

The role of conservation planning in assessing and mitigating climate change impacts on protected areas

Bob Smith

CCPAWA Inception meeting, Banjul, 31st March 2011

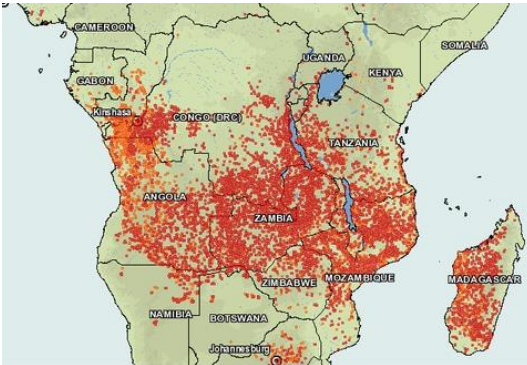
Durrell Institute of Conservation and Ecology

University of Kent

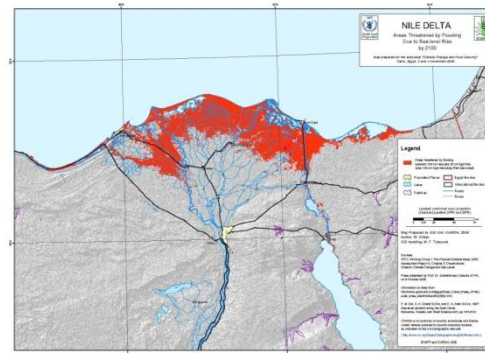


Examples of GIS in conservation

Long term monitoring of CC impacts on PAs



Mapping wildfires



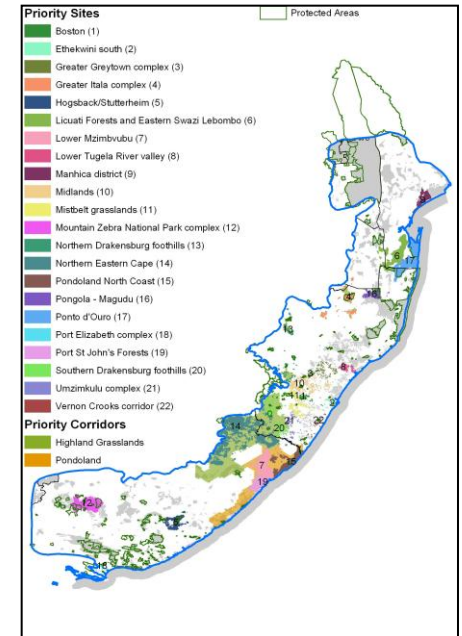
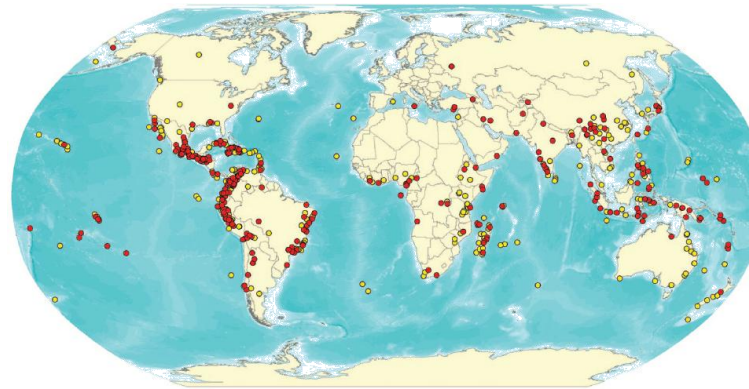
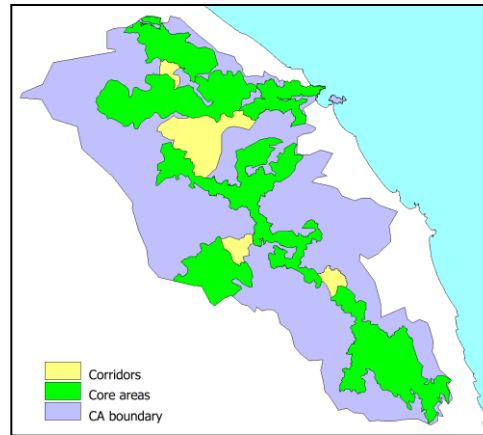
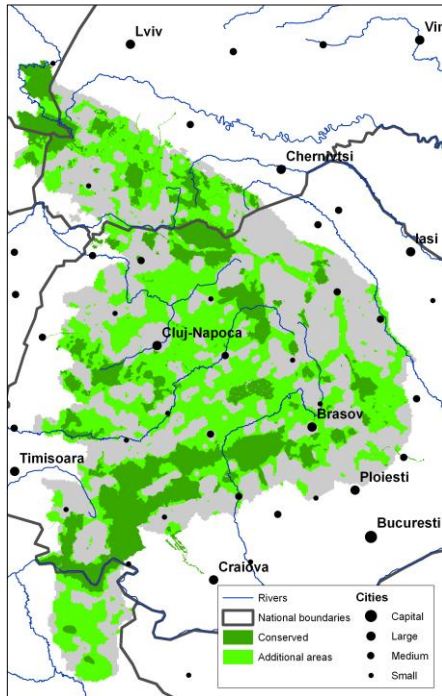
Sea level rises



*Impacts on
vulnerable species*

Examples of GIS in conservation

Identifying priority areas for conservation



Examples of GIS in conservation

Gap analysis

At its simplest, a gap analysis combines maps of:

PA location

+

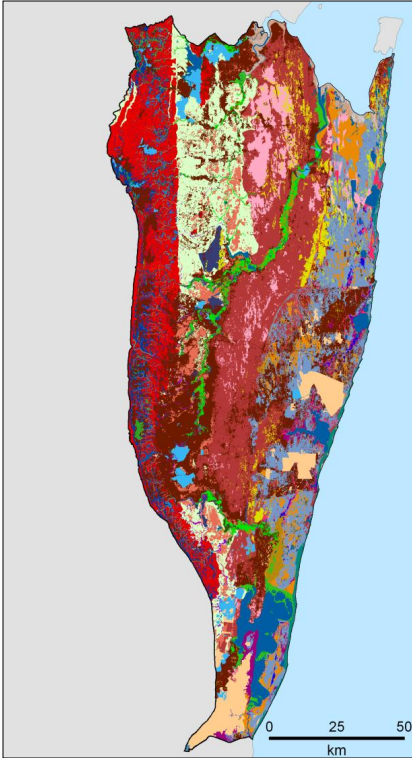
Distribution of important conservation features



To calculate the protection level for each feature

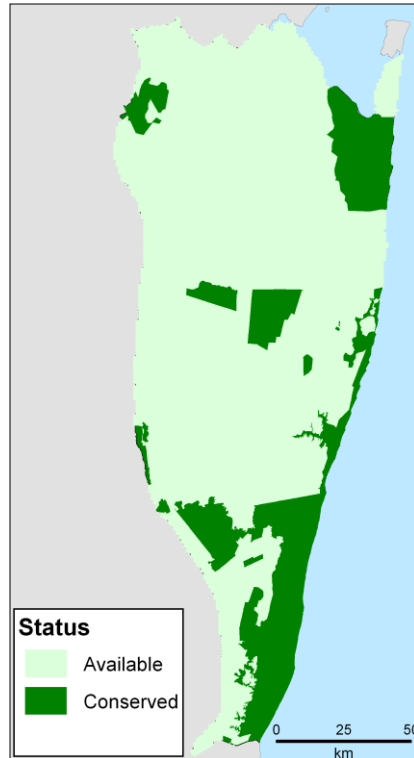
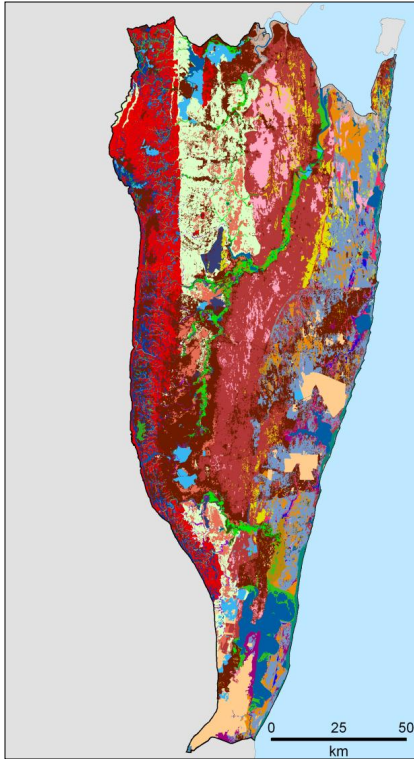


Gap analysis: the basic approach



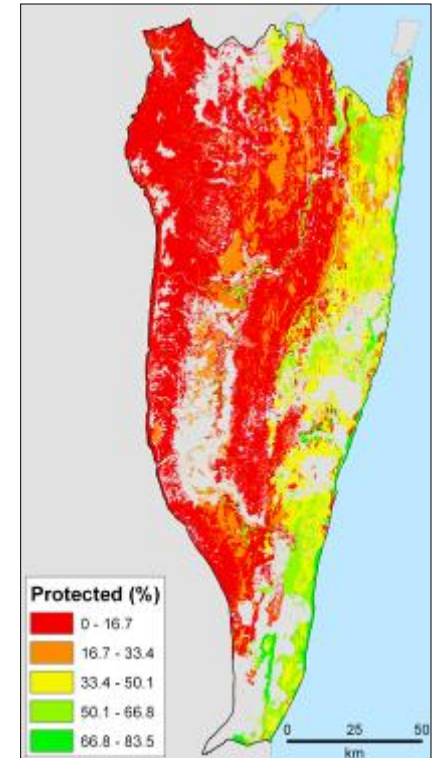
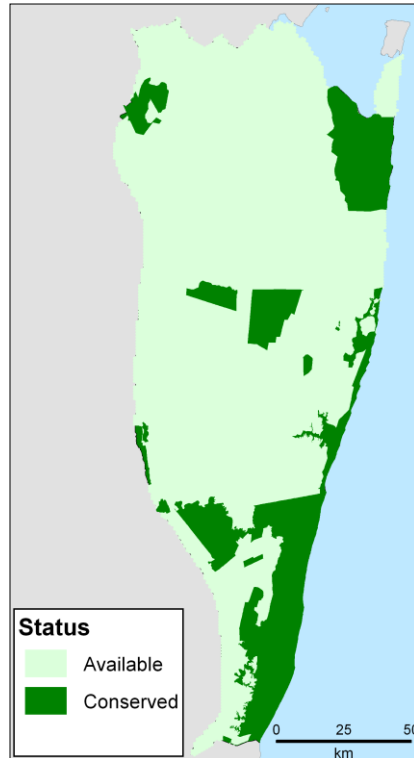
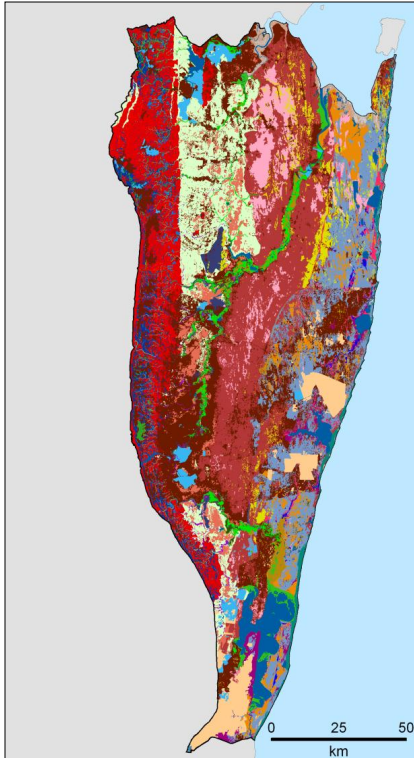
Name	Total (ha)		
Montane grassland	2,000		
Riverine forest	3,551		
Terminalia woodland	308,116		

Gap analysis: the basic approach



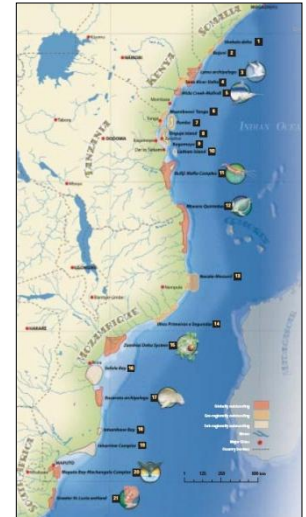
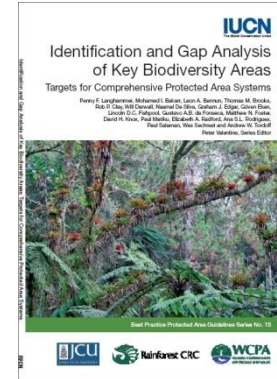
Name	Total (ha)	Conserved (ha)	
Montane grassland	2,000	734	
Riverine forest	3,551	2,327	
Terminalia woodland	308,116	36,845	

Gap analysis: the basic approach



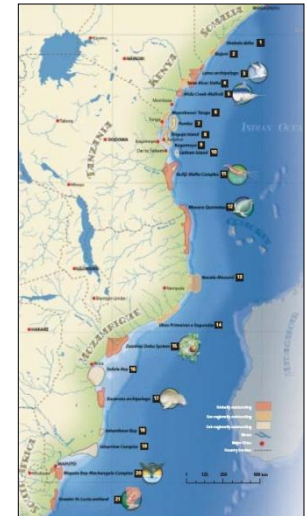
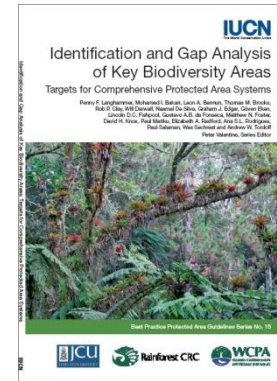
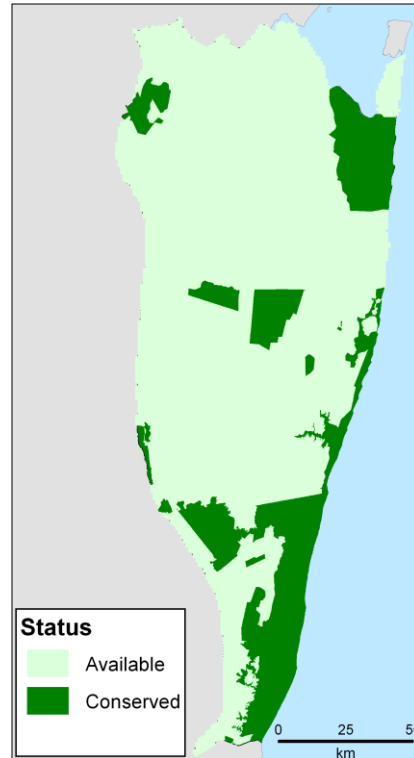
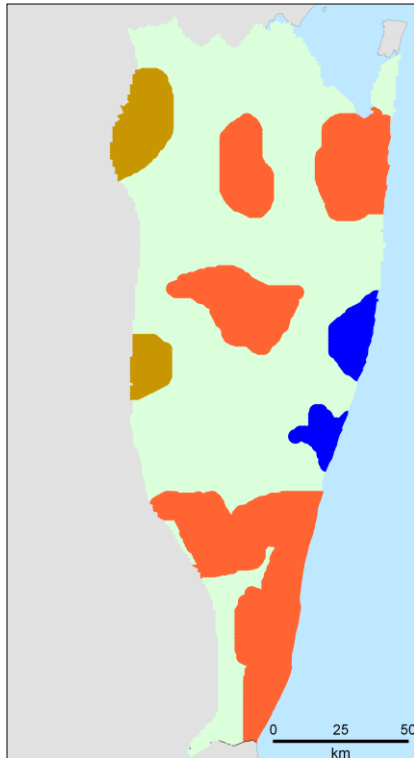
Name	Total (ha)	Conserved (ha)	Conserved (%)
Montane grassland	2,000	734	36.7
Riverine forest	3,551	2,327	65.5
Terminalia woodland	308,116	36,845	12.0

Gap analysis: post-prioritisation analysis



Name	Target (ha)	Conserved (ha)	Conserved (%)
Priority grassland	100%		
Important Bird Area	100%		
Ramsar site	100%		

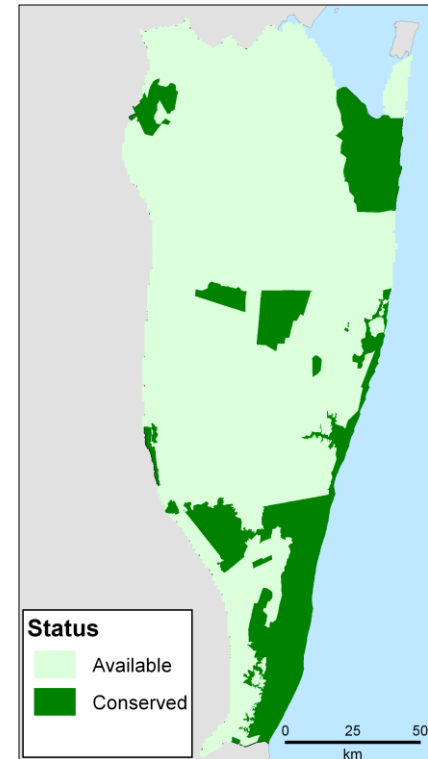
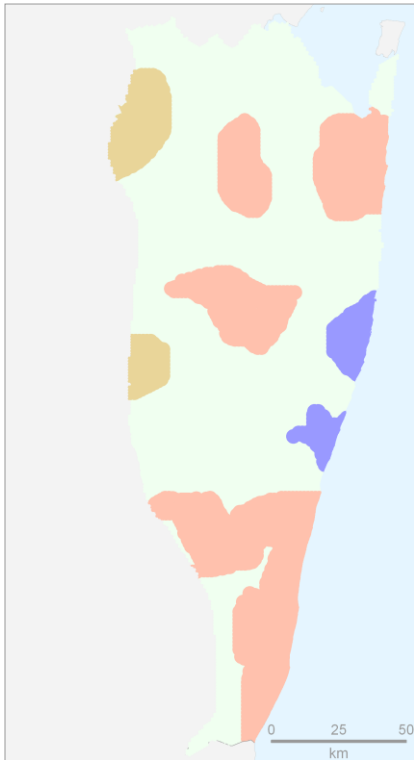
Gap analysis: post-prioritisation analysis



Name	Target (ha)	Conserved (ha)	Conserved (%)
Important grassland	100%	734	36.7
Threatened species	100%	180,000	73.0
Ramsar site	100%	42,000	63.5

Gap analysis

Predicting protection under different climate scenarios



Gap analysis

Assessing conservation levels for resilient areas

CRITICAL ECOSYSTEM PARTNERSHIP FUND



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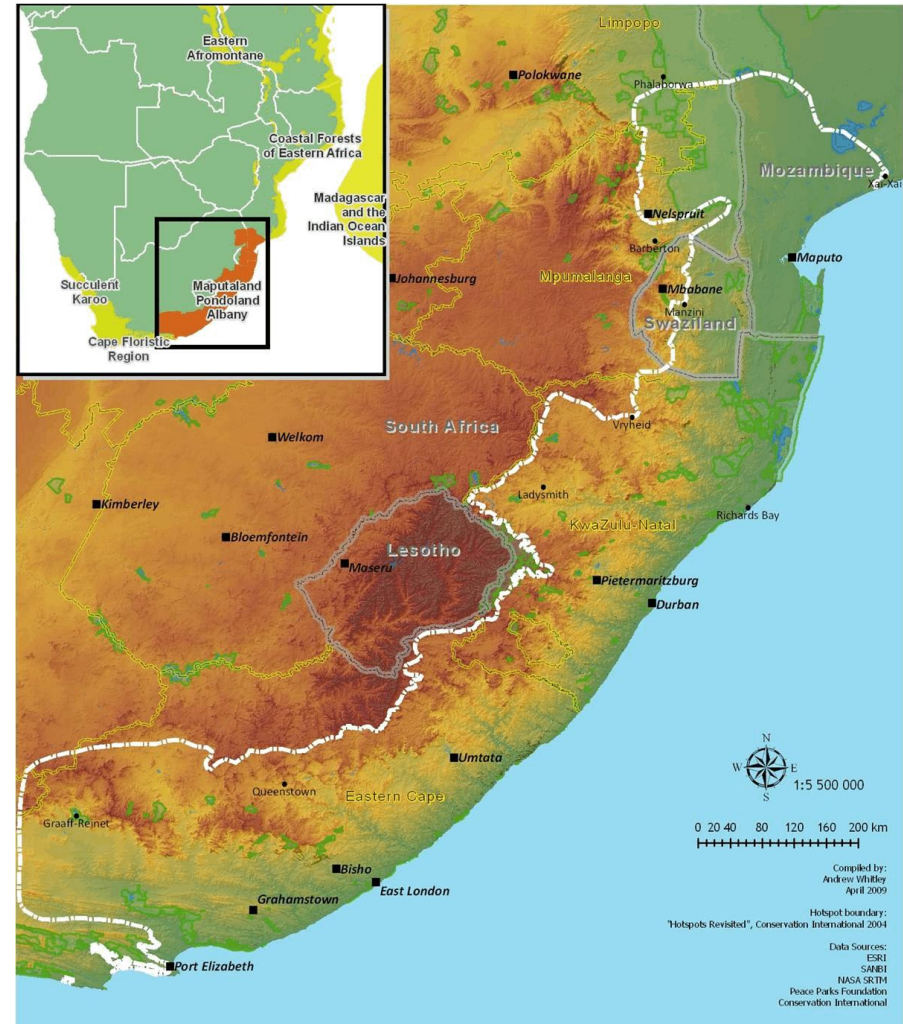
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WE PROMISE THE EARTH

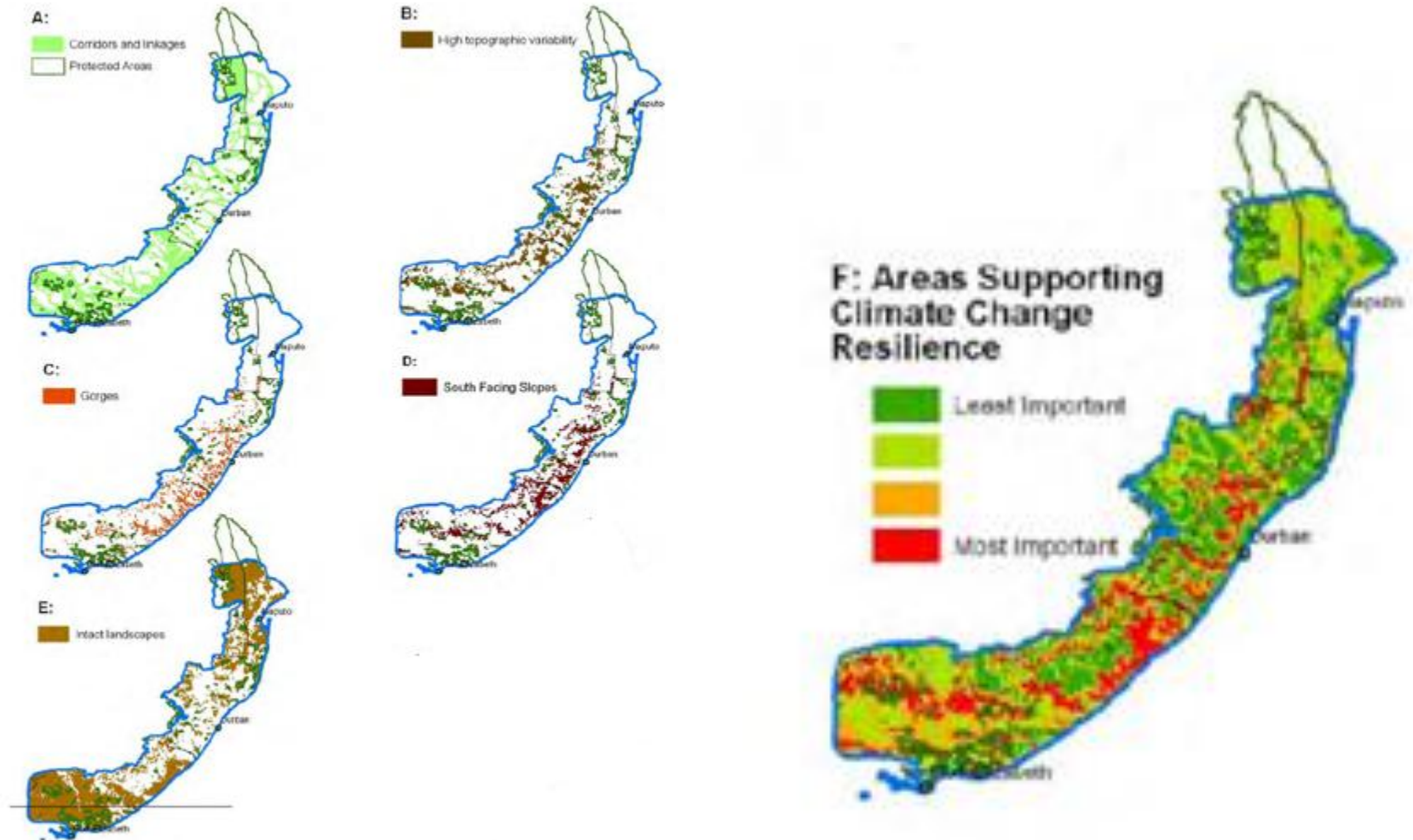


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Gap analysis

Assessing conservation levels for resilient areas



Examples of GIS in conservation

Identifying priority areas for conservation

Systematic conservation planning:

- Most widely used approach for identifying priority areas
- Transparent
- Efficient
- Creates a platform for combining different prioritisation schemes
- Minimises impacts on other sectors



**Margules & Pressey,
Nature, 2000**

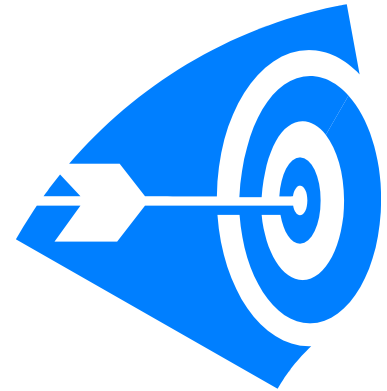
Examples of GIS in conservation

Identifying priority areas for conservation

Systematic conservation planning:

Target-based

Targets are set for each species and habitat at the beginning of the analysis



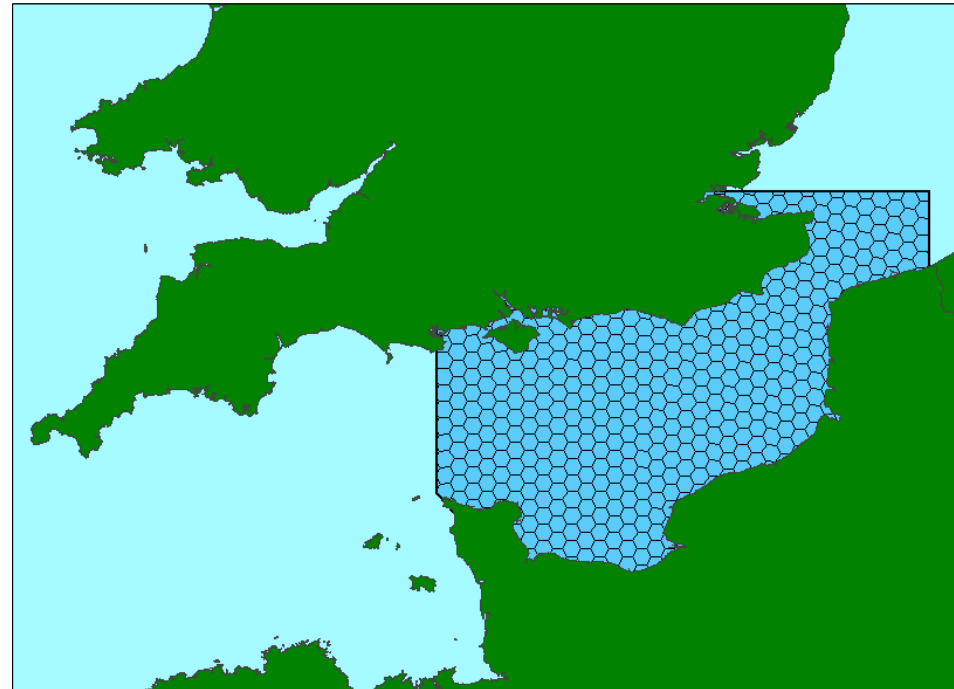
Incorporates cost data

Identifies priority areas that minimise impacts on other sectors



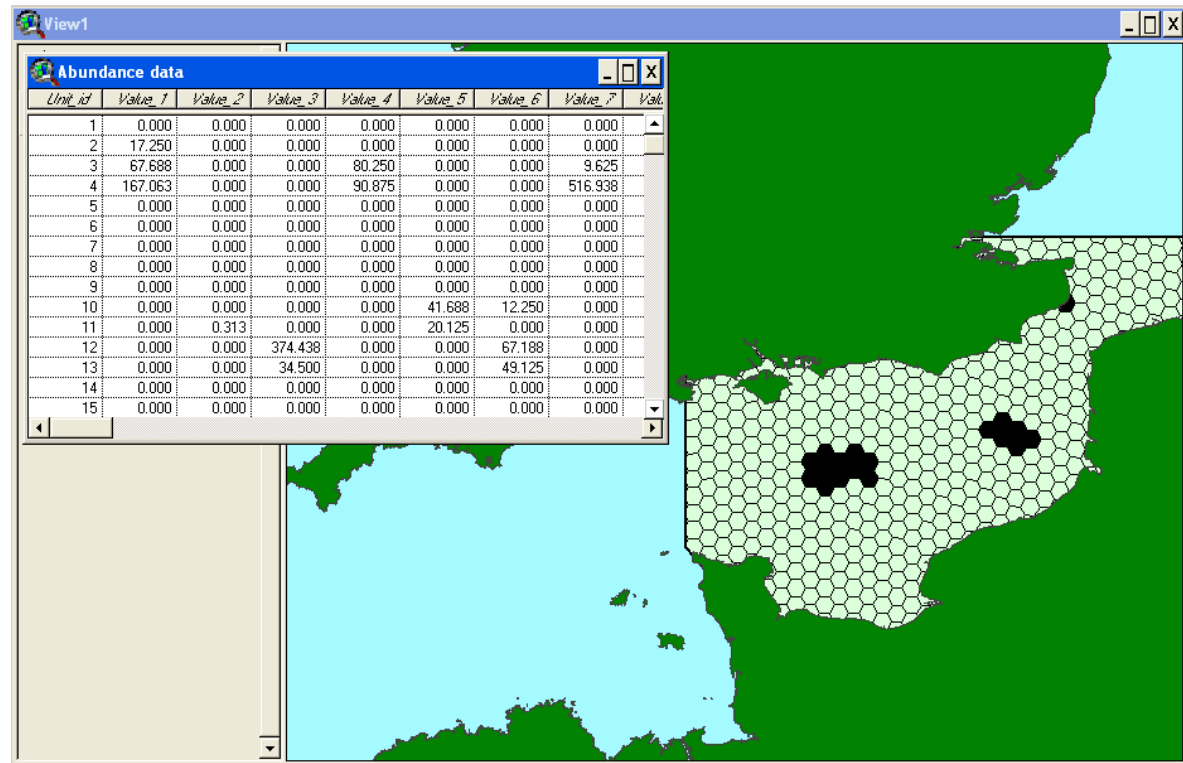
Systematic conservation planning

- 1) Identify the planning region
- 2) Identify the conservation features
- 3) Divide the region into planning units - any shape or size.



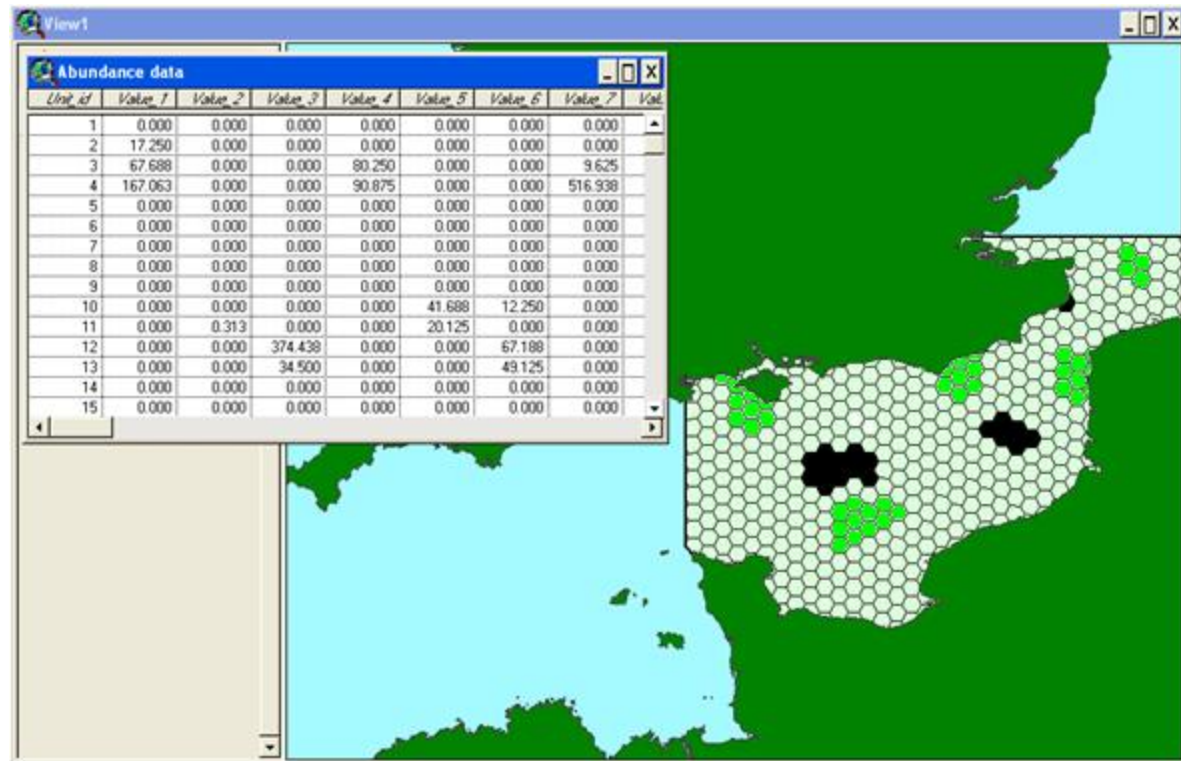
Systematic conservation planning

- 4) Measure the amount of each feature in each planning unit
- 5) Produce a cost value for each planning unit
- 6) Set the status of each planning unit (Conserved or Excluded)
- 7) Set targets for each conservation feature

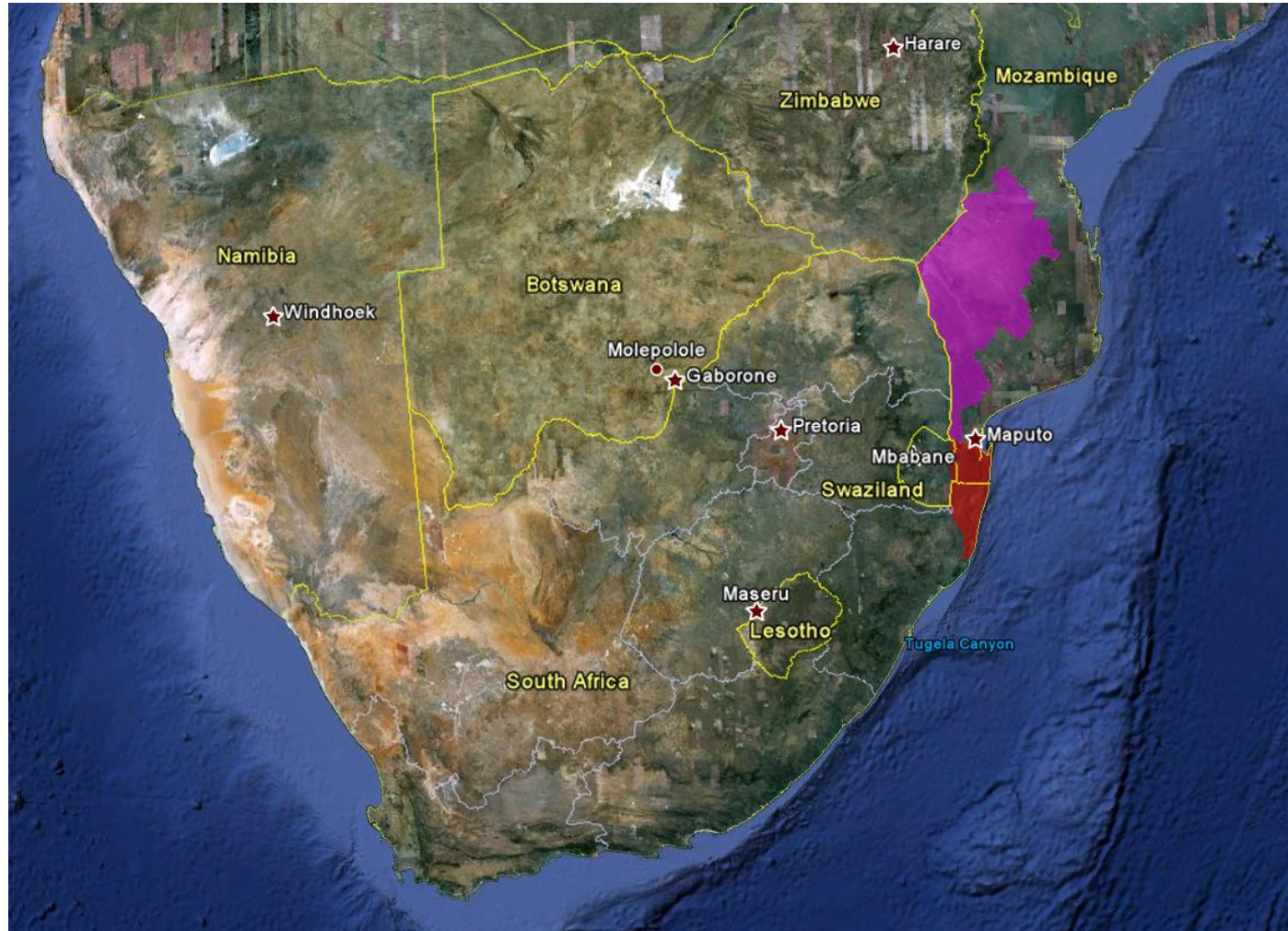


Systematic conservation planning

- 4) Measure the amount of each feature in each planning unit
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Case studies from Southern Africa



Case studies from Southern Africa

Maputaland Centre of Endemism



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National Trust
Commission



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UNISWA



Fórum para
Natureza
em Perigo



Amchanyakude
District Municipality / Distrito Municipal



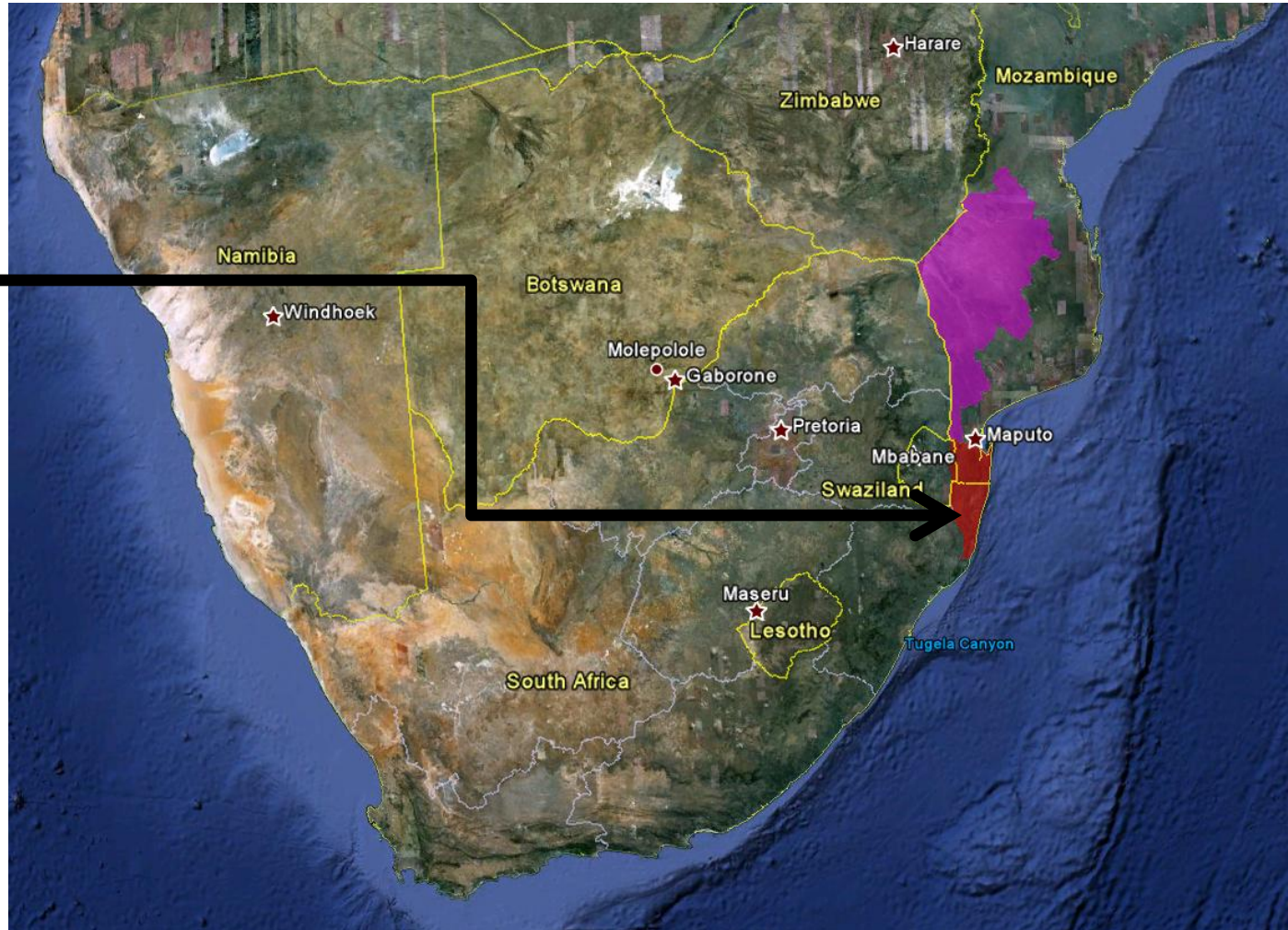
PEACE PARKS FOUNDATION
THE GLOBAL SOLUTION



Wildlands
conservation
trust

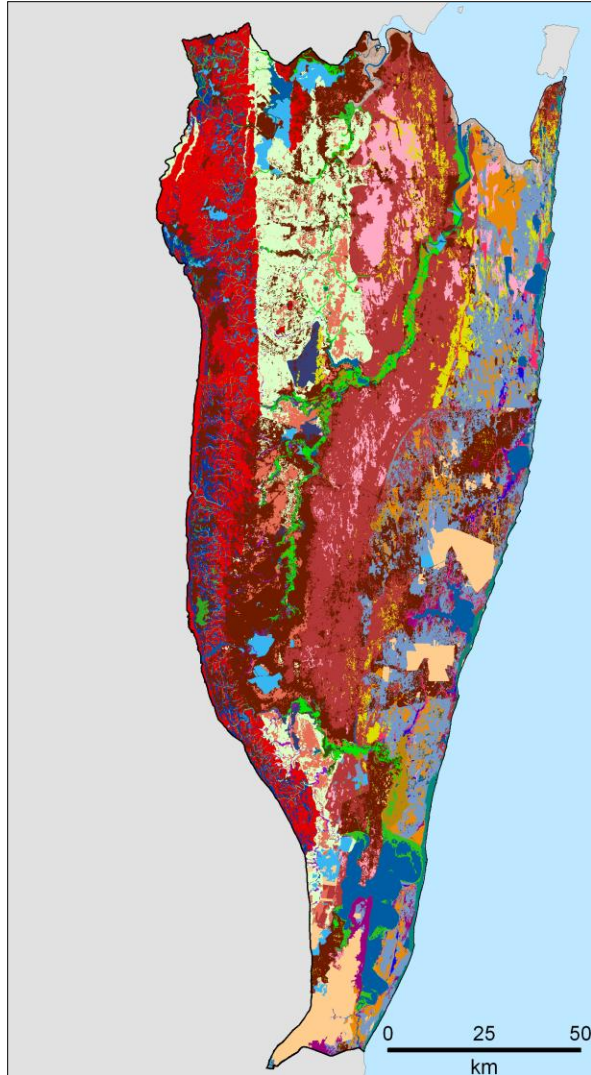


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Conservation features



44 landcover types



20 vertebrates

13 invertebrates

20 plants



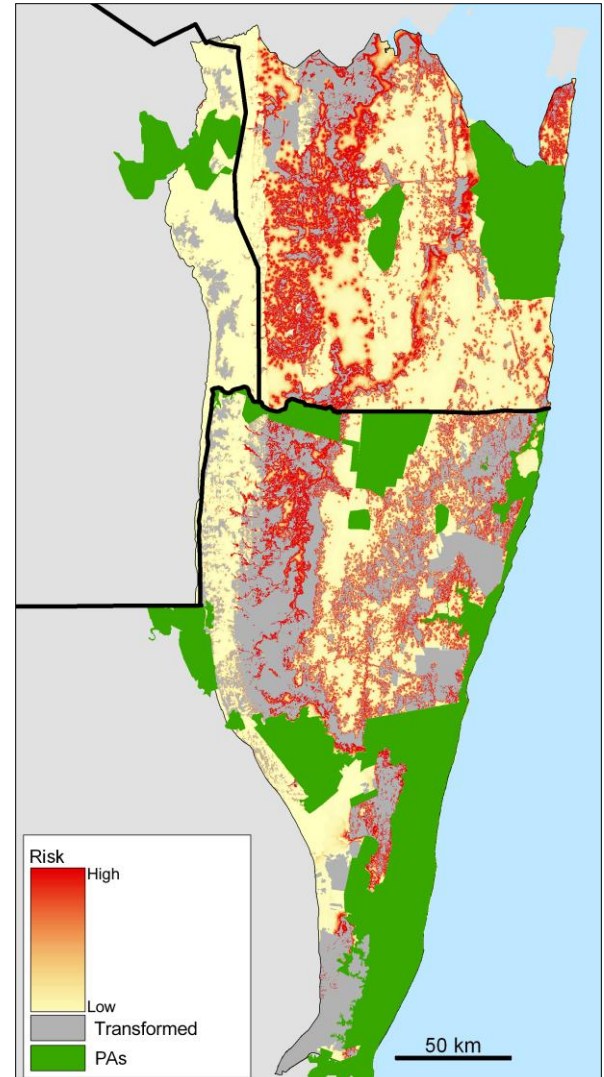
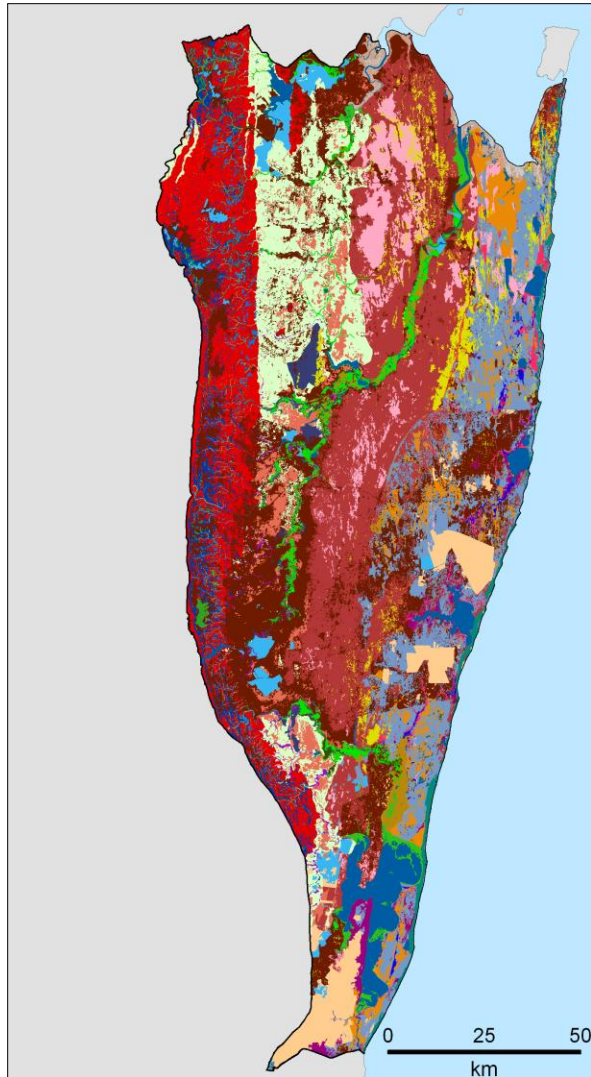
14 ecological processes



Smith et al., Biological Conservation, 2008.

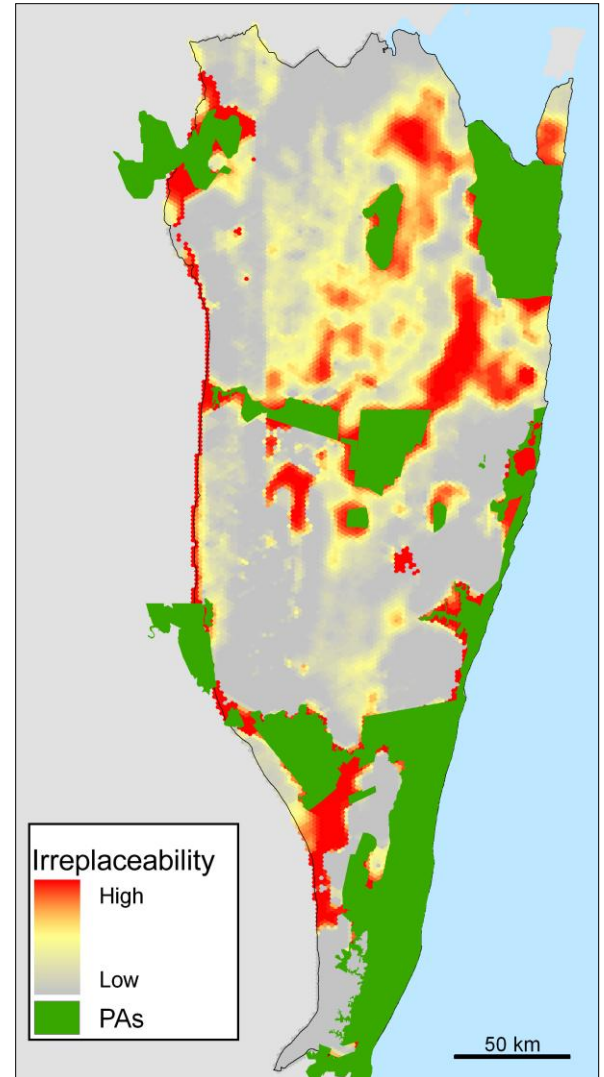
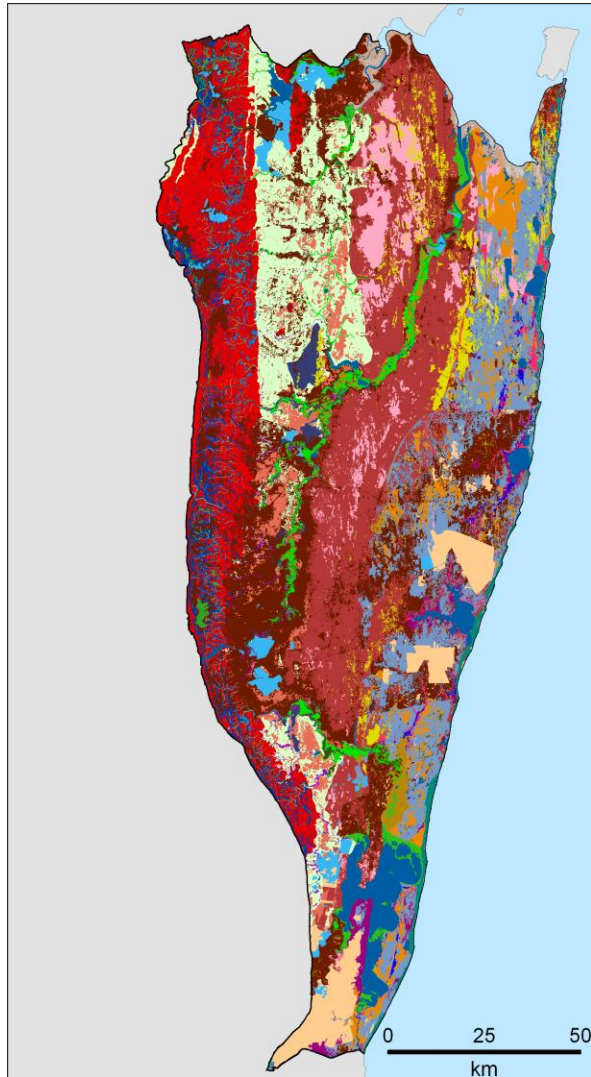
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Conservation features

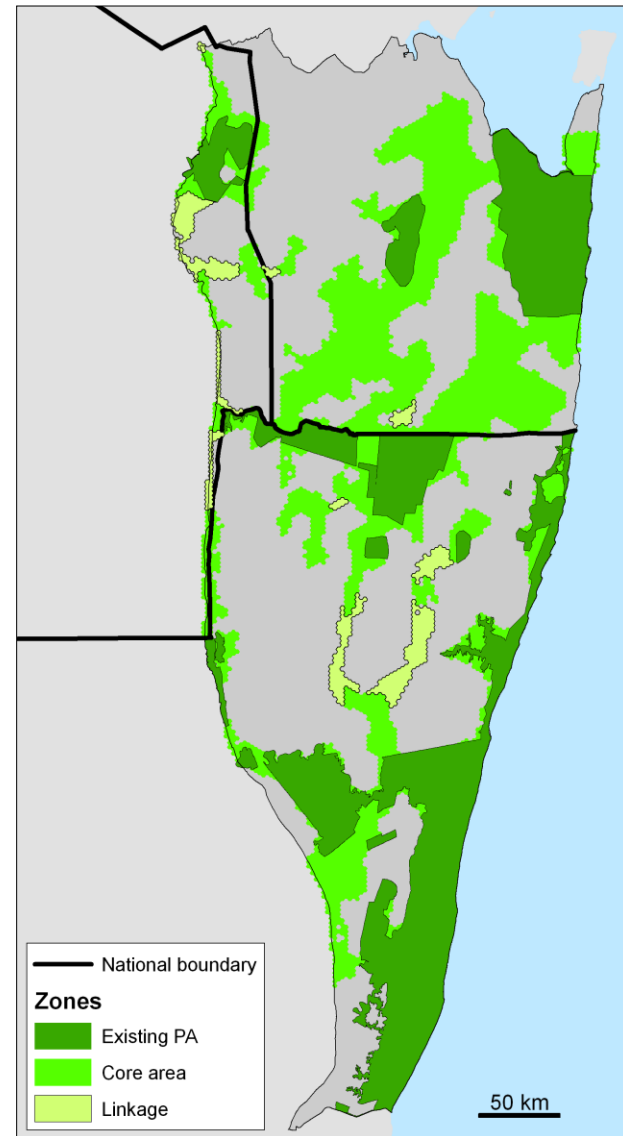
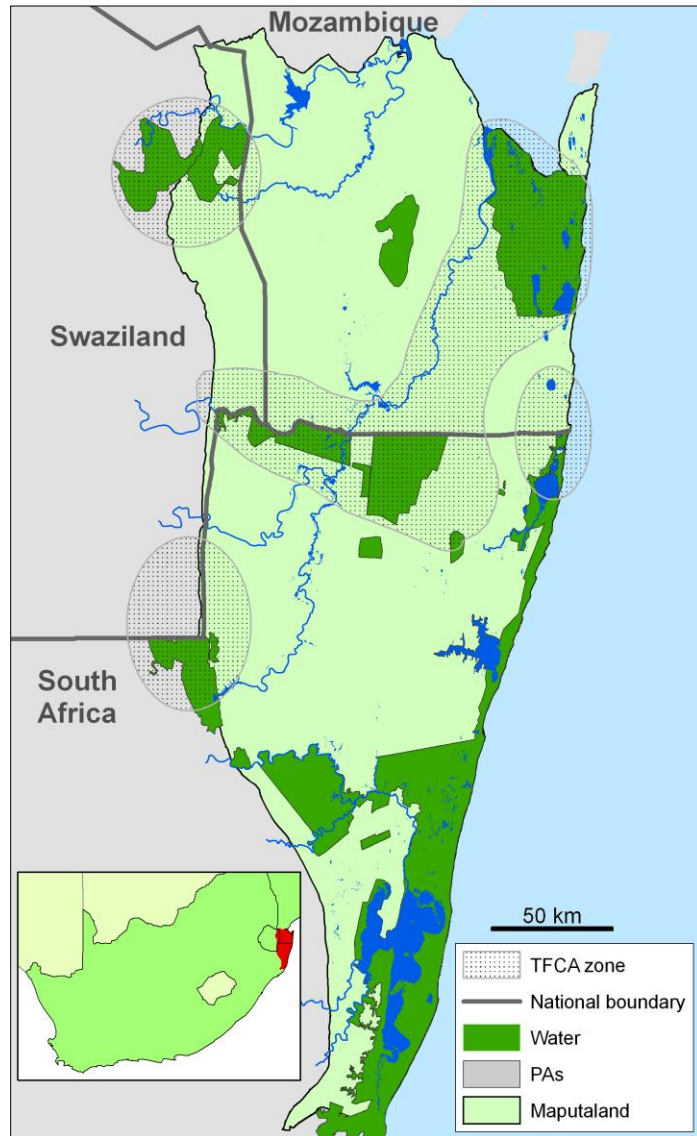


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Conservation features



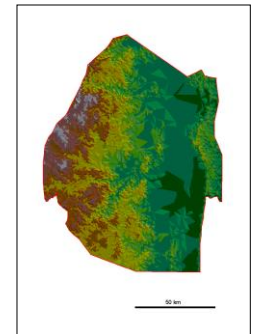
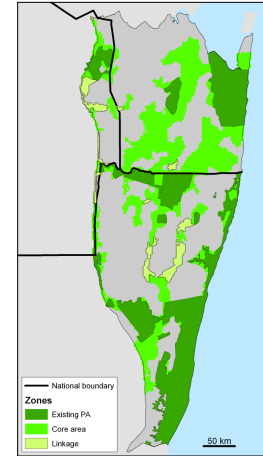
Maputaland centre of endemism



Systematic conservation planning

Developing robust PA systems

- Conserve current habitat
 - Develop corridors and landscape linkages
 - Stepping stones
-
- Identify priority areas based on predicted distributions
 - Conserve areas least-likely to be affected
-
- Identify areas that are important for conservation and suitable targets for REDD+, etc projects



GEF project outcomes?

Gap analysis

Measure current and future levels of protection

Identify PAs that will remain important

Identify how well resilient areas are conserved

Incorporate management effectiveness?

Systematic conservation planning

Identify suitable corridors and linkages

Identify new priority areas for conservation based on future climate projections

THANK YOU



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**Swaziland
National Trust
Commission**



**france (swaziland) england
interreg**

European Regional Development Fund
The European Union, investing in your future



Fonds européen de développement régional
L'union Européenne investit dans votre avenir