The Current Paradigm – Enclosed Landscapes

Spatial separation of livestock and wildlife
- Competition between livestock and wildlife
- Disease issues and markets
- Human-Wildlife Conflict

RESULT
- Fragmented Landscapes
- Ecological processes and functions disrupted
- Rangeland productivity and sustainability reduced
- Socio-economic benefits lost
TFCAs in Southern Africa: 14+

Scale and Complexity of TFCAs

<table>
<thead>
<tr>
<th>TFCA</th>
<th>Area (km²)</th>
<th>No. PAs</th>
<th>% State Land</th>
<th>No. Countries</th>
<th>Important Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>KAZA</td>
<td>520,000</td>
<td>67</td>
<td>22</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Great Limpopo</td>
<td>100,000</td>
<td>15</td>
<td>45</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Kgalagadi</td>
<td>37,000</td>
<td>3</td>
<td>95</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Chimanimani</td>
<td>2,000</td>
<td>2</td>
<td>60</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

*TFCA* moving to large, open landscapes to Restore Social-ecological system integrity, resilience, & sustainability

Cattle, FMD and Wildlife - Botswana, Namibia & Zw

Fragmented large landscapes

Disease Control by geographic separation of livestock and wildlife

ZW – Zones Red Vaccinated Buffer
The Human-Wildlife-Conflict Problem?

“An individual farmer can experience damage of well over $10,000 when elephants pull down and destroy a windmill, pull up pipes and damage a water tank” (Brown 2011)

Human-Wildlife Conflict - Alternative Perspectives

Direct Visible Impacts
- Human death & Injury
- Crop Losses
- Livestock Losses
- Disease risks
- Infrastructure damage

Local Competing Claims
- Livelihood options
- Land use options
- Resource access options

Indirect/Hidden Impacts
- Transaction costs (guarding assets)
- Opportunity costs
- Health

National Competing Policies
- Agriculture vs Conservation
- Land use planning & competing Govt. agencies

International Policies & Values
- Protection vs Sustainable Use
- Hunting vs Anti-hunting
- Trade bans

Shift focus from direct visible impacts to competing claims, policies and values
### Development Options?

(i) **Fences and fragmented landscapes**
consolidation of securely fenced protected areas, within a matrix of agro-pastoral communal farming areas, where disease-control strategies and human-wildlife conflict issues drive land-use policy,

OR

(ii) **Beyond fences and open landscapes**
development of multi-species systems across large TFCA landscapes where there is a reduced need for fences and where human settlements and cultivation form islands within a larger multi-species pastoral landscape.

### Integration of Wildlife and Agriculture?

KAZA – 520,000 km², PAs, + GMAs, WMAs, Community Conservancies, etc.

Protected Area Clusters & Corridors?

↓

Commodity Based Trade?

↓

Multispecies Systems?

↓

Integration of Wildlife & Agriculture

Landscape connectivity affected by fences and settlement
Consumptive and non-consumptive use of rangelands

1. Large wild ungulates function as ecological engineers
2. Grazing successions and facilitation between species
3. A range of species is able to exploit differing resources at differing spatial scales (horizontal and vertical) and at different temporal scales
4. Reducing species diversity alters ecosystem processes, function and productivity in African savannas
5. Wild large ungulates and cattle both facilitate and compete depending on season (Du Toit 2011, Odadi et al 2011)
**Economics/Ecology - Regional Scale**

Relative % contribution of wild & domestic large mammal biomass to GDP

**Rates of growth:**
- Livestock 2 – 3% pa
- Nature based tourism 5 – 15% pa
- Support to Livestock (Govt. etc) > wildlife sector

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**Economics - Local Scales**

Benefits and Costs of HWC in 27 Na Community Conservancies

<table>
<thead>
<tr>
<th>No of Conservancies</th>
<th>Benefit / Cost Ratio</th>
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</thead>
<tbody>
<tr>
<td>10</td>
<td>&gt;10.1</td>
</tr>
<tr>
<td>8</td>
<td>5-10:1</td>
</tr>
<tr>
<td>3</td>
<td>1-5:1</td>
</tr>
<tr>
<td>6</td>
<td>&lt;1:1</td>
</tr>
</tbody>
</table>

The best Benefit / Cost ratio realised was 50:1, the worst was -4:1

(Summarised from Brown 2011)
Climate Change Adaptation
Decouple Secondary Production and the generation of wealth from Primary Production

Strategic Approaches

1. Put a premium on, and invest in, higher valued land uses, diversification and intensification
   • Irrigation + markets at scales from HH gardens to major schemes
   • Nature based tourism & service industries

2. Decouple wealth creation from Primary Production

3. Match land use and ecological process scales

4. Develop policy and supporting legal frameworks that enable, rather than stifle, innovation and adaptability in resource access rights and resource management

5. Facilitate adaptation/transformation to climate change
   • Scale sensitive environmental governance
Integrating Agriculture & Nature Based Tourism?

Components necessary for viable rangeland Mgmt systems

- Ecologically sustainable
- Financially & economically profitable
- Technically feasible
- Politically acceptable
- Socially equitable
- Legally possible

The primary constraints

Thank You