Free State Provincial Biodiversity Assessment

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Golden Gate Highlands National Park

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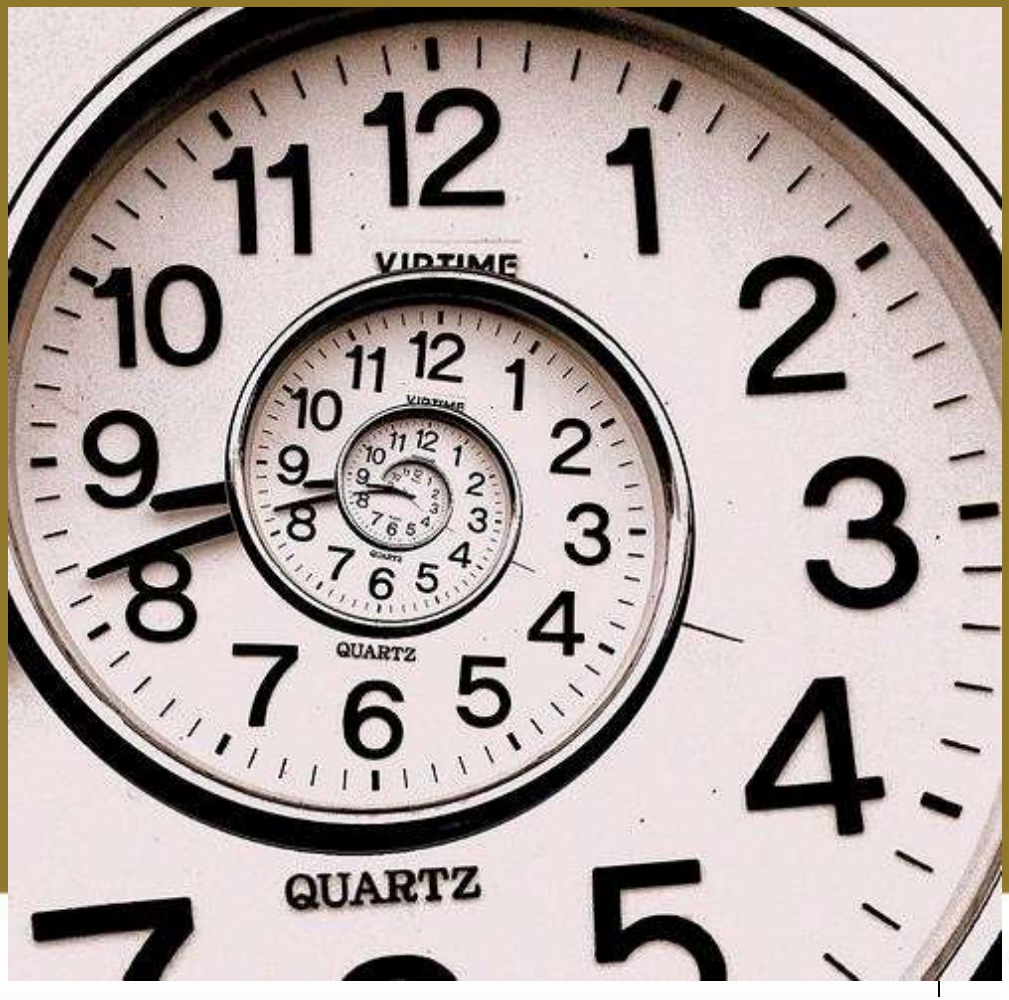
Free State Provincial Biodiversity Assessment

Content:

- Progress 2012/13
  - Biodiversity map
  - Corridor analysis
- Way forward

TIME FRAME

End March 2013



TIME FRAME

End March 2013

PROGRESS – 2012/13

- First release of a provincial plan was in March 2013.
- However, the March 2013 map is a cartographic product.
- Time constraints did not allow for 'irreplaceability' (C-Plan) or 'frequency of selection' (Marxan) analysis.

PROGRESS – 2012/13

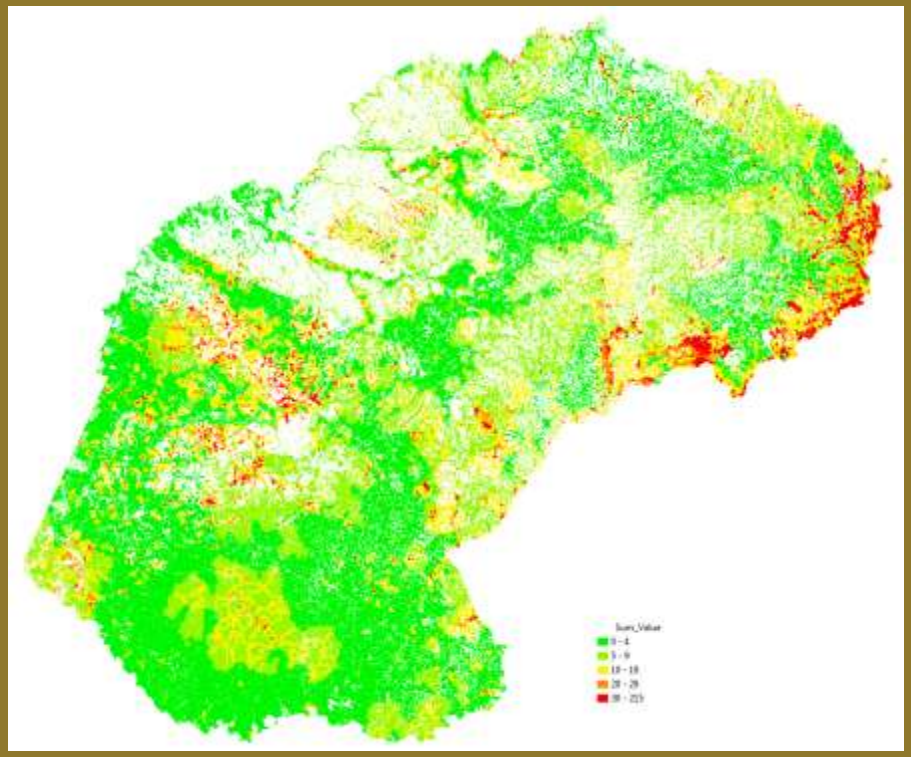
Simple approach:

- Conservation value scores (weight) was assigned to the mapped biodiversity features according to their conservation worthiness or 'value'.
- Biodiversity features with high value were assigned high conservation value scores (10) while those of lower conservation value were assigned lower scores (8, 5 or 3).
- Includes species (actual and modelled), ecosystems and NFEPA data, as well as some ecological services (water provision).

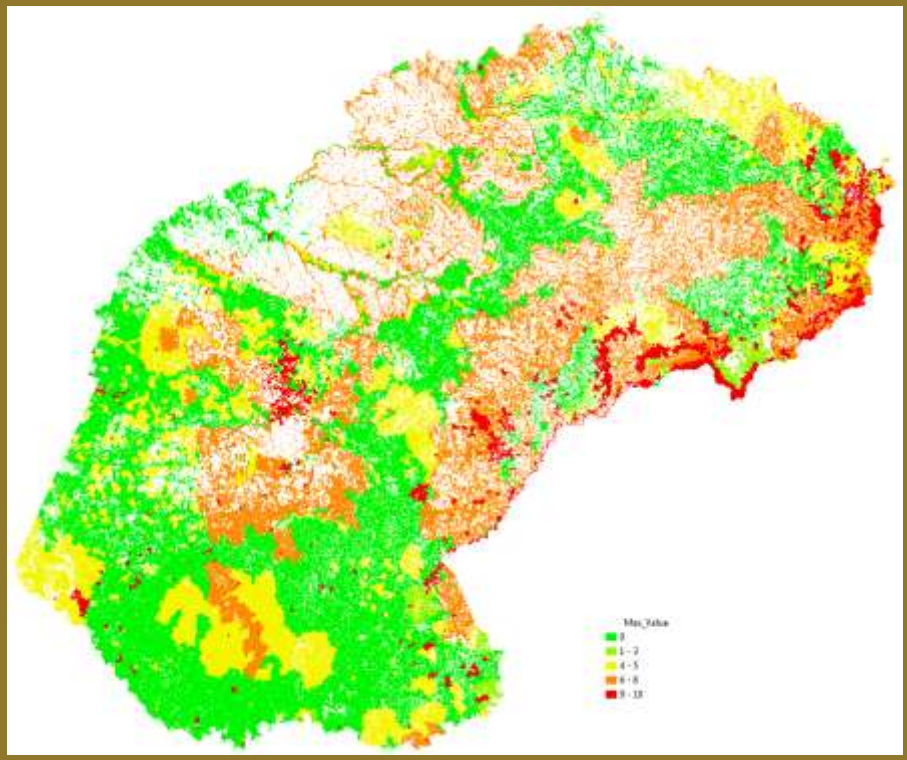
PROGRESS – 2012/13

- The Free State was subdivided into 65 874 sections (planning units) of 200 hectares each.
- A 'conservation value' score was calculated for each planning unit by summing the conservation value scores of the biodiversity features that occur in each of the planning units (spatial join).
- The maximum conservation value score for each planning unit was also determined along with the standard deviation of the conservation value scores.

PROGRESS – 2012/13



Sum of the conservation value scores



Maximum of the conservation value scores

PROGRESS – 2012/13

What the maps can be used for:

- Collectively the individual maps can be used for comparing the relative 'Value', or conservation importance, of the individual planning units with each other.
- As such they can be used to identify areas that, considering the limitations of the materials and methods, are of higher of lower priority than other areas.

PROGRESS – 2012/13

Limitations:

- No ‘irreplaceability’ (C-Plan) or ‘frequency of selection’ (Marxan) analysis, i.e. can not be used to identify CBAs.
- The biodiversity data that informs the maps are incomplete. The maps therefore represents the minimum biodiversity stock within the space of the planning unit.
- No biodiversity conservation categories and therefore no land use guidelines.

PROGRESS – 2012/13

- Corridor analysis was done using Circuitscape (McRae & Shah) – Thanks Mervyn!!
- The main objective was to establish inter-provincial connectivity while also accounting for Free State connectivity requirements.
- Circuitscape requries two input files:
  - Habitat data
  - Focal points

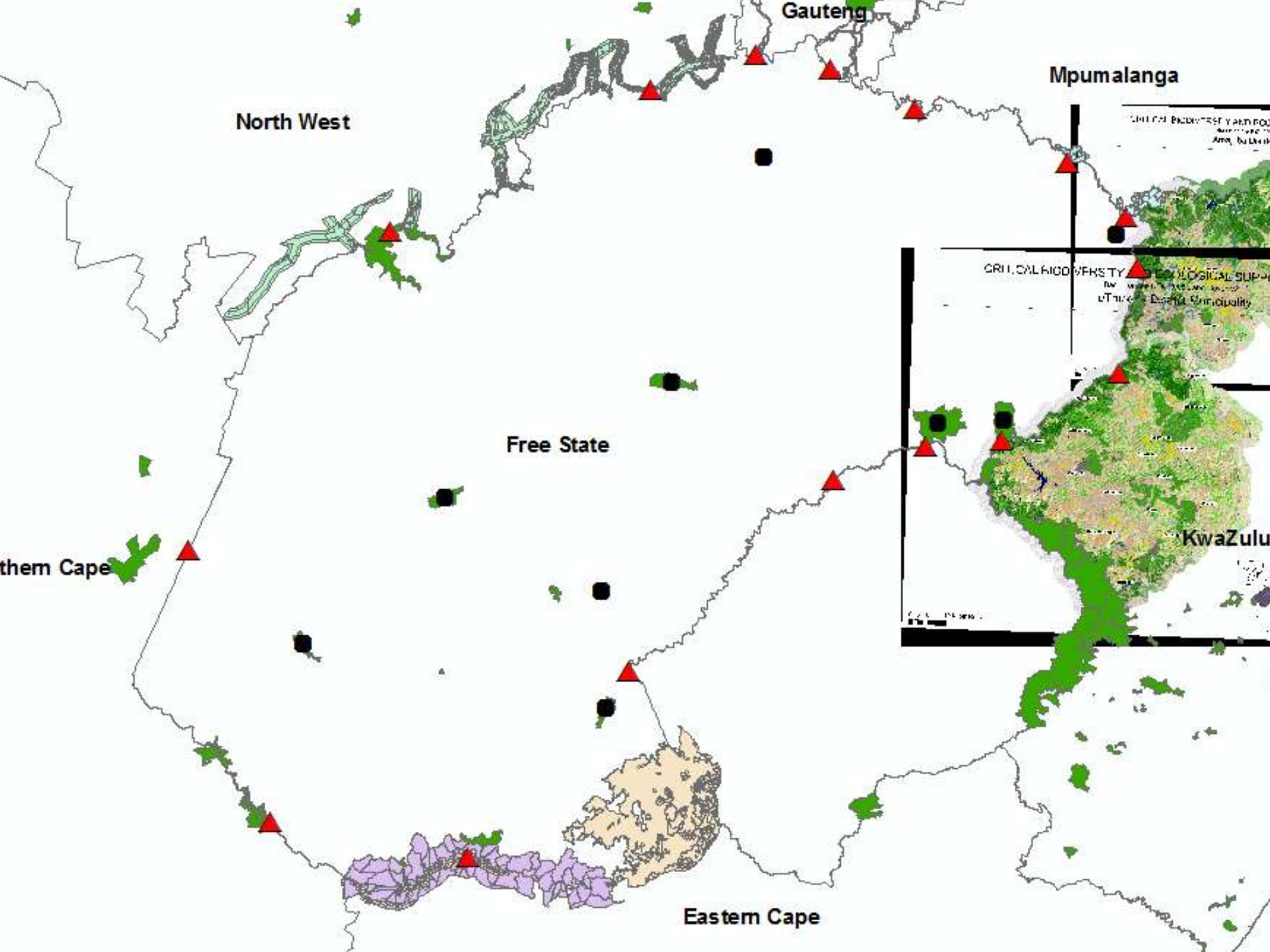
McRae, B., & Shah, V. (n.d.). *Circuitscape.org*. Retrieved September 21, 2012, from http://www.circuitscape.org

PROGRESS – 2012/13

Habitat data

- The habitat data layer was compiled from two separated sources, these being
  - the national coverage of areas resilient to climate change (Holness & Bradshaw, 2012) and
  - the Free State land cover map.

Holness, S., & Bradshaw, P. (2012). Areas important for supporting climate change resilience. In A. Driver, K. Sink, J. Nel, S. Holness, L. Van Niekerk, F. Daniels, et al., *National Biodiversity Assessment 2011: An assessment of South Africa's biodiversity and ecosystems.* . Pretoria: Synthesis Report. South African National Biodiversity Institute and Department of Environmental Affairs.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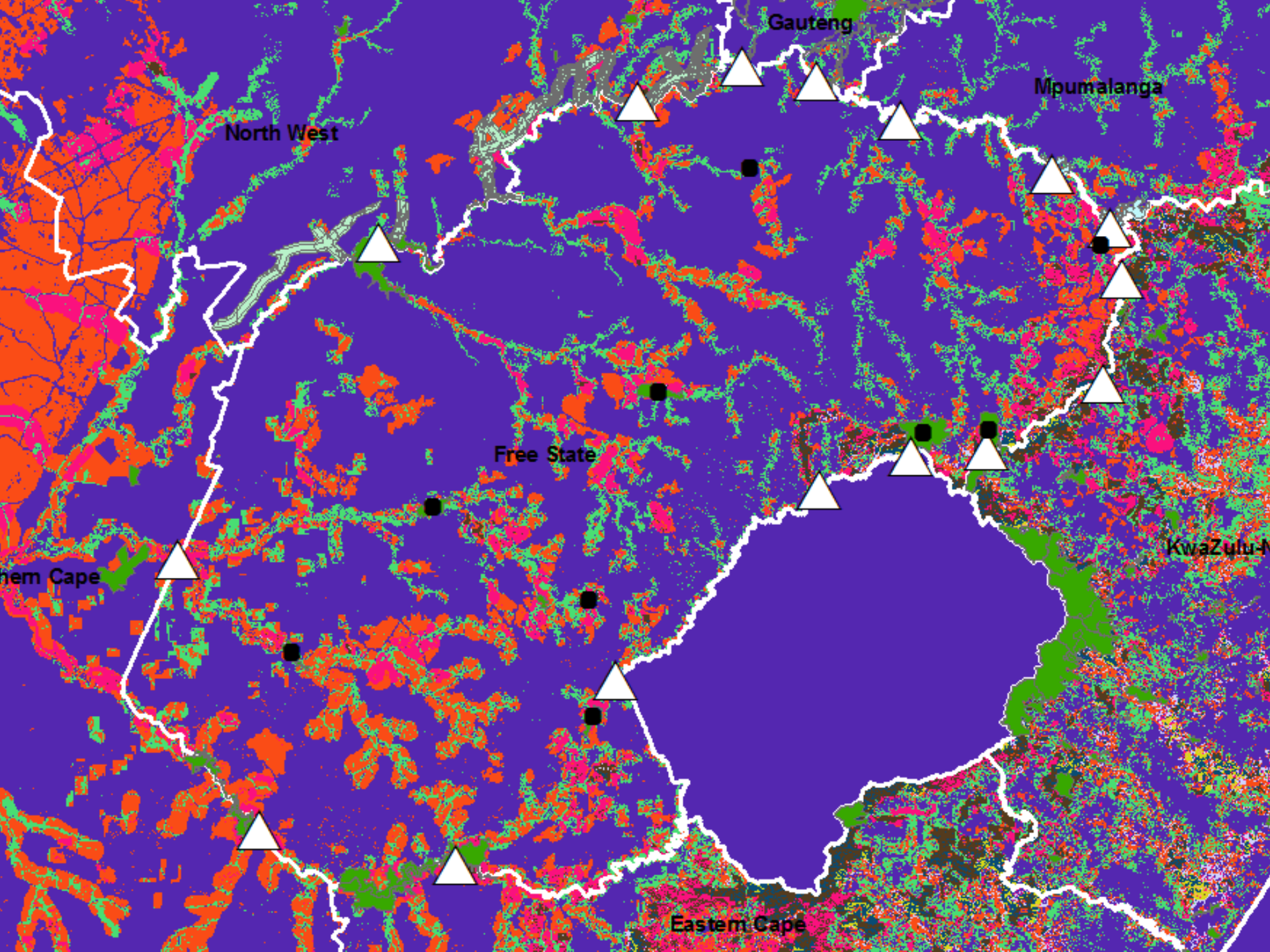
Mpumalanga
North West
Free State
KwaZulu
Eastern Cape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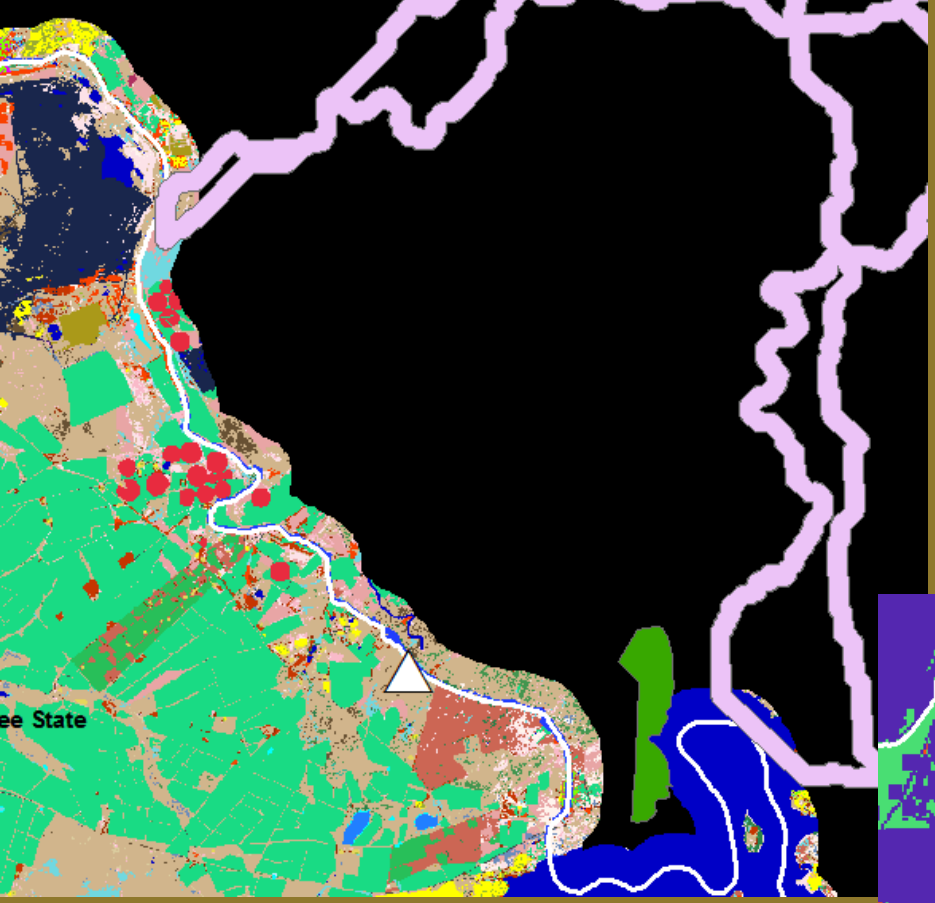
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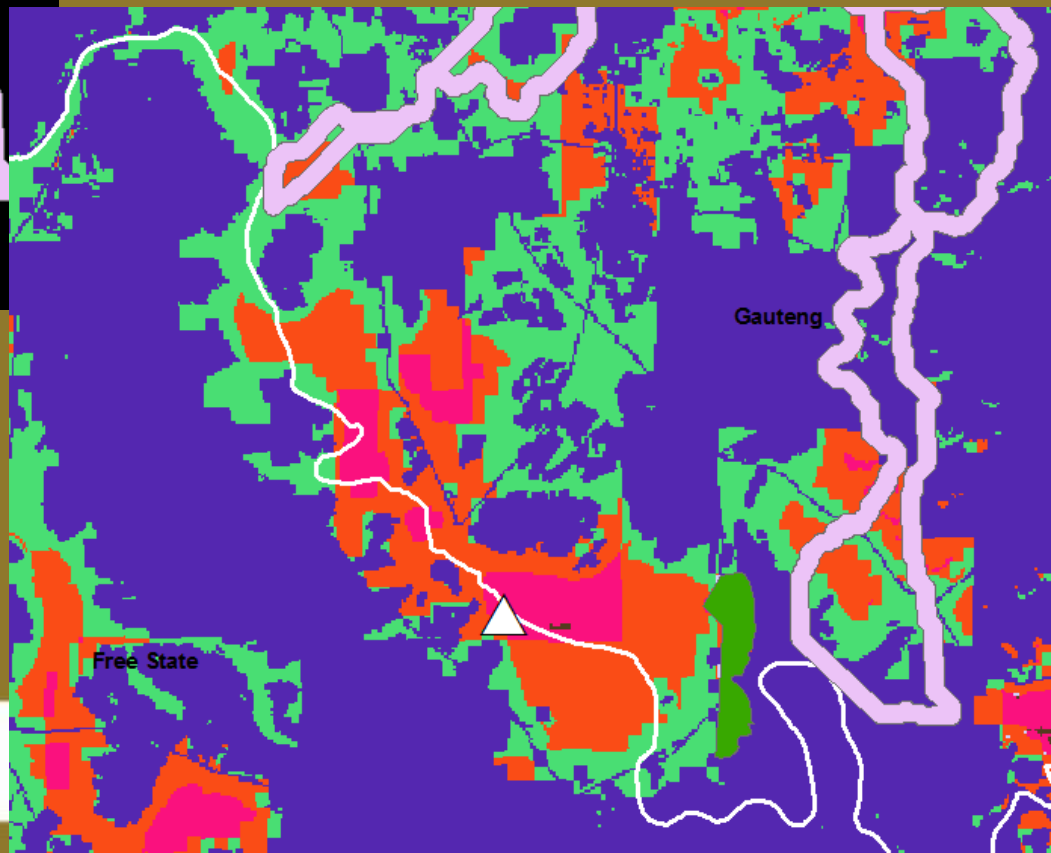
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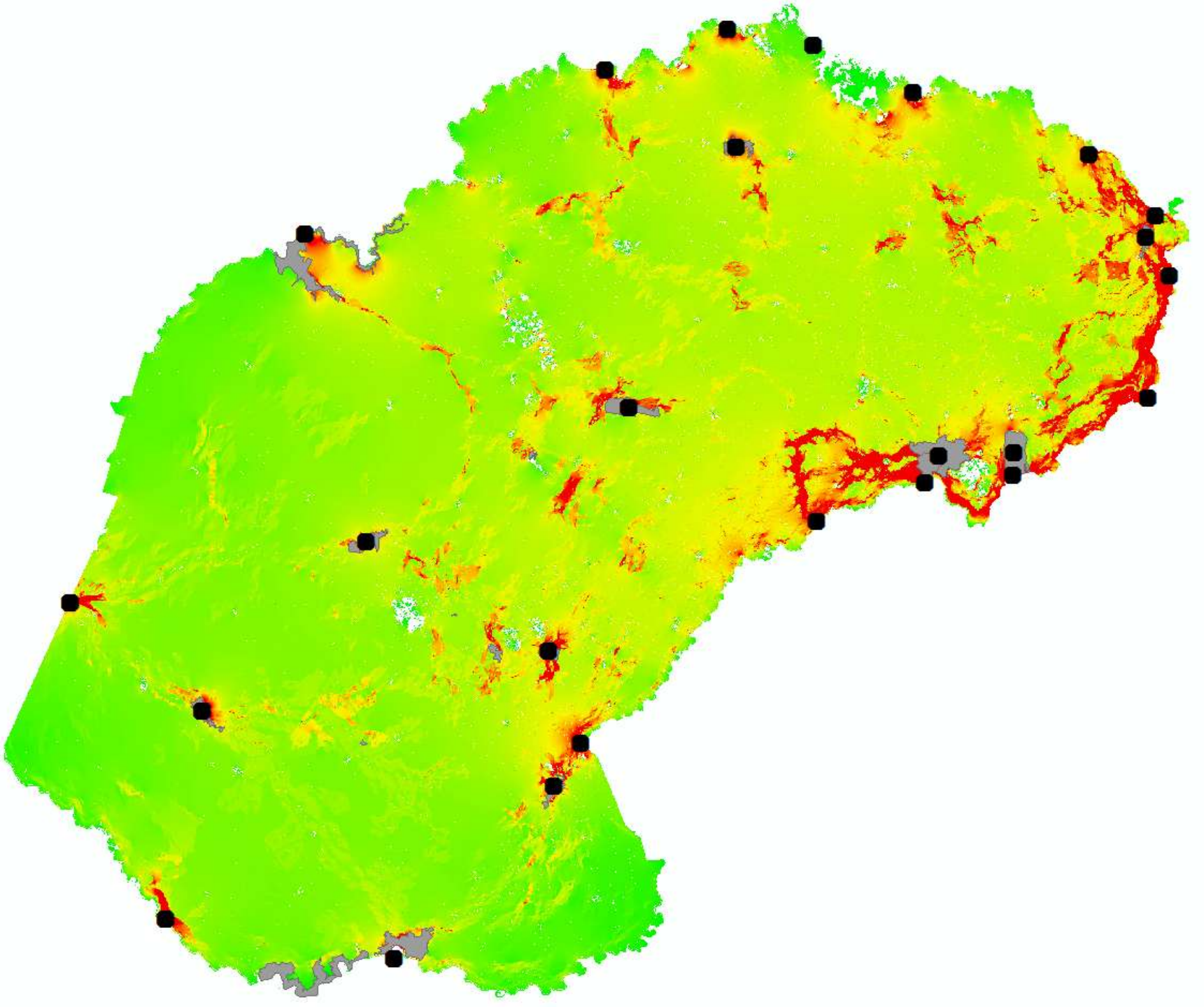

PROGRESS – 2012/13

Limitations of the maps

- Circuitscape is useful to identify pinch points in the landscape. It is, however, less efficient at measuring overall landscape connectivity (Pearlstine, Hogan, Labiosa, & Supernaw).
- Methods other than Circuitscape to be investigated to identify corridors across the broader landscape.

Pearlstine, L., Hogan, D., Labiosa, B., & Supernaw, M. (n.d.). *CircuitScape and LORACS Dispersal Models and an Index for Connectivity in South Florida Landscapes.* Retrieved March 21, 2013, from http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&cad=rja&ved=0CC8QFjAA&url=http%3A%2F%2Fwww.cloudacus.com%2Fsimglades%2Fdocs%2FGEER_2010_Dispersal_Model.pdf&ei=H6lRUf6ED9G5hAeBhoCQBw&usg=AFQjCNHHI-4InkEvHfueoD0pfSZOIfe_AA&sig2=c3ooV8

WAY FORWARD

- Continue to collect and include biodiversity data.
- Performing 'irreplaceability' (C-Plan) and 'frequency of selection' analysis (Marxan).
- Additional corridor analysis to support the identified pinch points.

TIME FRAME

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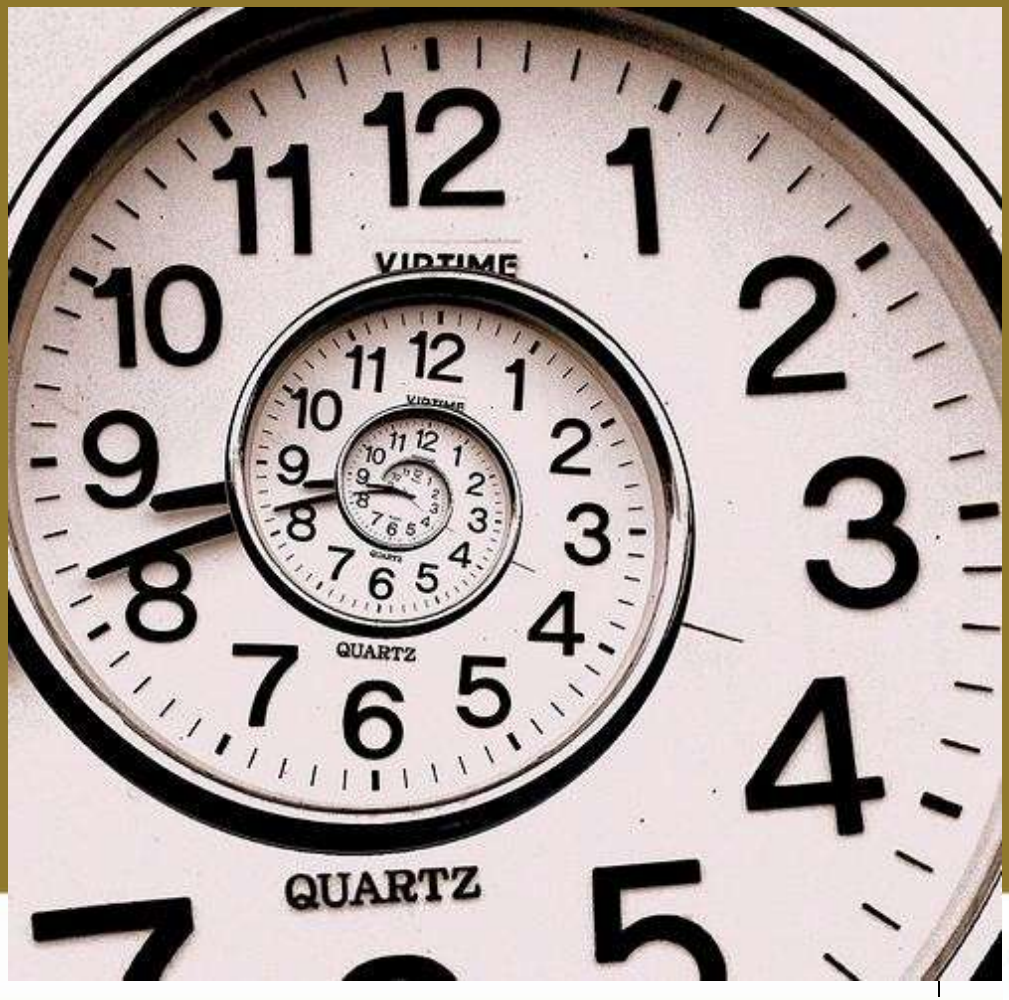

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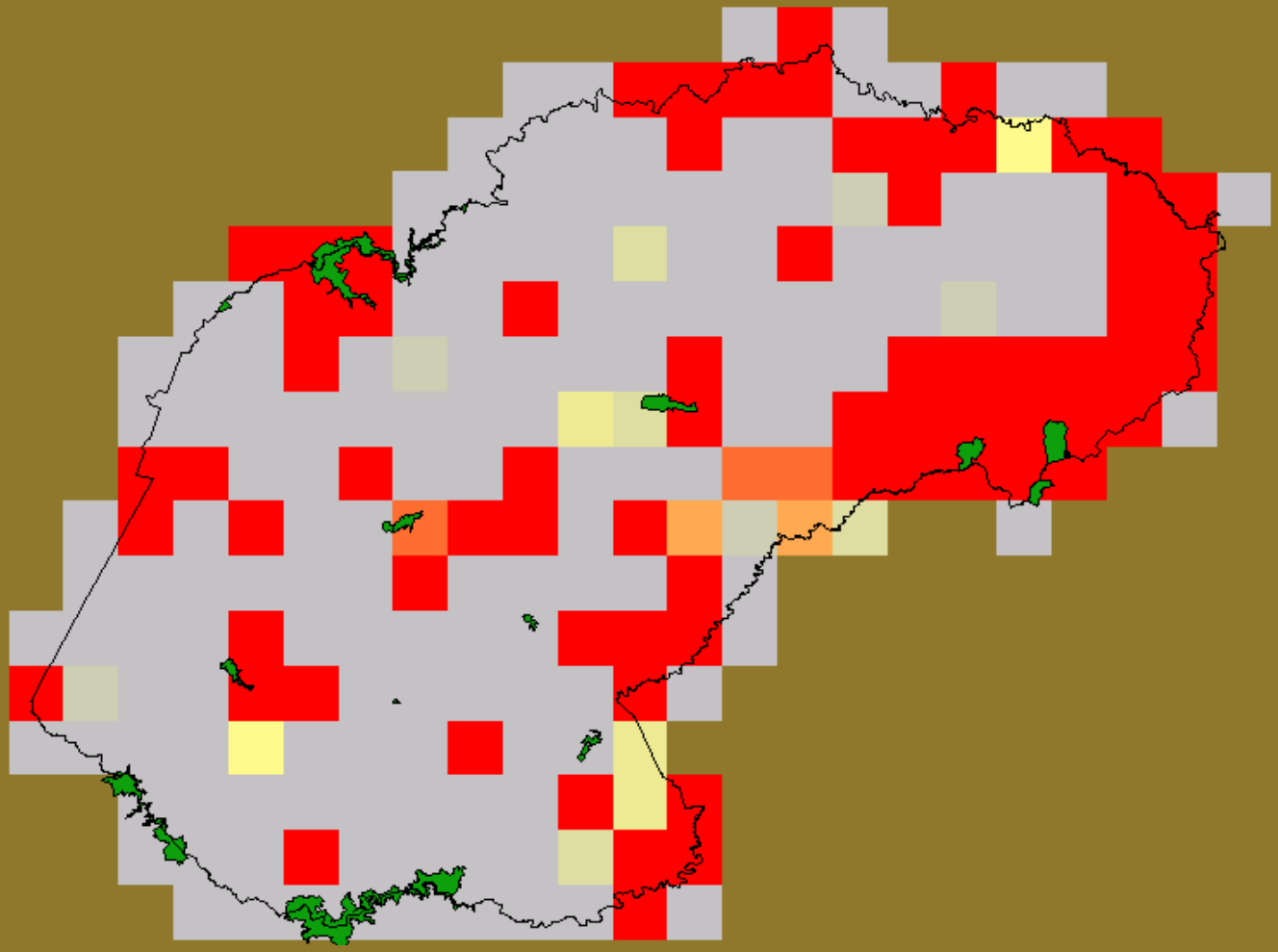
THANK YOU!!



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