

Summary of Gala evening presentation – Dr. Mike Peel & Ms. Jenny Newenham

The Kruger to Canyons Biosphere Reserve

International Biodiversity Day 2008 Report Back

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Biodiversity Day in the Kruger to Canyons Biosphere

Biospheres – designated regions

Internationally important protected
areas - adjacent to human settlements
wherein multiple-land use activities take place

Designated – UNESCO’s Man and Biosphere (MAB) Programme – interdisciplinary
research agenda and capacity building

Targets the ecological, social and economic dimensions of biodiversity loss

Knowledge-sharing, research and monitoring, education and training, and participatory
decision-making.

Biodiversity Day in the Kruger to Canyons Biosphere

UNESCO proclaimed in 2001

Limpopo and Mpumalanga Provinces

2.6 Million ha

Core zone of 923.770ha; **Buffer zone** of 485.586 ha; and **Transition zone** of 1.2
M ha

Third largest biosphere reserve in the World

Grassland – Forest – Savanna Biomes

Biodiversity Day in the Kruger to Canyons Biosphere

Exceptional diversity – habitats and species – relatively small distance

Altitude - 200 masl to 2 050 masl

Rainfall – 400mm to 3 000mm

149 mammal species; 510 bird species; 57 fish species; 2 700 plant species – many of which are endemic

Biodiversity Day in the Kruger to Canyons Biosphere

Nature multi-facted

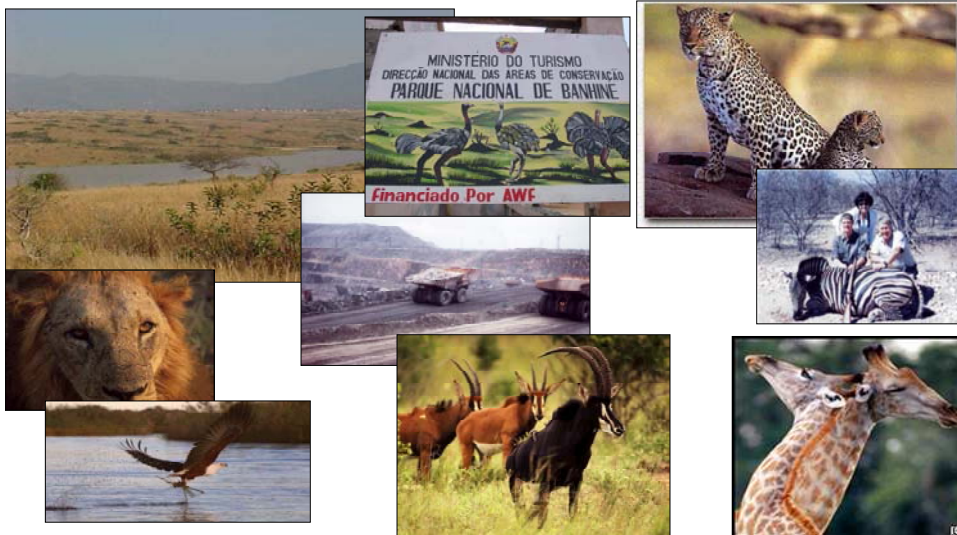
Diverse human population

Variety land uses – economic activities

1.5 M people – 97% black – transition zone

All activities – rely to some degree – natural environment - contribute local and national economy

Biodiversity Day in the Kruger to Canyons Biosphere



Biodiversity Day in the Kruger to Canyons Biosphere

Communal rangelands – provide diversity ecosystem goods

firewood – wild vegetables – wild fruit – edible insects – construction materials -
medicinal plants – grazing for livestock

Role – household needs – cost savings – income – ‘safety net’ times of crisis e.g. most
households – firewood – costs of stoves and electricity

Political history – resulted in densely populated areas – limited access – land and natural
resources – resulting – habitat fragmentation – change composition, structure

Surprising array – biodiversity – sustainable use and management – critical – biodiversity
conservation – human wellbeing – K2C

Biodiversity Day in the Kruger to Canyons Biosphere

Growth – nature based tourism – local and international

Diverse range opportunities

Accommodation – camping, chalet, luxury lodges and hotels

Hiking trails – self-guided to specialist

Bird and game viewing

Adventure activities – white water rafting, abseiling, hot air ballooning

Historical/cultural – tribal villages – gold mining towns

Biodiversity Day in the Kruger to Canyons Biosphere

The ‘seven wonders’ of the K2C

Kruger National Park

Blyde River Canyon – 3rd largest in the world – one of cleanest rivers in SA

Drakensberg escarpment – Mariepskop – unique endemic vegetation – scenic wonders

Private nature reserves – west of KNP– largest privately owned conservation area - world

Biodiversity Day in the Kruger to Canyons Biosphere

The ‘seven wonders of the K2C (cont’d)

Wolkberg Wilderness – one of SA’s floral hotspots

Phalaborwa – one of the deepest operating pit mines – gate to KNP – urban area – across
to Moçambique – ‘bush to beach’

Pilgrims Rest – historical mining town – 1870's – operational museum – hydro electrical power before London

The Grassland Biome

Mesic Highveld **Grassland** Region

Northern Escarpment Dolomite Grassland;

Northern Escarpment Quartzite Sourveld;

Northern Escarpment Afromontane Fynbos

The Grassland Biome (cont'd)

19 500T – medicinal plant material from SA wetlands – 28M people per year

Poaceae – all grain crops – one of the most important families on earth

Thatching – reed walls

Essential oils

Shelter – nesting material – food - fuel

The Forest Biome

Zonal and Intrazonal Forests

Northern Mistbelt Forest – endemic Mpumalanga – 0.5% MP surface area – but 10% of all plants in MP

Socio-economic value high – nature based tourism

Harvesting – medicinal plants

Cultural - Initiation

The Savanna Biome

Diversity of Savannas

Granite – Basalt - Gabbro – Rocky Bushveld – Sour Bushveld – Lebombo Bushveld

Mopane variations – Basalt – Lowveld Rugged – Gabbro – Phalaborwa Timbavati

Lowveld Riverine Forest

Alluvial Vegetation
Subtropical Alluvial

The Aquatic Biome

K2C adjacent and linked - Great Limpopo Transfrontier Conservation Area -
Moçambique

Provide critical ecosystem services

Via aquatic lifelines that run from our mountain catchments

Biodiversity Day in the Kruger to Canyons Biosphere

18 sites visited today – over 200 people involved

Core zone – strictly protected – formal conservation

Private game reserves – communal rangelands – **buffer zone**

Agricultural farm – plantation – organic farm – mine site – **transition zone**

Results:

Grassland Biome

Watervalspruit - Graskop

Not 10% of what there is - need 2 weeks!!

Natal green snake – *Protea parvula* – endemic

Possible Red Data – *Erica* spp.

Sherman trap – Forest Shrew

Matabidi

Transformed Grassland - 60 taxa

African Bullfrog – unusual locality - also time of year; 11 alien invasives

Results:

Forest Biome

Mariepskop

Bit windy - 35 birds - Crowned Eagle – Lanner Falcon

>100 plant species – 46 species forest – 62 species plateau – 8 muti plants – 6 endemic

Plantation

Please stand and report back!! – no report

Results:

Savanna Biome

PMC - Night drive (4h)

Mammals – 11; Reptiles – 1 – croc; Fish – 1; Birds – 21

Kapama (1h)

Mammals – 11 (Civet); Reptiles – 1; Birds – 10;

KNP (2.5h)

Mammals – 5 (Wild dog – CE); Birds 4 (Ground Hornbill CE); Reptiles 2 puff adder;

Results:

Savanna Biome cont'd

Raptors

Aardvark spoor – Le Vaillant's Cuckoo

Palabora Mining Company

10 species insect on *Euphorbia ingens*

Mammals – 8 species; Birds – 41; Fish – 2; Reptiles – 3 striped pale blue chin lizard – rare; Trees – 45; Grasses – 22

Wolverdiend

Mammals – 3; Birds – 2; Trees – 93; Grass – 25; Concern over cutting of live trees

Kapama

Mammals 15; Birds 38; Trees 45; Grasses 28; Forbs 15; Reptiles 2; Invertebrates 35;

Results:

Savanna Biome cont'd

New Dawn - Mango Orchards – farm restitution

Trumpeter hornbill;

Plants 38 species; Birds 15; Invertebrates

SAWC

Good 'gogga' identification exercise – *Pephricus* = Squash Bug - camouflage

Violin Spider, Long bodied grass spider; Biting midges Ceratopogonidae

Mammals – 3; Birds 25; Reptiles 4 (2 Boomslangs); Trees 20;

KNP

Mammals 17; Birds 37 (Mopane); Reptiles 11; Invertebrates 27 including bonking tok tokkies; Vegetation taxa 84; Trees 38; Grasses 27; Forbs 19;

Results:**Savanna Biome cont'd****Ntisri**

Mammals (spoor) 16; Reptiles 6; Birds 27; Trees 36 (Lala Palm); Grasses 28; Invertebrates 20

Low elephant impact; *Opuntia* not good

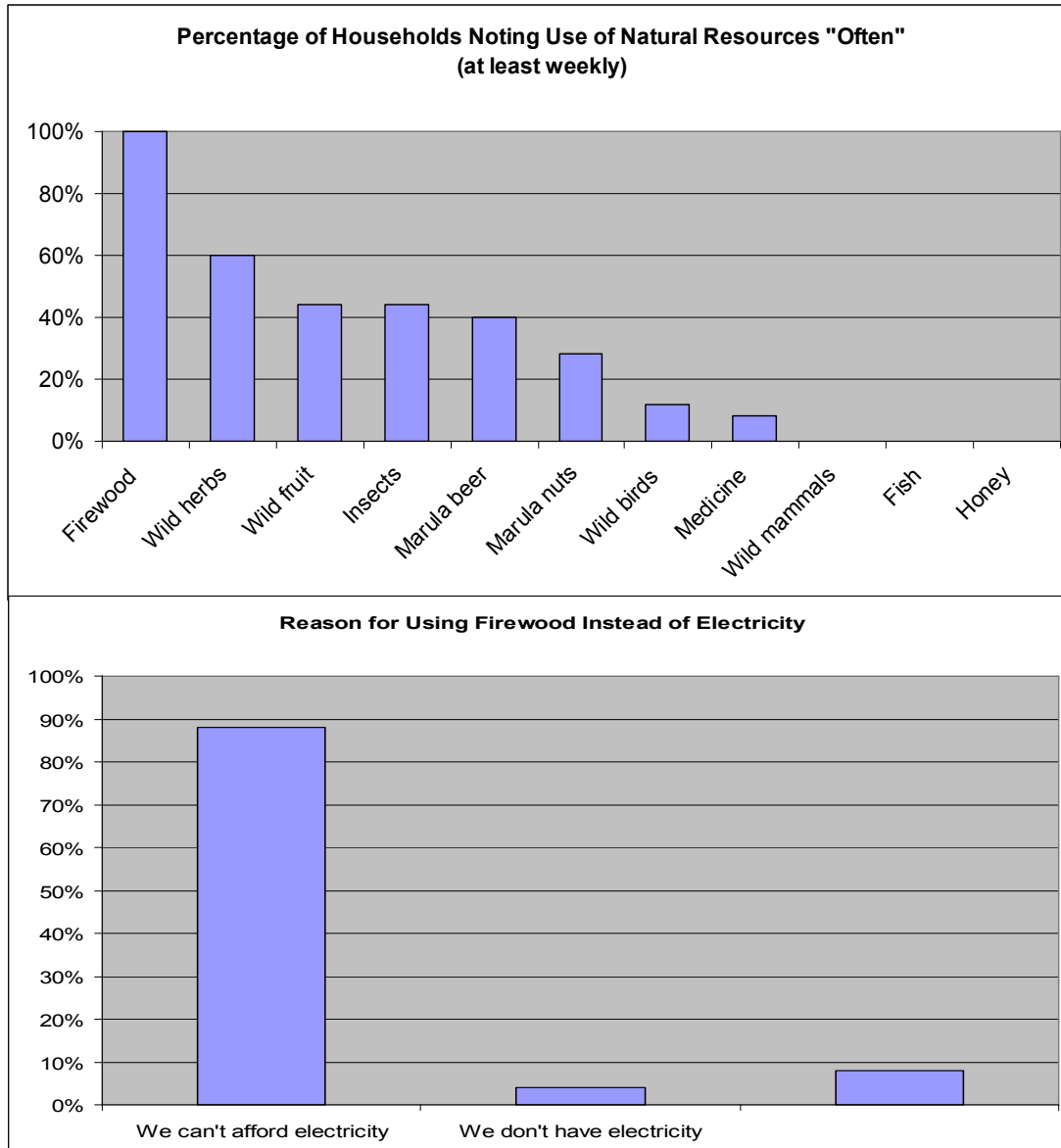
Organic Mango Orchard

Mammals 8; Birds 17; Plant taxa 23; Reptiles 1 (snouted cobra); Invertebrates 20

Bavaria Citrus

Mammals 4; Birds 33; Plant taxa 25; Invertebrates 25

Results:**Savanna Biome cont'd****Wilverdiend – household**



The Aquatic Biome

Vaalhoek – Blyde River - escarpment

Endemic Minnow *Barbus argenteus*

2 Indicator species – good quality water - Rock Catlets

22 taxa on SASS 5 = good water quality

Otter's Den – Blyde River

136 taxa; *Barbus brevipinnis* new record for OD;

25 taxa on SASS 5 = good quality water

Olifants River – Oaks Bridge

9 Taxa on SASS 5 – low to moderate score;

Birds 4; Fish 2

The Aquatic Biome cont'd

KNP

Birds 61 = highlight; Fish 14; 33 invertebrates; 1 Bushveld gerbil; 112 vegetation taxa; Trees 37; Grasses 24; Forbs 44; Alien species 6

Biodiversity Research and Collaboration in Kruger to Canyons Biosphere South African Environmental

Observation Network (SAEON) – first node in SA - Phalaborwa (Ndlovu)

A comprehensive, sustained, coordinated and responsive South African Earth observation network that delivers long-term reliable data for scientific research and informs decision-making

Environmental research - Changes in the environment Detect – Monitor – Report

Collaboration in the Biosphere

Resulted in comparable landscape maps of area west of KNP, KNP and area to the east of KNP (Peel (ARC), Kruger (SANParks), MacFadyen (SANParks), Stalmans (ICS), Gertenbach (ex SANParks))



The Convention of Biological Diversity

Why is biodiversity loss a concern?

Ecosystems provide – necessities of life

- food, clean air and water
- protection from natural disasters
- shape human cultures/spiritual beliefs
- Essential life processes
 - affects ecosystems – perturbations
 - less able – supply ecosystem services

Changes in biodiversity – more rapid – last 50 years than in human history

Conservation of Biological Diversity (CBD)

Objectives - CBD

Sustainable use of its components

Fair and equitable sharing of benefits

CBD brings together

Conservation

Sustainable development

CBD and its 2010 Biodiversity Target

Concern over biodiversity loss – 1992 - Convention on Biological Diversity

- Legally binding global treaty
- Conservation and sustainable use
- Fair sharing – benefits – genetic resources

2002 – CBD agreed

“...to achieve, by 2010, a significant reduction of the current rate of biodiversity loss...”

Can ecosystems provide resources and essential services?

Integrity of ecosystems – ability support human livelihoods

Fragmentation of catchment and river systems (flow/quality)

The proposed Blyde National Park – ensure water flow – Moçambique

Increasing human population – development (red text below = threats)

To ensure ecosystem services we need to provide services that:

Moderate weather extremes – consequences (floods/droughts)

Disperse seed

Protect people from harmful rays

Cycle and move nutrients

Protect streams, river channels, coastal shores from erosion

Detoxify and decompose waste – regulate disease carriers

Control agricultural pests

Maintain biodiversity

Preserve soils – renew fertility

Contribute – climate stability

Purify air and water

Pollinate crops and natural vegetation

What are some threats to biodiversity?

Invasive alien species - rivers

Climate change – e.g. increase in temperature – alter land use options

Nutrient loading and pollution

Habitat change – bush thickening – grazer declines

Overexploitation – fuelwood – developments fragmenting habitat

Do we use ecosystems sustainably?

What proportion of the biosphere – sustainably managed? – environmental, social, economic implications

The ecological footprint – area of land and water – needed – sustain defined human population – based

use energy, food, water, building materials, other consumables
1961 – humanity using half earth's capacity - renew resources – now exceeded

Is the CBD being implemented?

Thematic programmes – each biome – working for water } – working with fire }

Technology transfer } – Protected areas } – ongoing classification }

Biodiversity monitoring } - Impact assessment ≈ - Incentive measures X – Invasive aliens
}
International collaboration }
Improved capacity to implement CBD ≈
Planning and implementing ≈
Better understanding – biodiversity/CBD ≈ }

The role of biological indicators – and how are we doing in the K2C?

To monitor status and trends of biological indicators

Improve effectiveness – policies and management

We need to look at among others:

- Rate of loss
- Major threats
- Promote sustainable use
- Maintain ecosystem health

The role of biological indicators

Rate of loss – e.g. intra-specific competition – habitat

Major threats – e.g. climate change – population growth – unchecked development

Promote sustainable use – e.g. avoid ecological ‘crashes’

Maintain ecosystem health – e.g. a healthy tree:grass balance

Are we on track to meet the 2010 CBD Target?

Biodiversity loss – **set to continue globally – foreseeable future (2010) – requiring unprecedented effort**

Factors causing biodiversity loss – **climate change, habitat change, invasive alien species, pollution – projected – constant or increase –**

Increased action

What do we need to do?

Integrate biodiversity concerns – Economic/development programmes/policies

Engage in key sectors

- Agriculture and food
- Energy
- Trade (policies)
- Poverty alleviation

The K2C and the way forward

Biosphere provides - flagship example to showcase - approach towards sustainable development

The Kruger to Canyons (K2C) Biosphere

contains a unique pattern of protected areas, agricultural landscapes and cultures in the Grassland, Forest and Savanna regions of South Africa

Remember 2010 is not only our year for the World Cup!!!