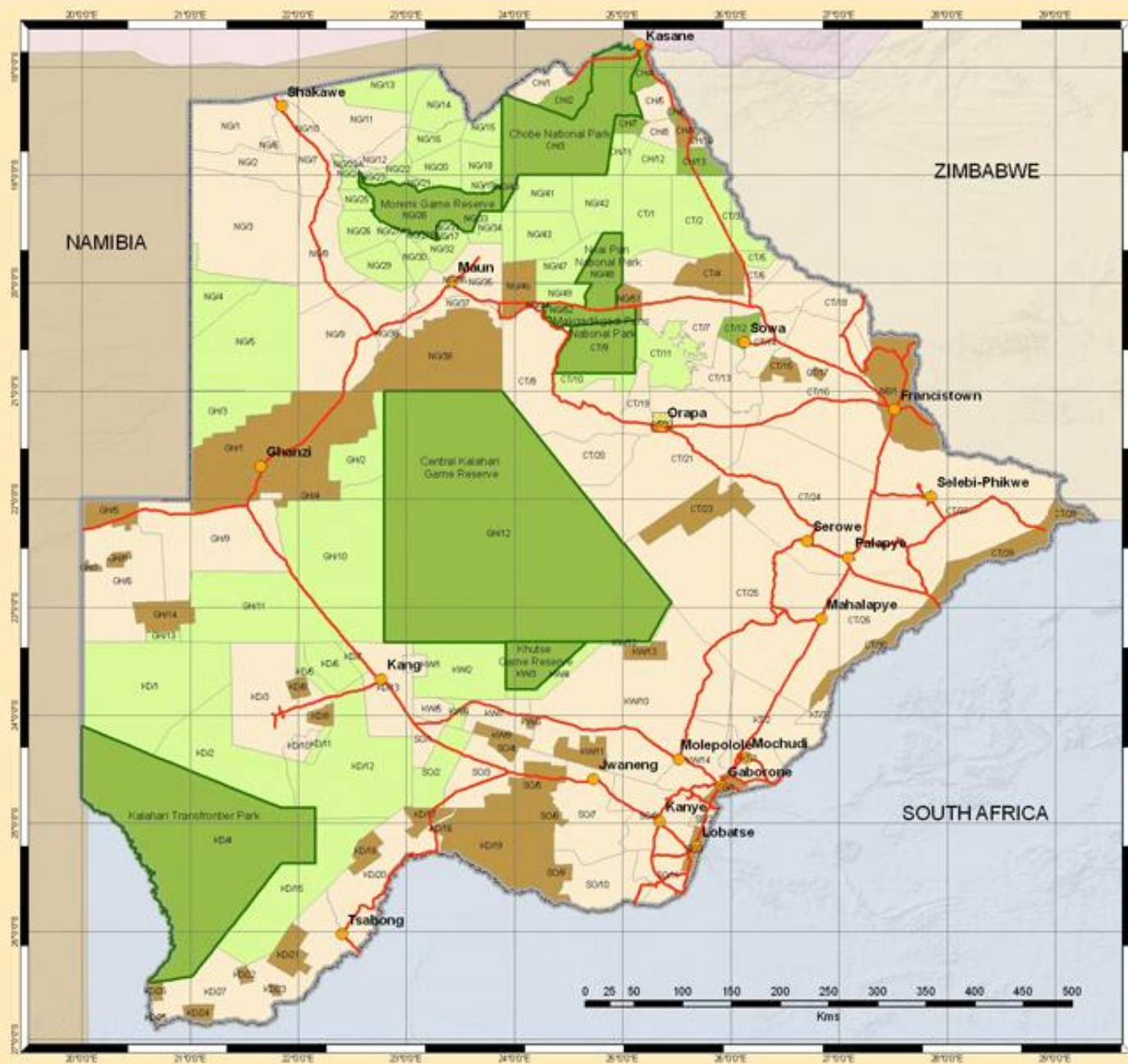
Key Points

- Landscape Level Management
- Co-existence of free ranging wildlife and livestock
- Fragmentation and Enclosure or wildlife corridors and multiple Use
- Game ranches – strategic use

Kavango-Zambezi TFCA







LAND USE IN BOTSWANA (By CHA Designation)

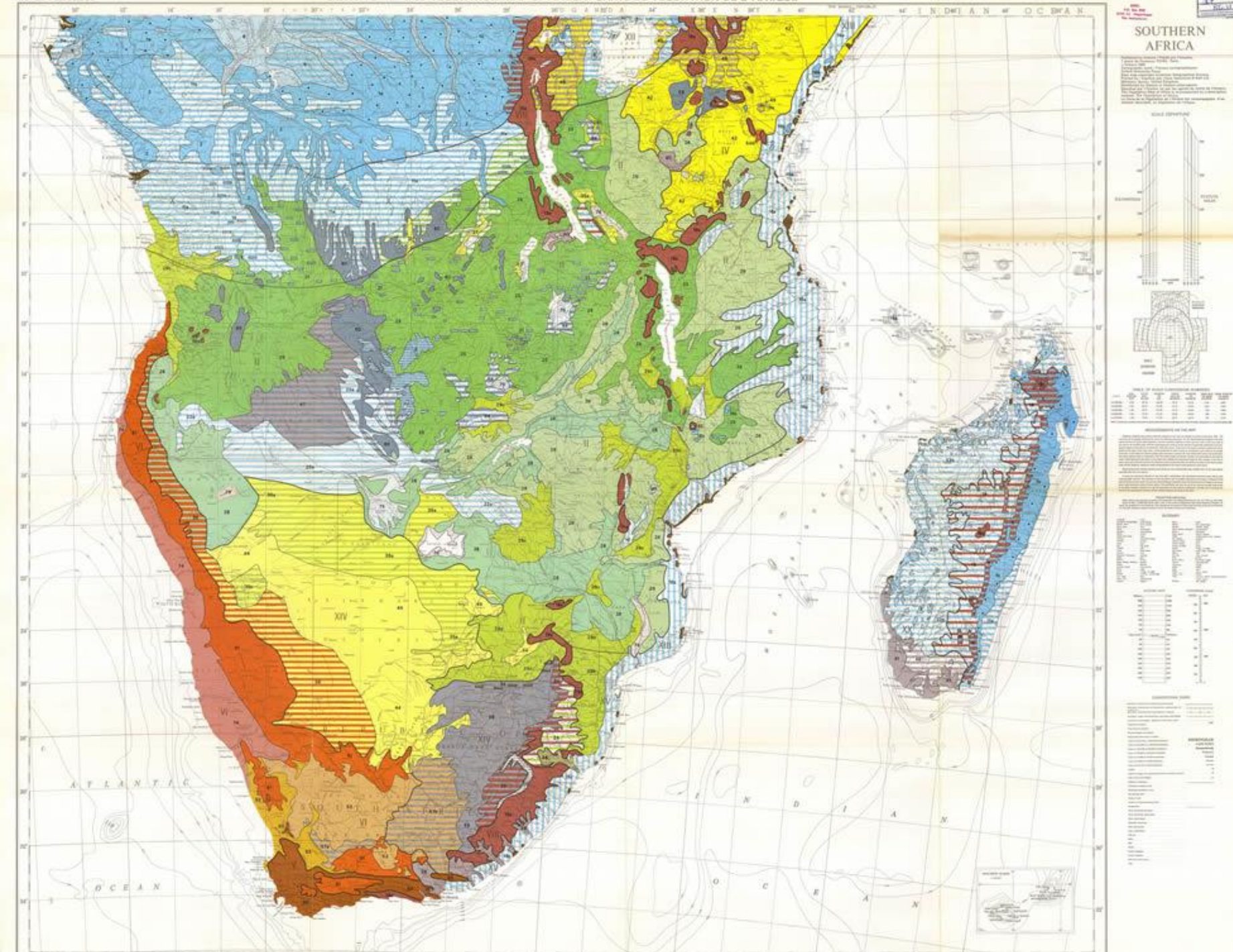
Landuse Categories

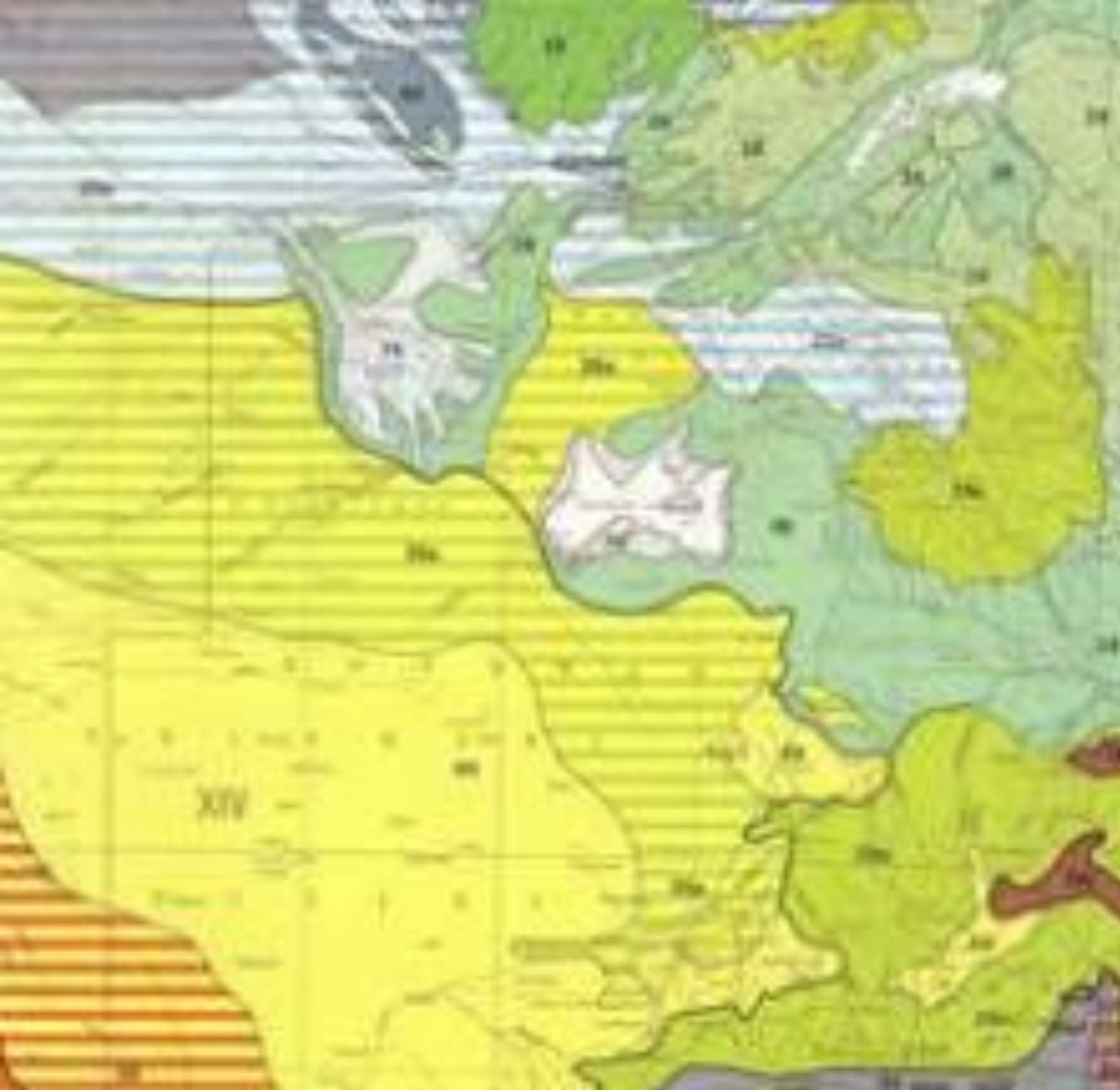
-  Protected Areas
-  Wildlife Management Areas
-  Pastoral/Residential Areas
-  Farms
-  Mining
-  Major Towns
-  Tarred Roads
-  International Border



Produced by:
Ngami Data Services
P/Bag 28
Maun, Botswana

Email: nds@ngami.net
Phone: 267 6860581





Zambezian
Plants 8,500
Mammals 55
Birds 650

Ecosystem Connectivity

Kalahari/Highveld Plants 2,000 Mammals 32
Birds 172

Constraints – NW Botswana

- **Groundwater – most boreholes in the sandveld are low yielding and saline**
- **Disease outbreaks (for example foot and mouth, anthrax, CBPP, blackleg)**
- **Mogau (*Dichapetalum cymosum*) is the most significant poisonous plant**
- **Depredation and HEC**
- **Conflict with arable land areas and clearance of riparian vegetation**



Dichapetalum cymosum

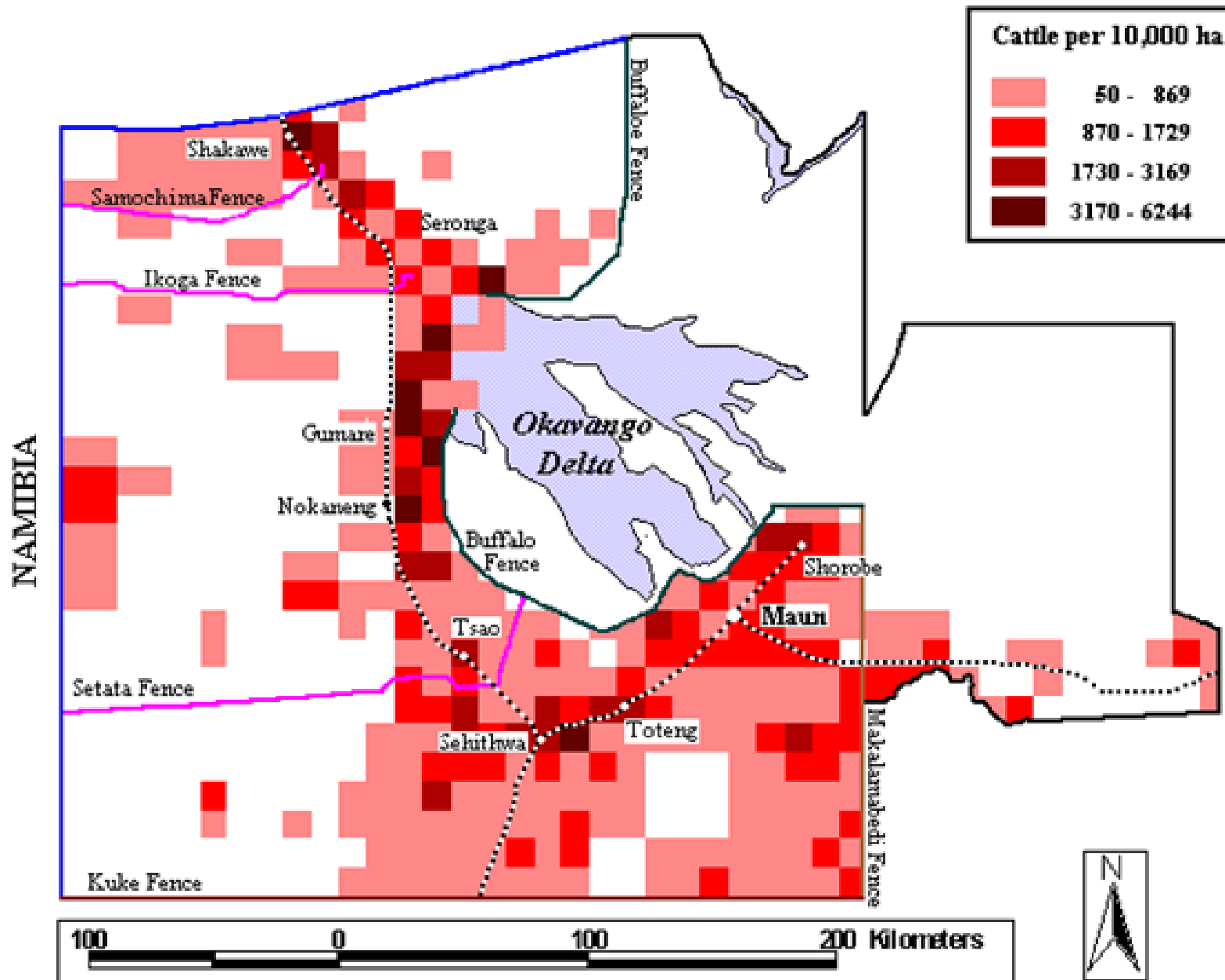
Mogau

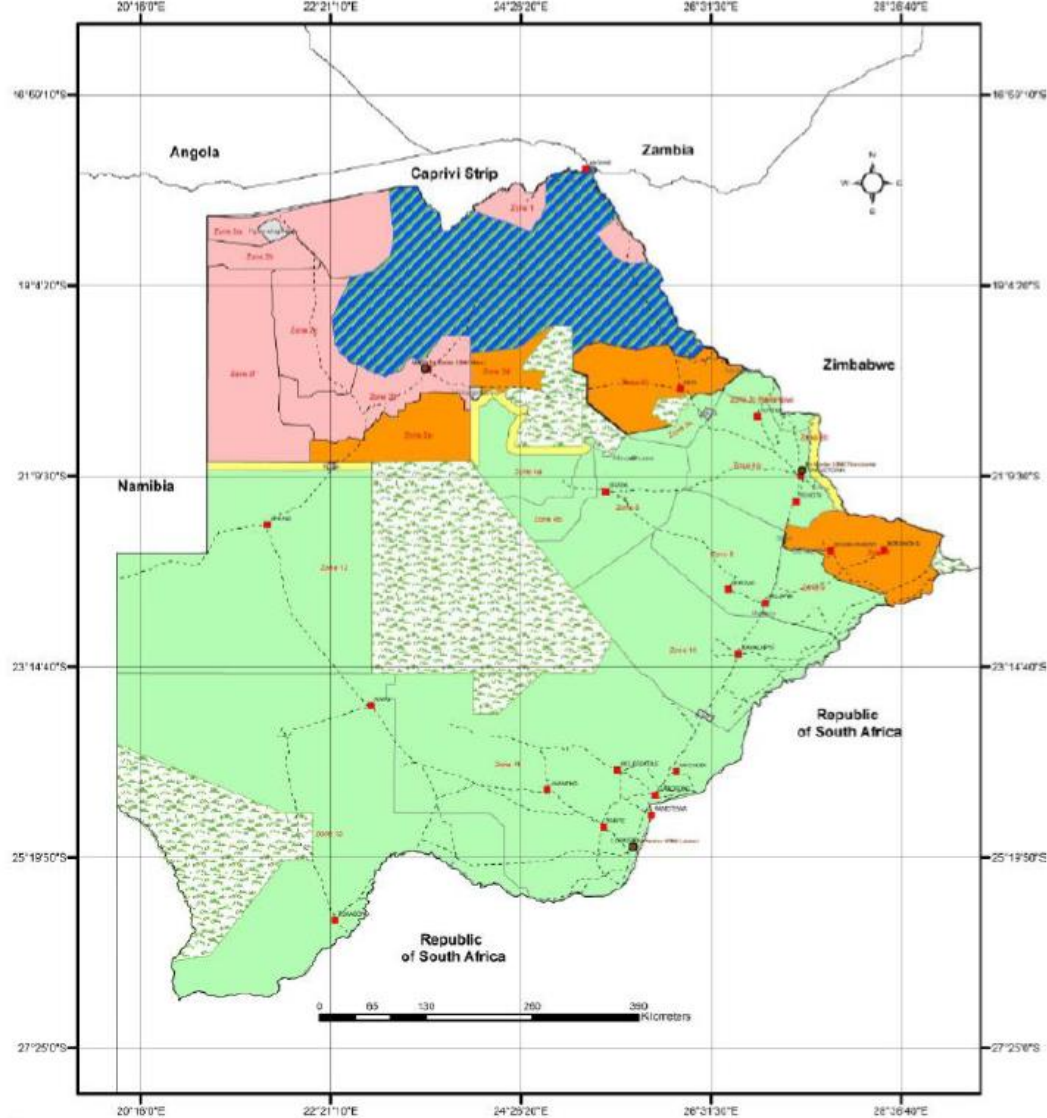


Livestock Numbers and Distribution

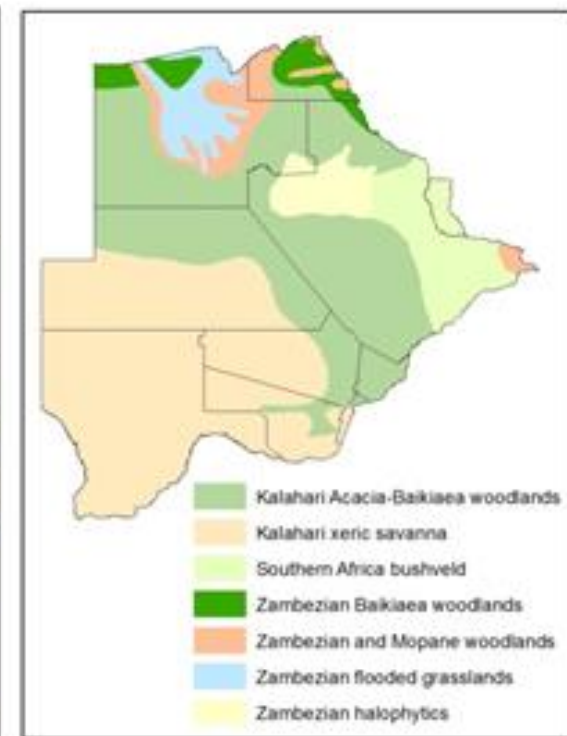
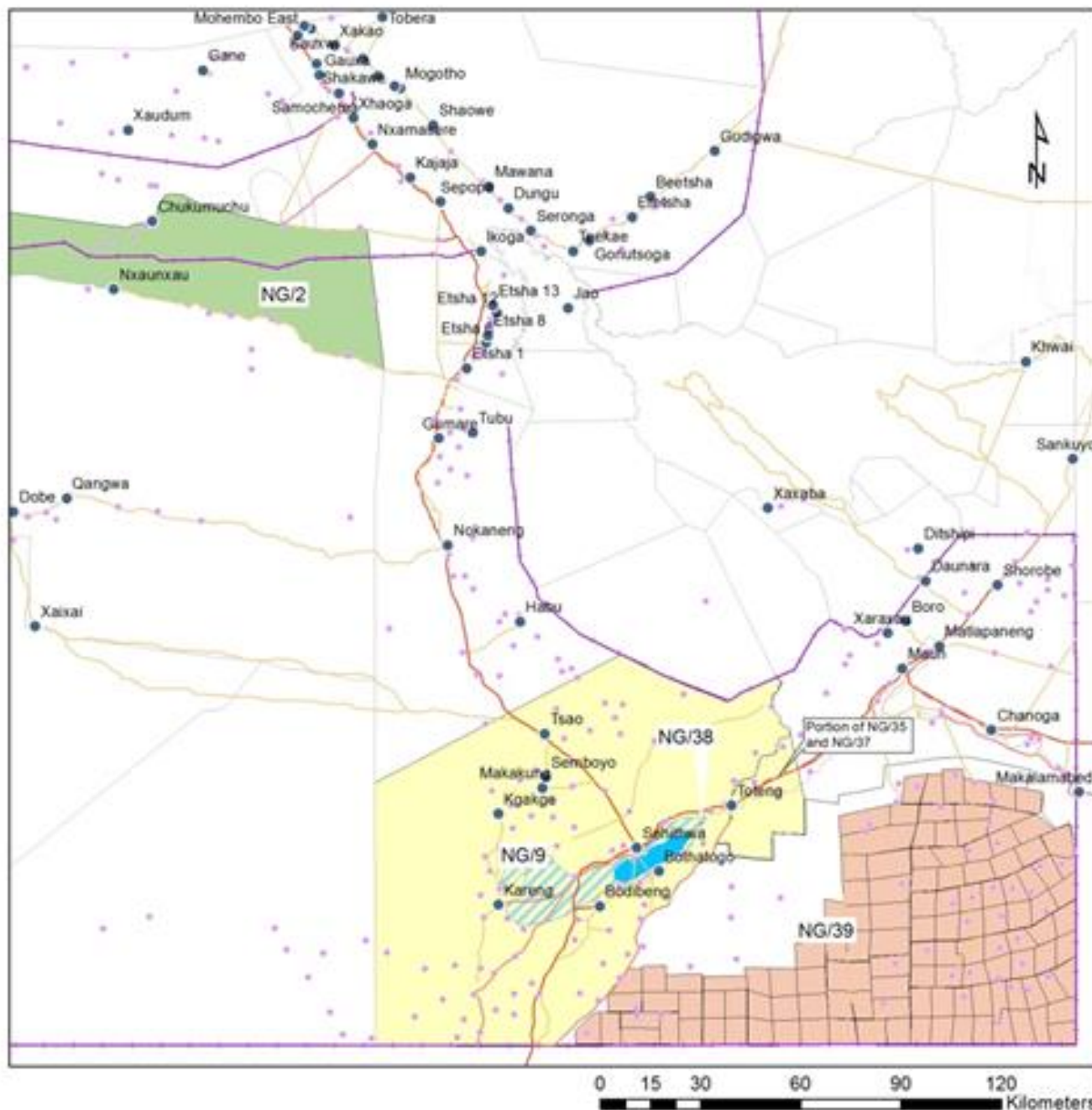
- 1996 – 320,000 livestock (1993 – 217,000 goats)
- 2012 - 370,639 livestock
- - no figures available for individual ranches
- - smallstock population (78,938) - appears low

Map 1: Cattle Distribution in Ngamiland
pre CBPP in 1995









NG2



NG2



NG2



Lake Ngami



Lake Ngami



Lake Ngami



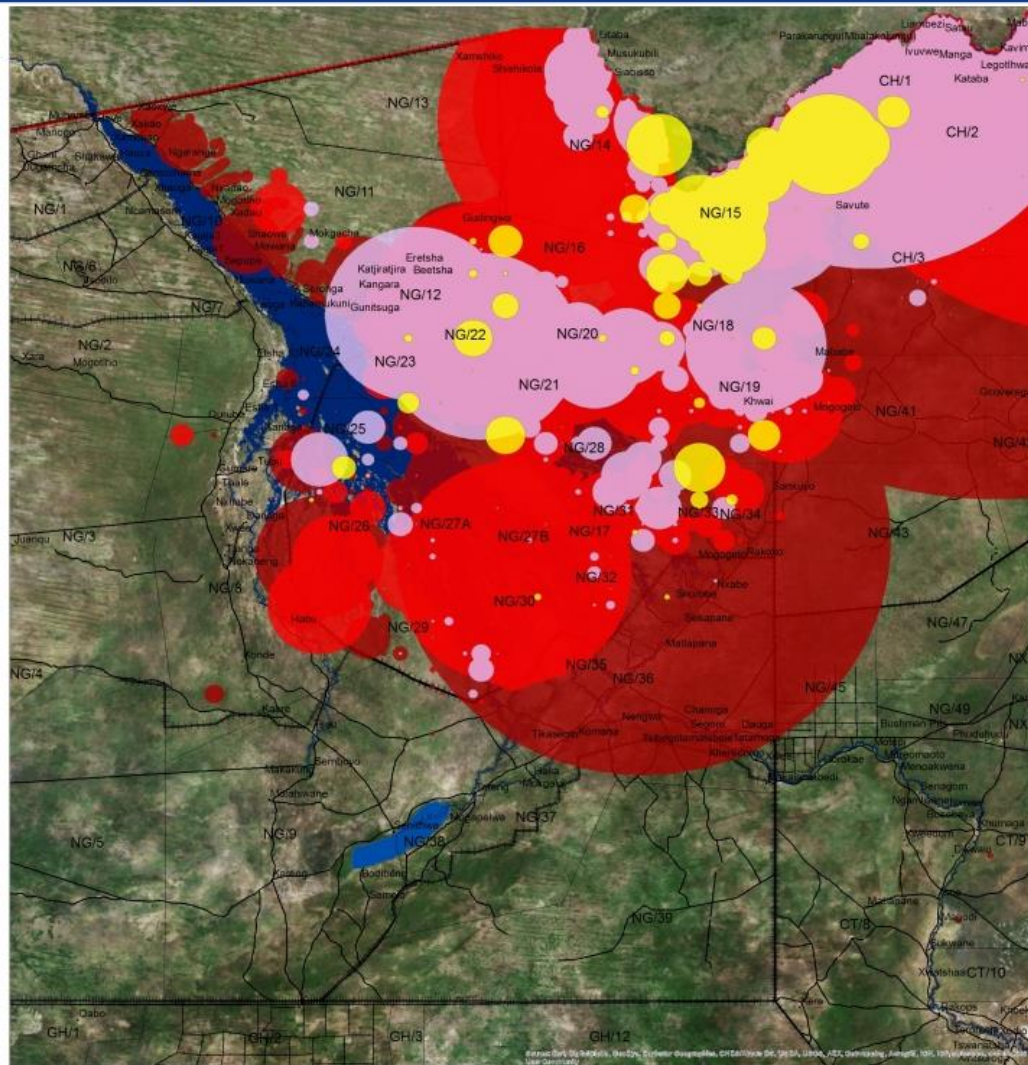
Hainaveld Farms



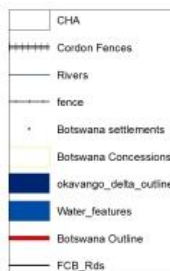
Hainaveld Farms



Elephant Expansion Ngamiland 1990 - 2012



0 10 20 40 60 80 100 120 140 160 Kilometers

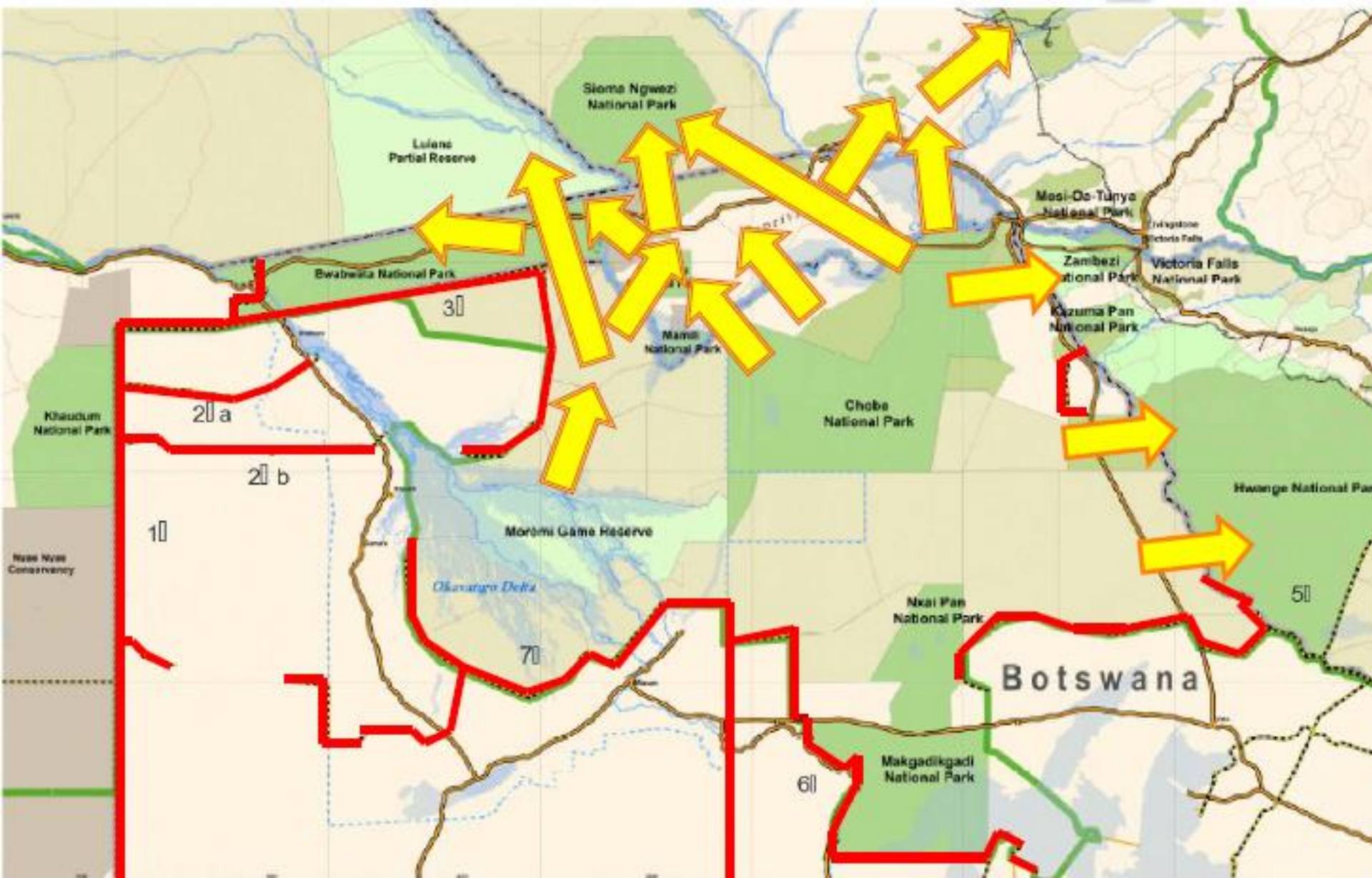


Data:
DWNP Aerial Survey Counts
2012 Dry & 2004 Wet Season
Biomass represented as LSU
per square Kilometer totalled
over BOTH seasons

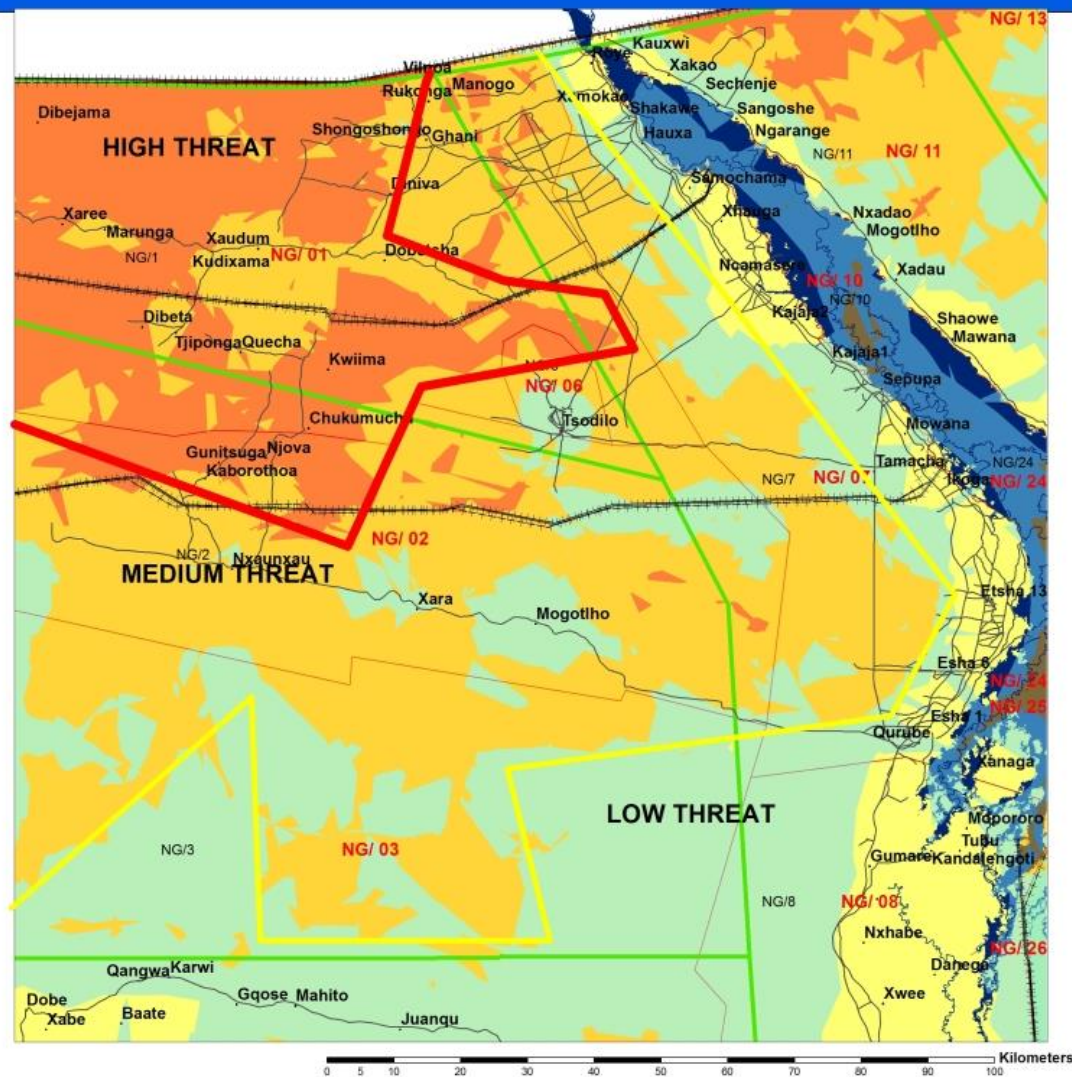
Map prepared by







Fire & Fire Breaks in NW Botswana



- all fences
- Ngamiland roads
- Rivers
- firebreaks
- Botswana settlements
- hainaveld_ranches

Fires 2001 - 2015

Sum

- 1-4
- 5-8
- 9-14



Data Source:
MODIS-FIRMS

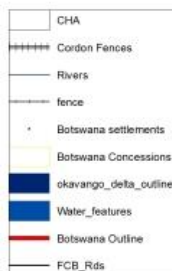
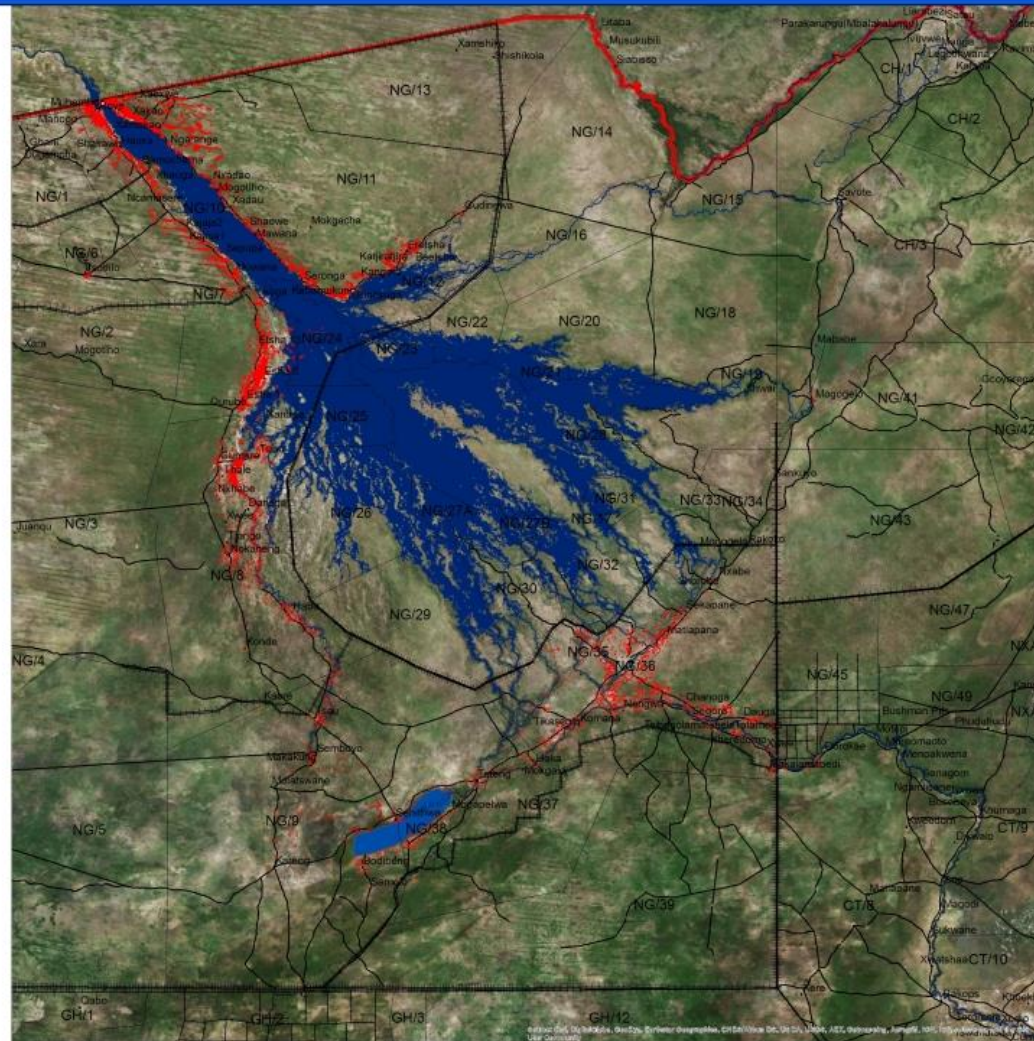
Map prepared by

ESA
Ecosystem Solutions for Africa

Fire Affected Savannah



Arable Fields 1995



Arable Fields

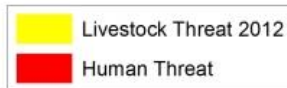
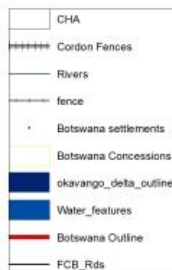
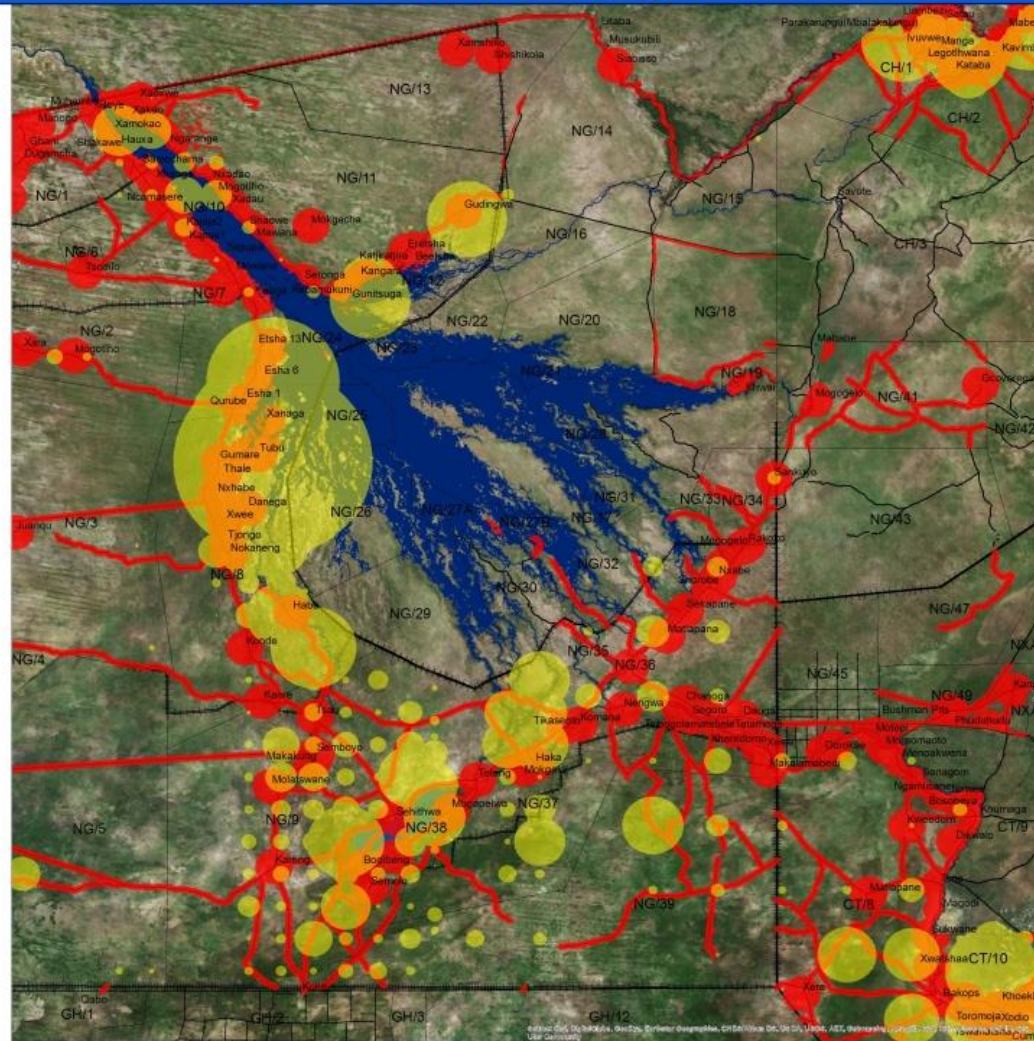


Fields include Molapo & Rainfed Agricultural Sites

Map prepared by



Human & Livestock Pressure on Natural Resources, Ngamiland



Data:
Human Pressure includes
influence of settlements, fields
and Roads

Map prepared by



Land Degradation in ar around the Okavango De from 2001 through to 20

Legend

Hydrology

- Main Rivers of the Okavango
- Okavango Basin

Boundaries

- Country Boundaries

Enhanced Vegetation Index (EVI) Score

- 3 High relative decline in vegeta
- 2 Intermediate relative decline in vegetation
- 1 Low relative decline in vegeta
- 0 No significant change in cover
- 1 Low increasing trend in vegeta
- 2 Intermediate increasing trend in vegetation
- 3 High increasing trend in vegeta



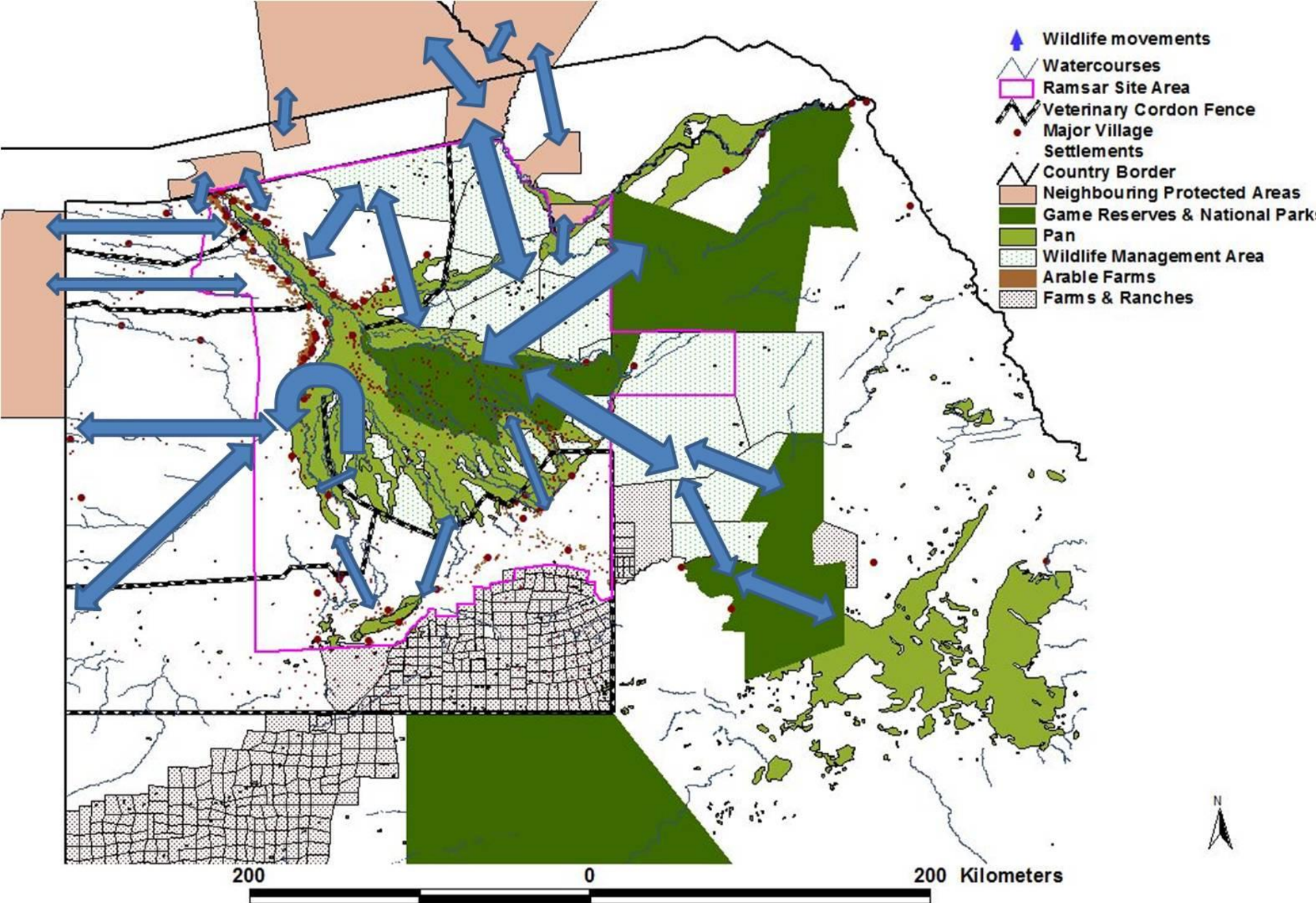
Kilometers
0 10 20 40 60

Data: USFS RSAC generated EVI index
Projection: WGS84

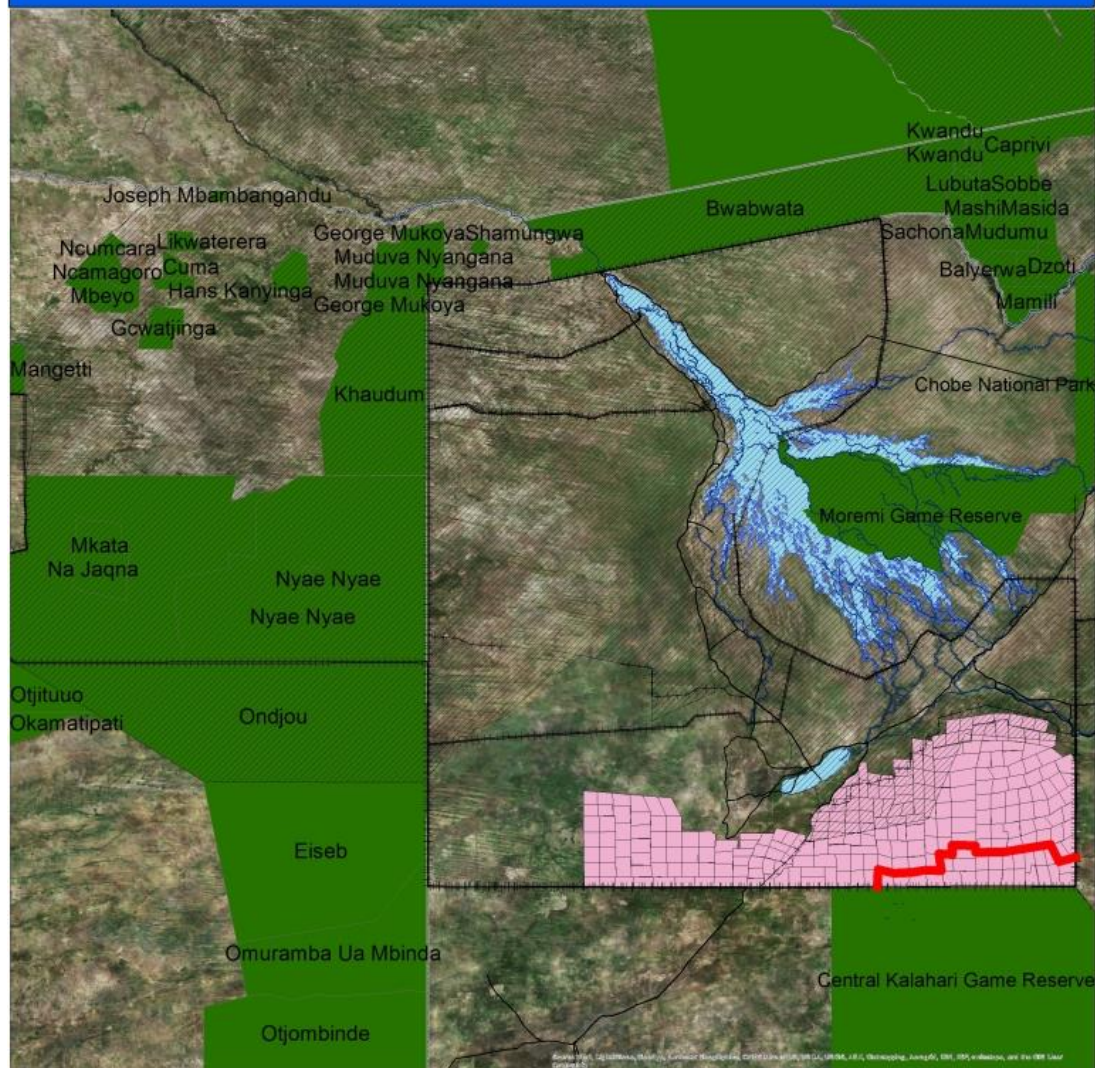
**Burn Scars in Ngamiland 2007 & 2008
overlaid onto the land degradation assessment**

WILDLIFE CONNECTIVITY

- Delineation of wildlife corridors (width location);
- Consolidation of villages (densification) to take advantage of existing infrastructure and services;
- Revitalisation of CBNRM policy;
- Prohibit the development of agriculture (arable and livestock) in the wildlife corridors.



KAZA-TFCA and Linkages with Namibia/Botswana



0 10 20 40 60 80 100 120 140 160 180 200 Kilometers



Map prepared by



ence:



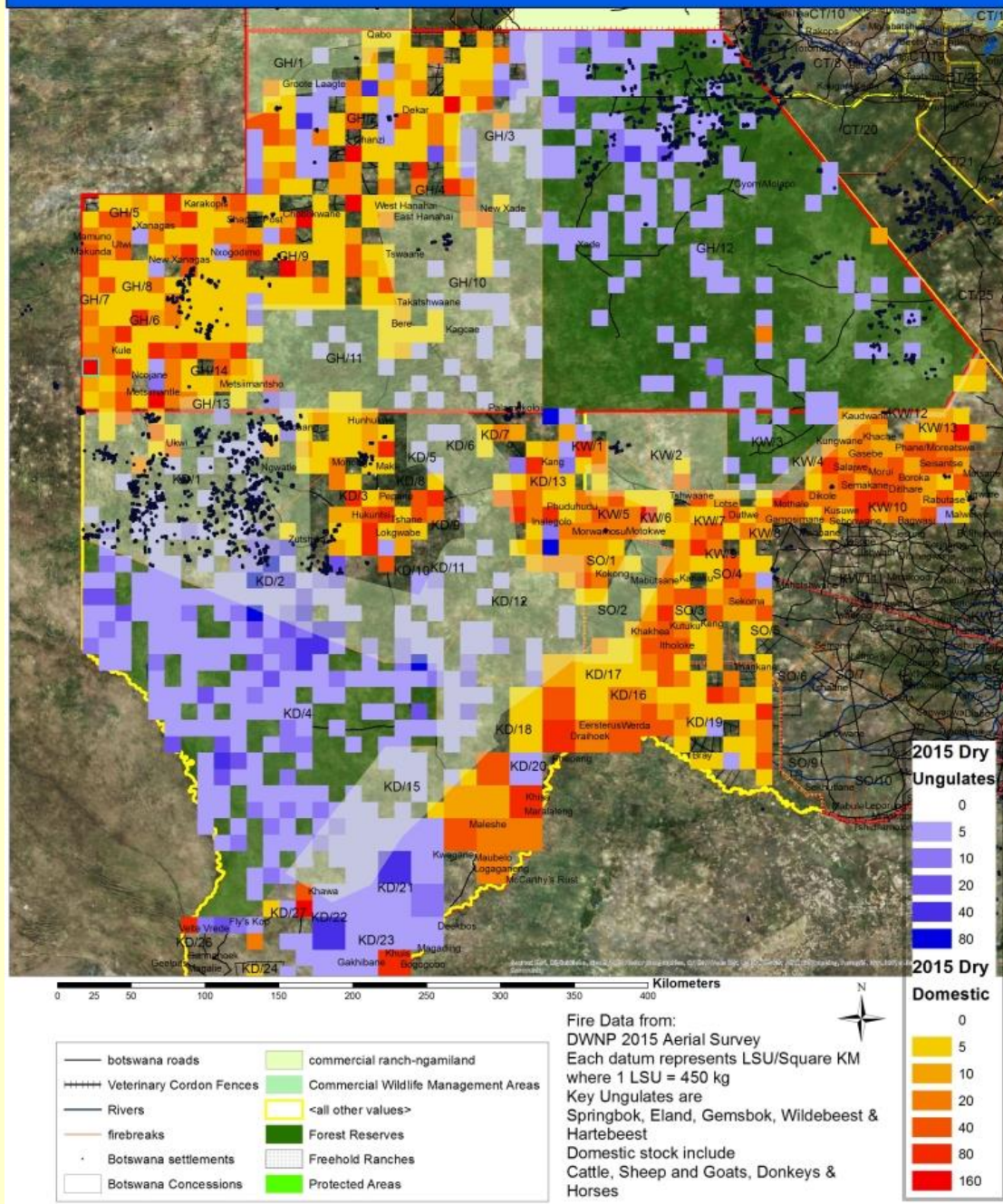
Map prepared by

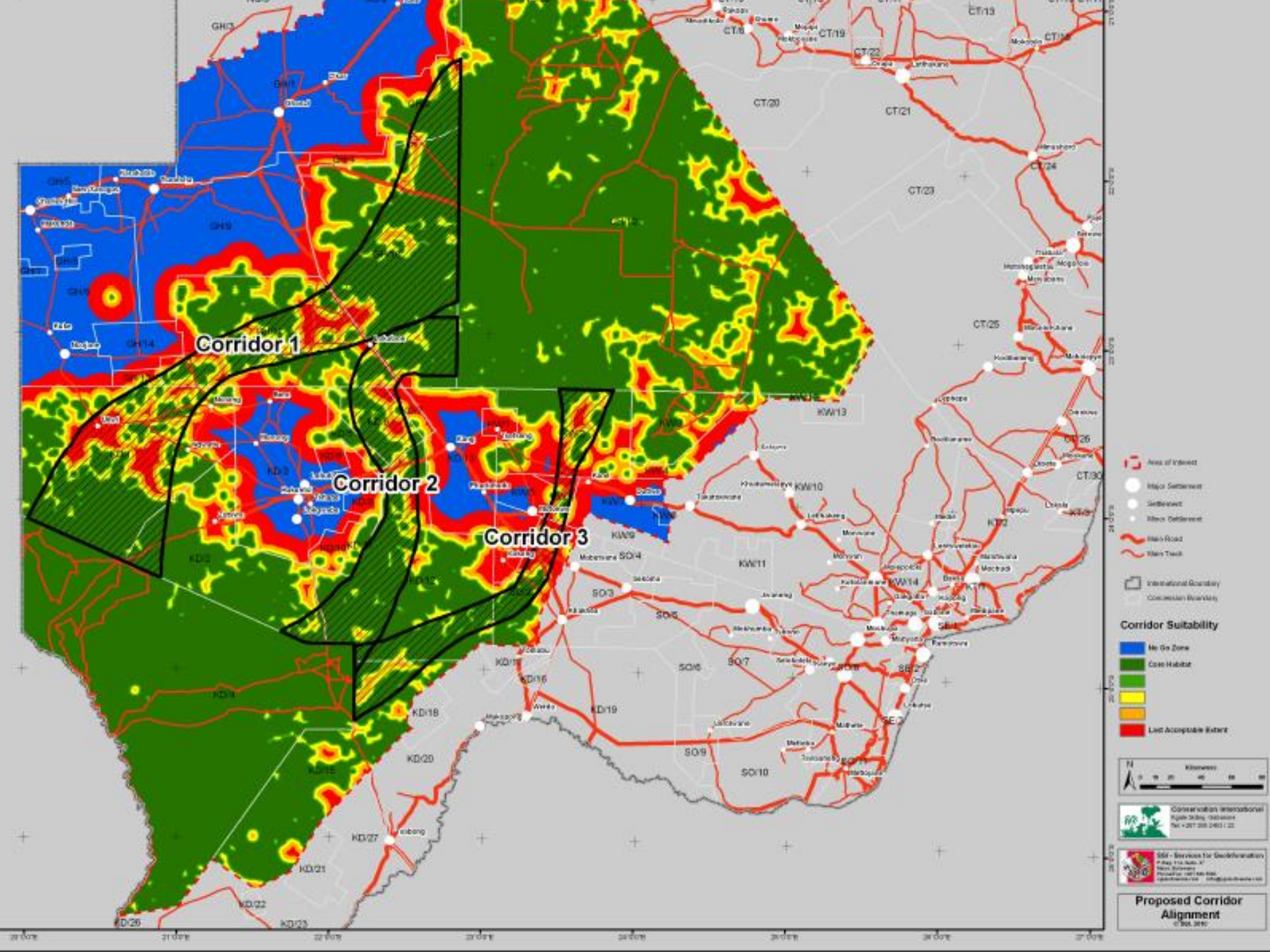
A scale bar labeled "Kilometers" with markings from 0 to 100 in increments of 10.

Lessons from the Kalahari System

- Cross-sectoral planning required
- Enclosure through Veterinary cordon fencing for disease control in order to satisfy EU beef export requirements.
- Loss of resilience
- Effective collapse of the Kalahari as a major wild animal system
- Dire livelihood consequences for Kalahari residents who are amongst the poorest in the country

Biomass of Key Ungulates and Domestic Stock 2015



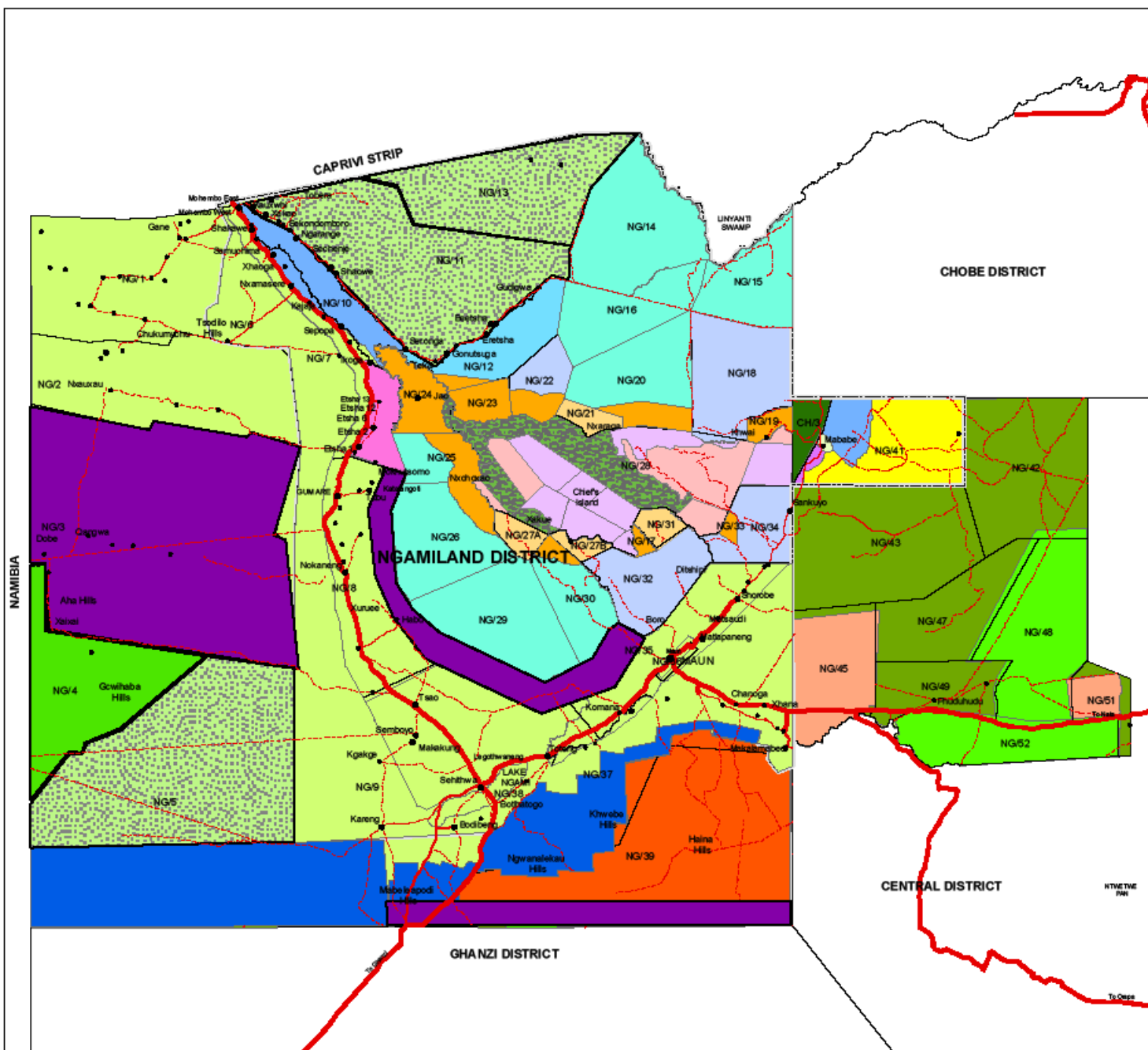


The decline of key Kalahari wildlife populations

Date	Hartebeest	Wildebeest	Eland	Springbok	Gemsbok
1978#	293,462	315,058	18,832	101,408	71,243
1994	44,085	13,598	11,757	87,501	123,110
1996	29,247	13,671	19,027	58,003	117,130
2001	41,408	11,866	23,659	28,118	103,616
2002	24,240	8,278	19,271	25,727	93,246
2003	44,453	12,074	24,024	24,308	89,247
2005	46,182	15,020	41,477	22,457	103,164
2012*	53,603	22,704	32,280	35,101	123,510
2015**	43,526	20,810	74,790	40, 042	121,449

**** Includes Ghanzi Farms**

***** Includes Kweneng and Southern District**



Project Title
**NGAMILAND INTEGRATED LANDUSE PLAN
(2008)**

Map Title
Recommended Ngamiland Land Use Plan

LEGEND

Settlement Type	Existing Land Use
• Major Village	Game reserve
• Village	Arable / Pastoral / Residential
• Settlement	Proposed Wildlife Management Area
Road Type	T.G.L.P. ranches
— Tarred Road	Wildlife Management Areas
— Gravel Road	Panhandle
— Track	Fencing Component
□ Boundary	Ranches
□ Ngamiland Boundary	Tourism Development Area
□ Other Districts	Mababe Community Use Zone
□ Controlled Area	Mababe Hunting Grounds
Proposed land use	Mababe Proposed Community Photographic Area
Community	Mababe Seasonal Use Area
Wildlife Utilisation	Arable / Pastoral / Residential
Game Ranch	Chobe National Park
Mixed Use	Commercial Photographic Area
Livestock and Wildlife Utilisation	Commercial Wildlife Utilisation (leasehold)
Moremi Zonation	Community Managed Wildlife Utilisation in Livestock Area
Low	Community Photographic Area
Density Tourism	Community Wildlife Utilisation (leasehold)
Medium	
Density Tourism	
Wilderness Zone	

DATA SOURCES:

Base data revised and updated from the DSM topographic map sheet series using ArcInfo 8 and ArcView 8. National Settlement Policy, BRIMP (2002).

PROJECTION:
BNGRS_GCS_LATLONG
DATUM: D_GRS_1980

Map Compilation: Spatial Dynamics

CLIENT: Department of Lands

CONSULTANT: LANDflow Solutions

