Identifying priority conservation areas in Mozambique: preliminary results for the Great Limpopo TFCA

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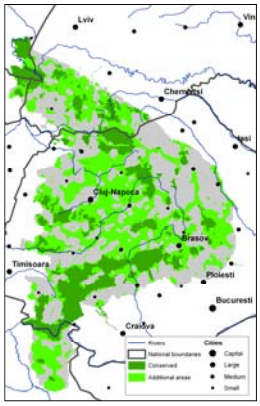
Systematic conservation planning & Marxan

- Most widely used approach for designing protected area networks and other conservation landscapes/seascapes.
- Marxan is the most widely used software.

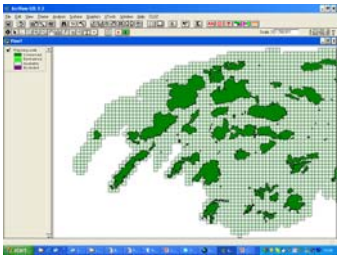


Systematic conservation planning & Marxan

1) Based on spatial data

Systematic conservation planning involves dividing the planning region into a number of different planning units.

ALL of the data in the conservation planning system must then be related to these planning units.



Systematic conservation planning & Marxan

2) Target driven

E.g. 120 km^2 of oak woodland

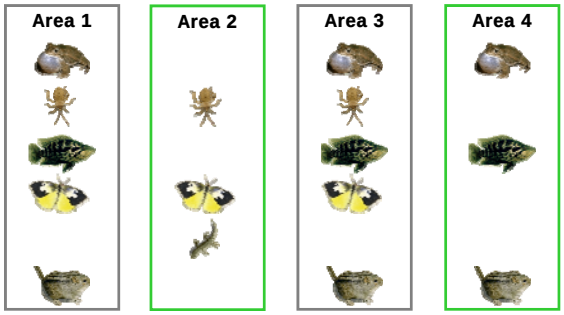
800 wolves

2 corridors linking upland and lowland areas

Systematic conservation planning & Marxan

3) Based on the concept of complementarity

Choosing planning units to maximise the amount of biodiversity that is protected when combined.

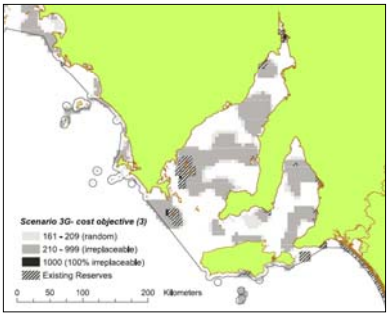


Systematic conservation planning & Marxan

4) Explicitly minimises conflict with other user groups

Including rock lobster harvest data into the planning analysis to reduce the impact in the fisheries.

The new system was slightly larger (3%) but the economic impact was reduced by a third.

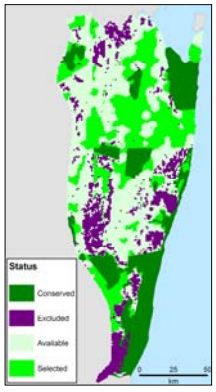


An example from Maputaland - Lubombo TFCA

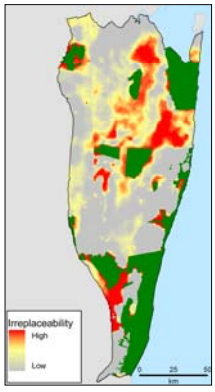
44 landcover types

53 species

14 ecological processes



Best portfolio



Irreplaceability scores

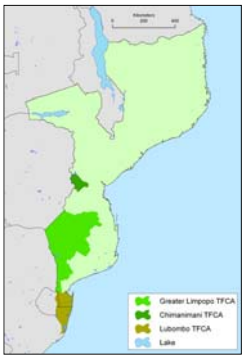
TFCA conservation planning systems

Project to developing conservation planning systems for three TFCAs

Decision support tools for National Directorate of the Conservation Areas (DNAC)

DICE, University of Kent

Universidade Eduardo Mondlane



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Great Limpopo TFCA

Greater Limpopo Conservation Planning System will include data on:

- Landcover types
- Species
- Ecological processes
- Conservation opportunities
- Conservation constraints

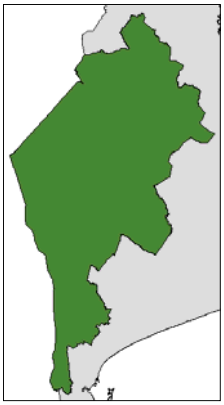
It could be used for:

A. Land-use zoning

B. Developing corridors

C. Identifying locations for new PAs

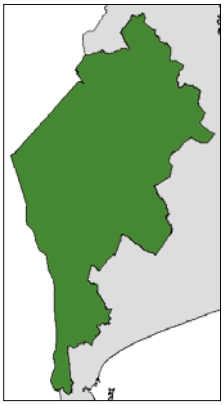
D. Changing PA boundaries



Great Limpopo TFCA

Planning region falls within Mozambique using political and natural boundaries.

Total area = 96,494 km^2

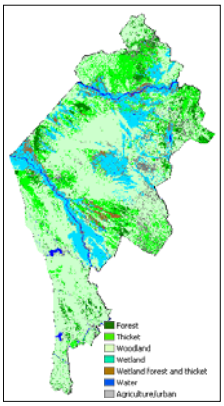


Basic landcover map

Developed from 2006 landcover maps developed by the Peace Parks Foundation.

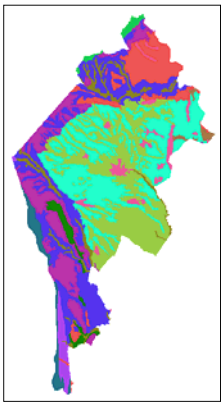
Missing areas based on 2000 Landsat ETM images

Converted from 30m to 100m resolution.



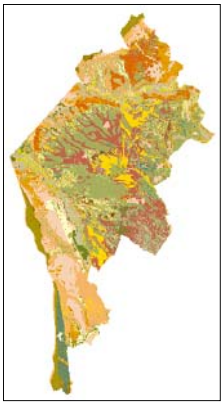
Soil map

Combined with a soil map that was simplified into 12 different soil classes.



Combined soil and landcover map

The final landcover map contained 58 landcover/soil combinations.



Setting targets

Targets for each landcover class were based on research undertaken by SANBI.

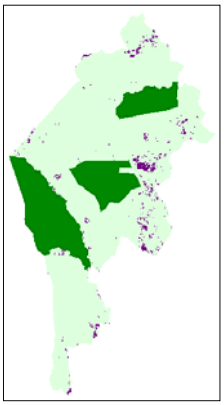
Ranged between 19% and 40% of original extent.

Planning units

The planning region was divided into 49,148 planning units – most were 200ha hexagons.

Planning units that were >50% cleared for agriculture were excluded from the analysis.

Planning units that fell within the PAs were set as conserved, and so were always included.



Planning unit cost

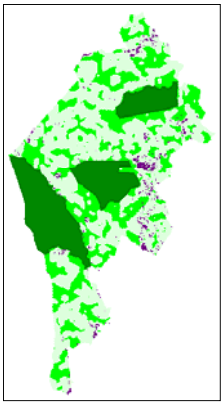
The cost of each planning unit was based on its distance to agriculture and roads.

Preliminary results

Used Marxan to identify the areas needed to meet the remaining targets based on

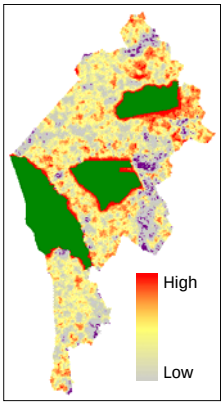
Minimising PU cost

Reducing fragmentation levels



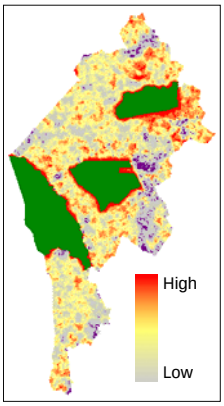
Preliminary results

Irreplaceability scores show high levels of flexibility, with areas around existing PAs and in north-east having highest levels of irreplaceability.



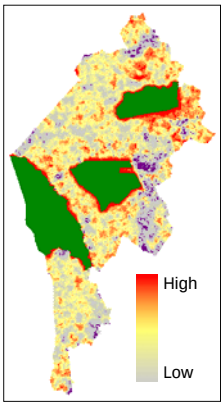
Next steps

1) Recalculate PU cost based on human population data.
2) Add species data (based on modelled distributions).
3) Include national game count data.
4) Incorporate data on ecological processes.
5) Include opportunity and constraint data.



Further analyses

1) Conservation assessment based on updated data
2) Identifying potential for changing PA boundaries
3) Incorporate disease data?



Conclusions

1) Systematic conservation planning is a transparent and objective approach for designing conservation landscapes.

2) It should be a continuous process that incorporates new and updated data.

3) There is plenty of scope for it to include data on disease occurrence and dynamics as long as this **can be captured spatially**.

Acknowledgements

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