Climate change and migratory species: Swaziland

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"Towards a CMS Programme of Work on Climate Change"

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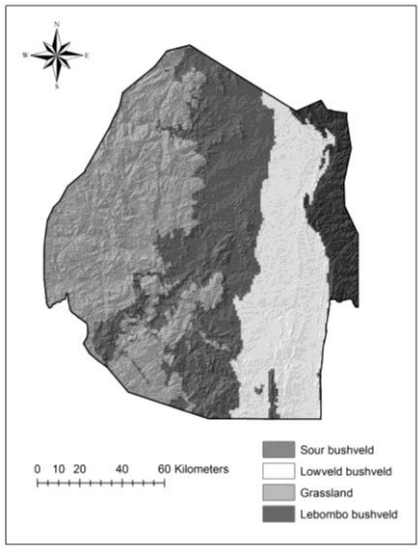
Limón, Costa Rica

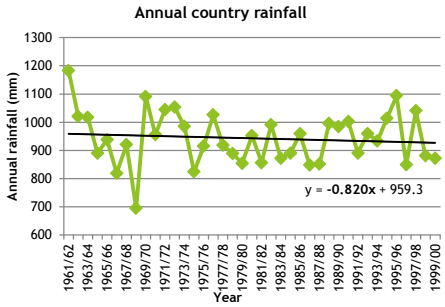
Background

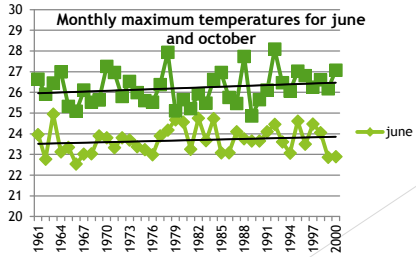
- Size - 17364 sq. km
- Climate
- Party to CMS since 1 January 2013
- Of the 72 CMS species found in Swaziland only two are mammals, mostly birds.
- Total of 2 and 10 CMS and Birds of Prey Appendix I species, respectively



Climate trends: 1960 -2010

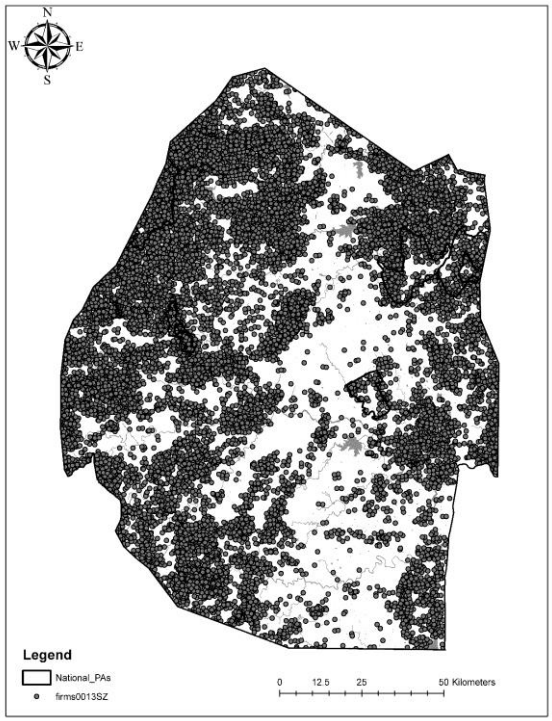
- The warming rates for the whole country for minimum temperatures for June and October were estimated at 0.312 °C and 0.663 °C, respectively, while for the maximum temperatures were estimated to be 0.312°C and 0.507°C, respectively (between 1960 and 2010).





Climate change effects

- CO2 fertilization increasing woodiness, bush encroachment – as similarly observed and projected in southern African region.
  - More than half of the bird species studied showed a significant change in occurrence between 1998 and 2008 in the Lowveld
  - Most migratory bird habitat (e.g. grassland ecosystem and wetlands)
- Alien plant species invasions – facilitated by climate change and other factors
- Drying of wetlands and persistent reduced water flows and droughts in stopover sites
- Frequent fires
- Land use/land cover change (habitat conversion) – particularly agriculture and human settlements – threat of mining!
- Changes in precipitation and temperature seasonality (phenological shifts)
- Important Bird Areas under threat
- Agricultural adaptation could also affect habitats as suitable crop areas shift to potential refuges.


N
W
E
S
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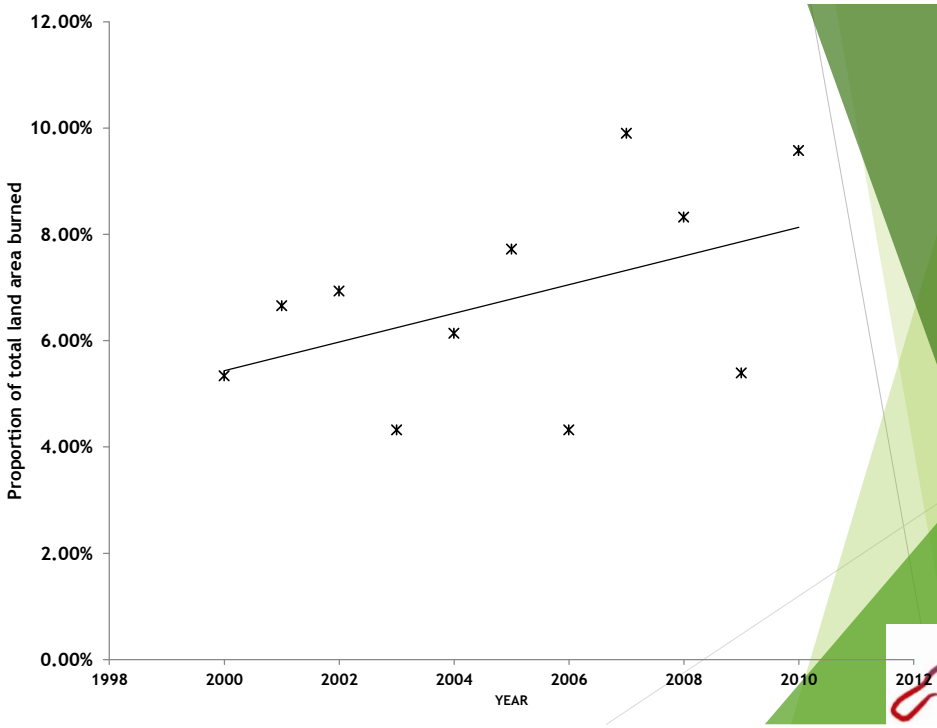
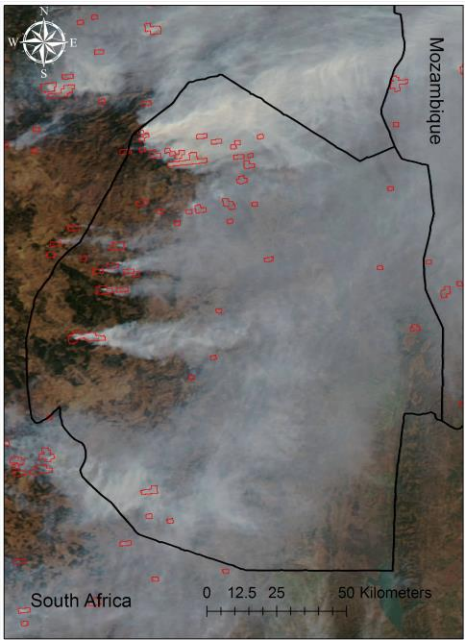
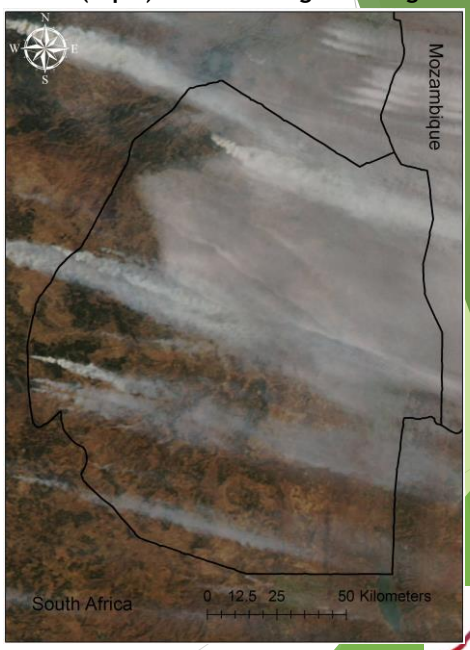
firms0013SZ
0
12.5
25
50 Kilometers


12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
Proportion of total land area burned
1998
2000
2002
2004
2006
2008
2010
2012
YEAR

MODIS (Aqua) satellite images 28 July 2007



MODIS (Aqua) satellite images 31 August 2008



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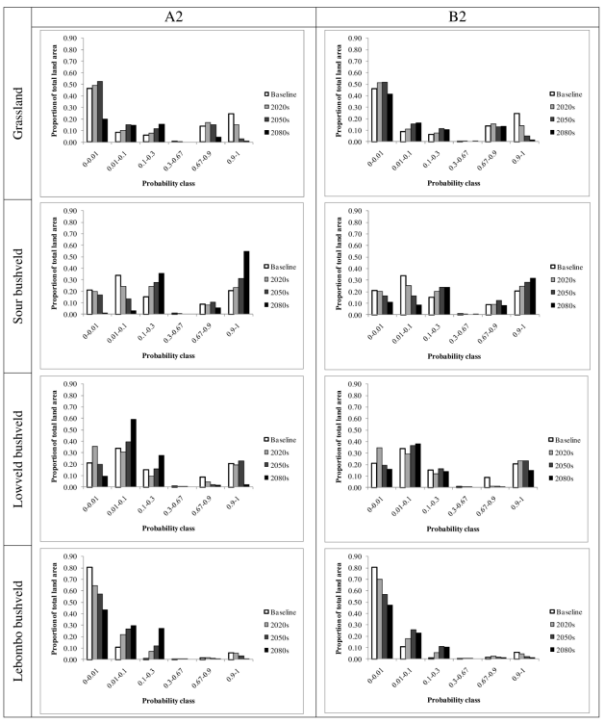

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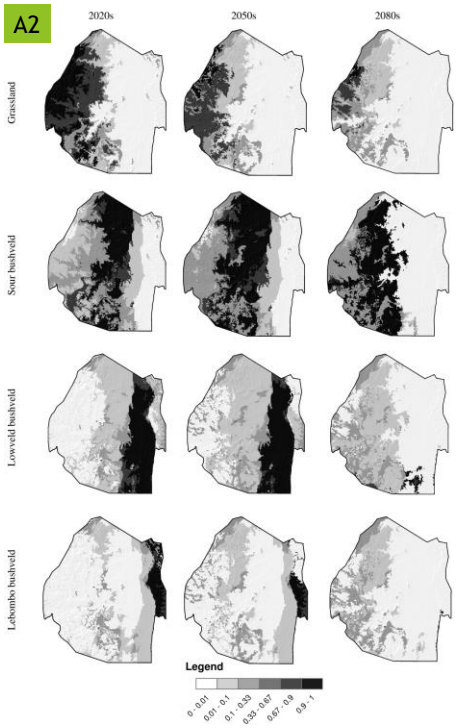

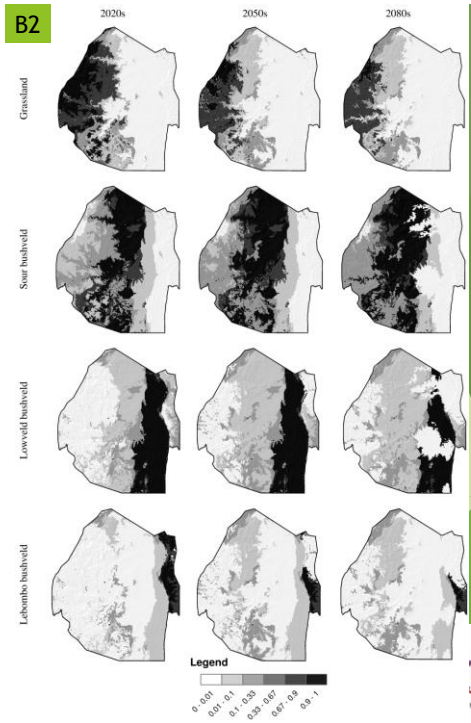

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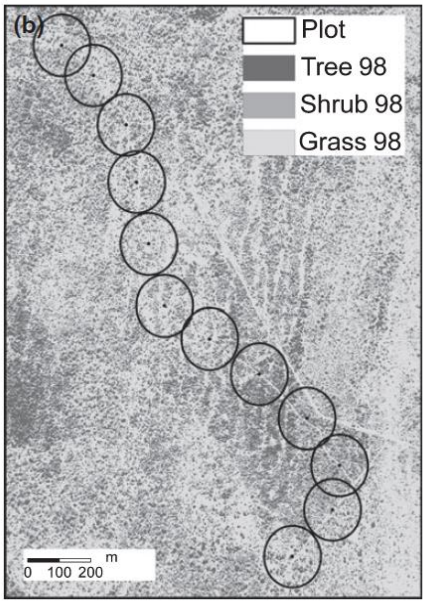
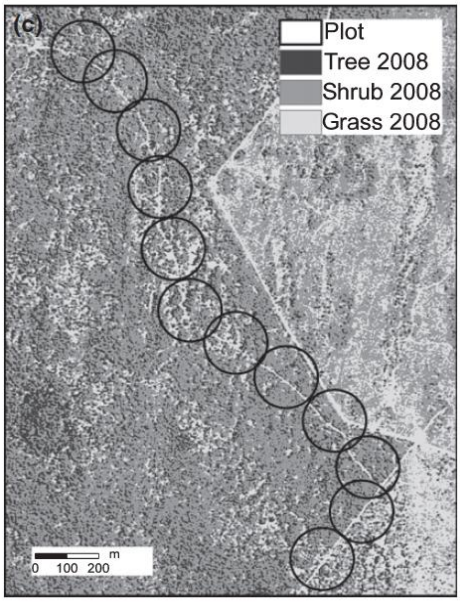




Monadjem and Bamford, 2009

Chromolaena odorata (Chromolaena)

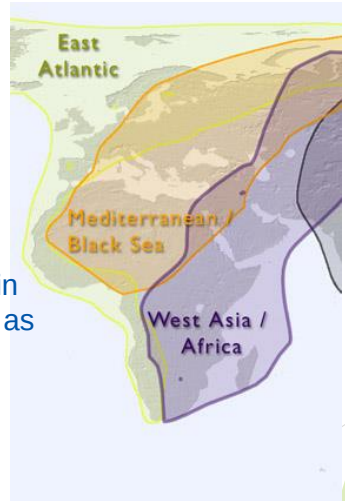
Lantana camara (Lantana)

Swaziland & AEWA

•Swaziland is part of the West Asian- East African Flyway;

•Swaziland counts over 80 migratory waterbird species – of which **67** are protected by AEWA;

• 3 migratory waterbird species occurring in Swaziland are listed as **Vulnerable** and 1 as **Near Threatened** under the criteria of the IUCN Red List.



The Corncrake example

- The Corncrake (*Crex crex*) for example has its breeding range in a large part of Eurasia, most of which are very susceptible to habitat loss due mostly to agricultural intensification.
- From August onwards, the Corncrakes migrate through Northern Africa (in September and October) and arrive at their wintering grounds in South-Eastern Africa from November onwards. Swaziland is one of the core wintering areas for the Corncrake between November and March.
- Between March-April, they again migrate back to their breeding grounds in Eurasia. Swaziland is therefore internationally important for the conservation of the Corncrake as well as the many other flyway species whose conservation depends on international cooperation.
- Grassland highly vulnerable to climate change and frequent fires whilst other suitable habitat threatened by agricultural expansion.

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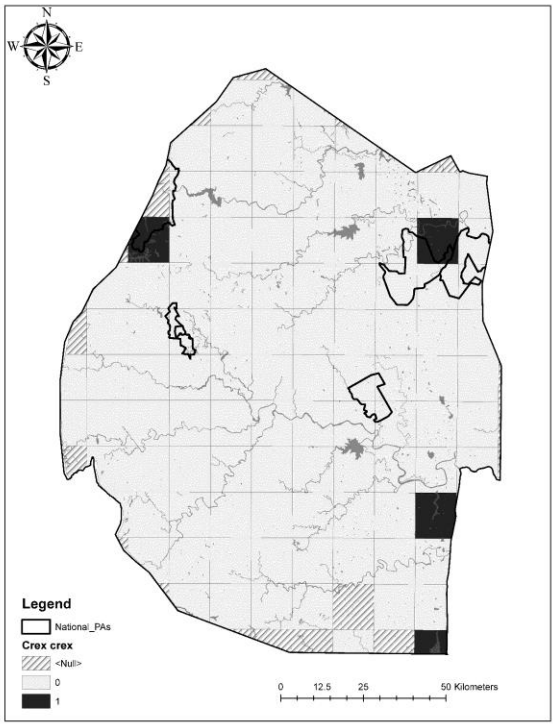

Distribution of Corncrake (*Crex crex*)

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The Marabou Stork Example

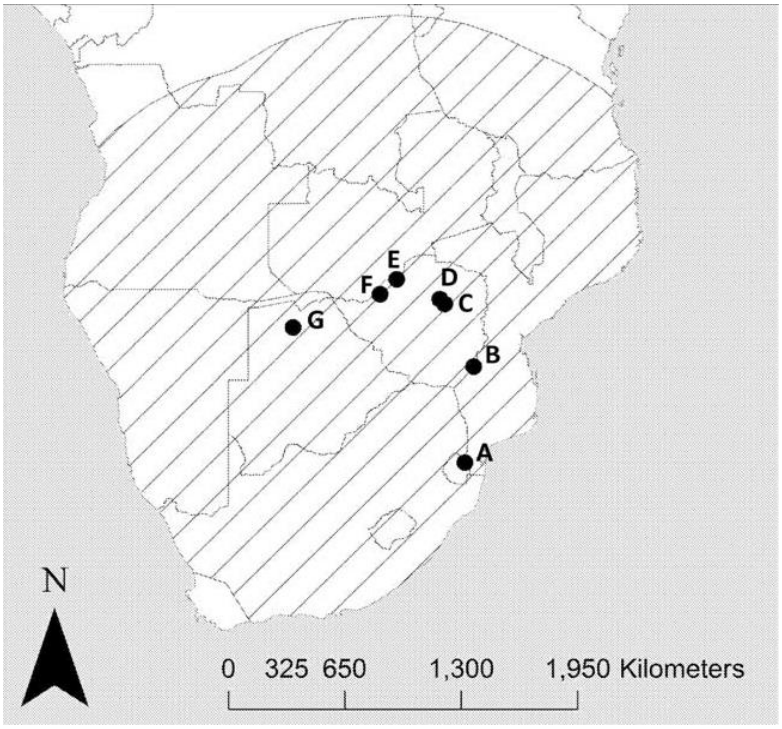
Marabou Storks *Leptoptilos crumeniferus* in Southern Africa over five breeding seasons.

Timing of breeding was related to rainfall preceding the breeding season. Fecundity (chicks fledged per nest) declined through each season.

The probability of an individual hatchling fledging was influenced by rainfall during the hatchling period, temperature during the hatchling period and laying date.

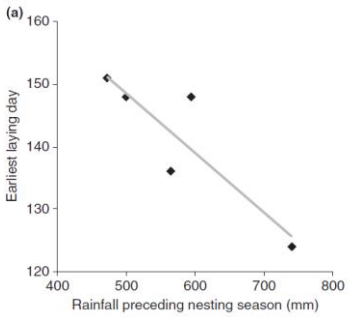
To disentangle the three effects, inter-annual variation in each was compared with the large inter-annual variation in breeding success, with rainfall providing the greatest explanatory power.

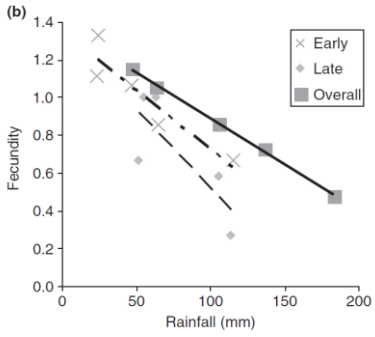
Rainfall, which tends to increase through the breeding season, seems to be at least partly responsible for the seasonal decline in breeding success.



Marabou nesting sites - Monadjem et al., 2012

Effects of rainfall seasonality changes on marabou stork



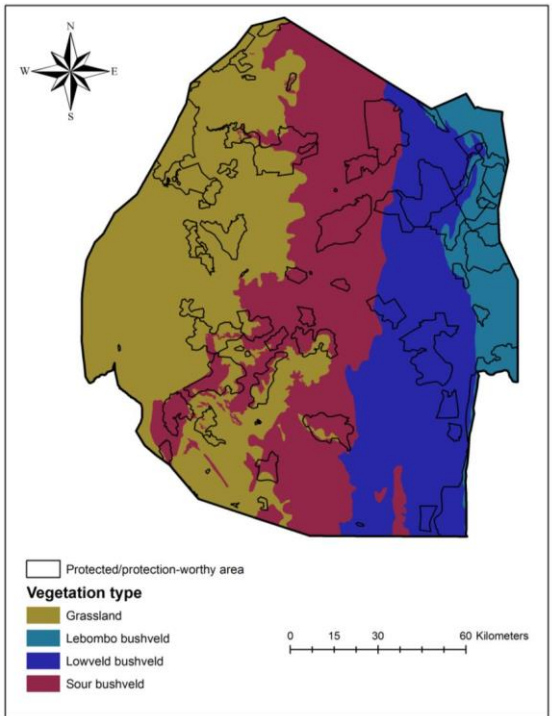


- rainfall in the summer preceding the breeding season influences the timing of breeding and rainfall during the breeding season influences breeding success.
- Predictable seasonal variation in rainfall is at least partly responsible for the lower success of nests started late in a season.

Monadjem and Bamford, 2009

Adaptation actions

- GEF project to strengthen and expand protected area network (landscape approach and increase connectivity including communal areas)
  - Multi-stakeholder/multiple land use with emphasis on ecosystem services
  - Focus on non-climatic pressures
- To prepare national management plans for specific species especially Appendix 1 species
- National fire management policy and strategy development
- Third National Report (in prep.) will also focus on ecosystems and species vulnerability assessment
- Multi-stakeholder national climate change committee
- Climate change policy development (underway until Mid-2014)



Points for consideration

- Support cross-border collaborative research and monitoring of migratory species and climate change effects (flyway/migratory routes approach)
- Identify/develop a key set of indicators for climate change effects
- Address indirect effects of climate change and non-climatic factors e.g. effects of cc on land use changes which in turn affect habitat availability for species
- Pay attention to breeding and wintering areas and seasonality
- Landscape approach linking multiple land use mosaics, protected areas and corridors (ecosystem-based adaptation).
- Involve communities especially where communal tenurial rights exists
- Emphasize on-the-ground transboundary cooperation
- Identify capacity needs
- Synergy with other MEAs e.g. CBD PoWPA, UNFCCC Nairobi Work Programme on Impacts, Vulnerability and Adaptation

THANK YOU – GRACIAS - SIYABONGA

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