CWR conservation planning in the SADC region

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IN THIS PRESENTATION...

- Occurrence data for SADC CWR conservation planning
- Where are hotspots of priority CWR located?
- Are priority CWR conserved *ex situ* and *in situ*?
- How is climate change predicted to affect CWR diversity?
- Where to conserve *in situ* priority CWR diversity?
- Where to collect priority CWR diversity for *ex situ* conservation?
- Integrating national and regional *in situ* conservation priorities
- Key messages

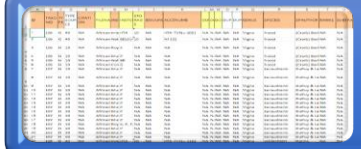
CWR CONSERVATION PLANNING IN THE SADC REGION

Development of food and beverage CWR checklist for the SADC region

Prioritization of CWR for conservation action

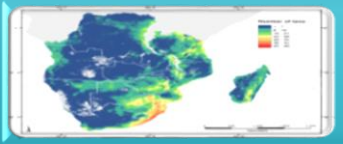
Occurrence data analyses (**identification of hotspots and priority sites** for *in situ* conservation and *ex situ* collection, etc)

OCCURRENCE DATA ANALYSES IN THE SADC REGION



Collation and verification of occurrence data for priority CWR

Diversity analyses (hotspots, complementarity, ecogeographic)



In situ and *ex situ* gap analyses

Climate change analysis

Conservation recommendations

OVERVIEW OF OCCURRENCE DATA

- 110 taxa - 11,092 records
- ↑↑ no. of records and unique populations (> 700 records, 500–700 unique populations):

  Vigna unguiculata subsp. *dekindtiana*

  Solanum campylacanthum

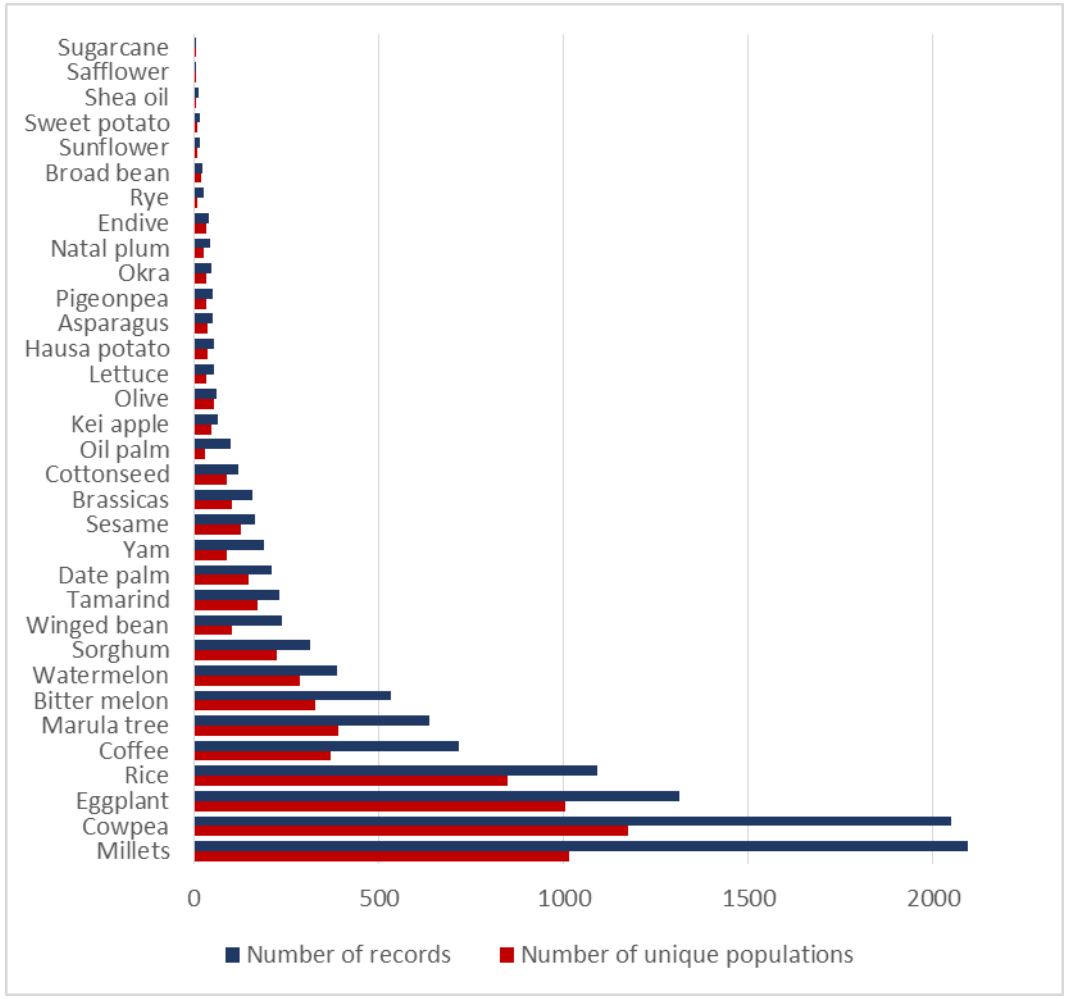
  Oryza longistaminata

- No occurrence data:

  Coffea liberica var. *liberica*

  Hibiscus sabdariffa var. *altissimus*

  Vigna unguiculata subsp. *burundiensis*



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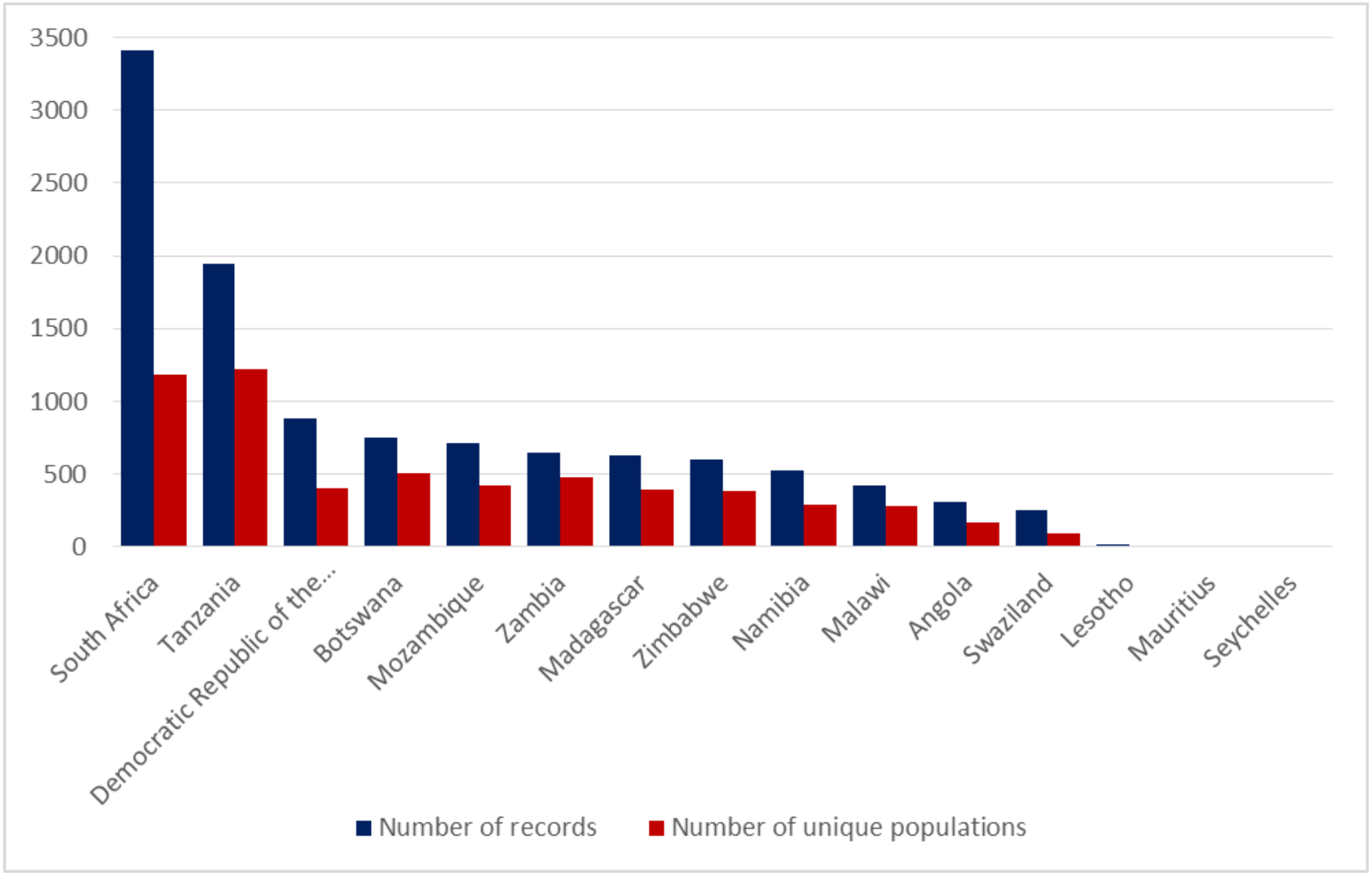

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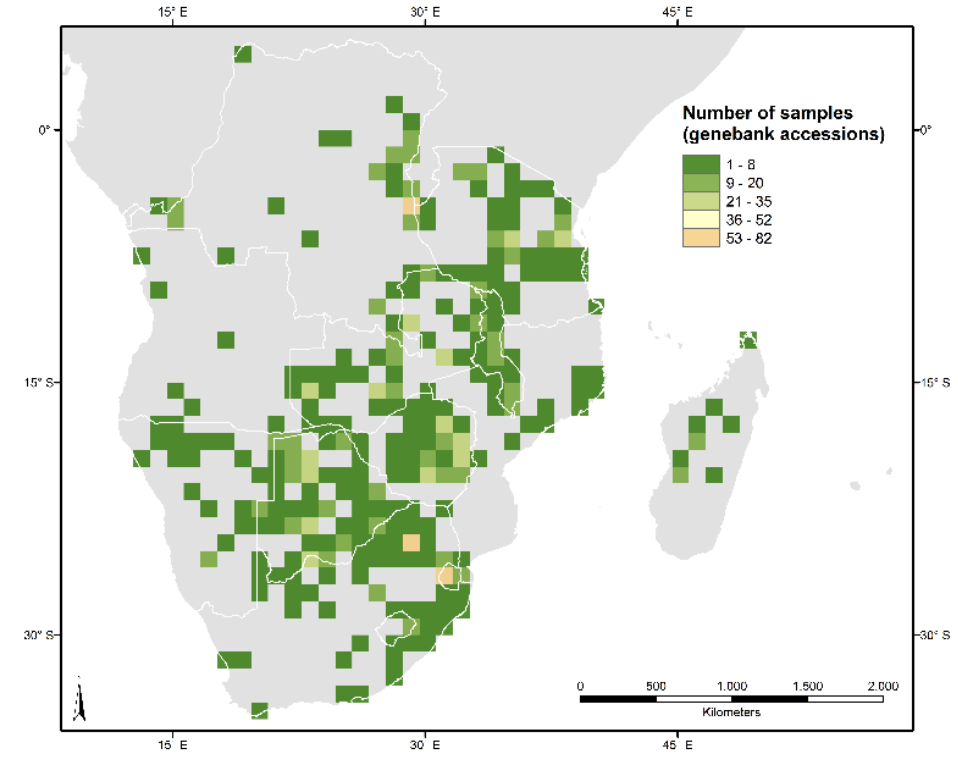
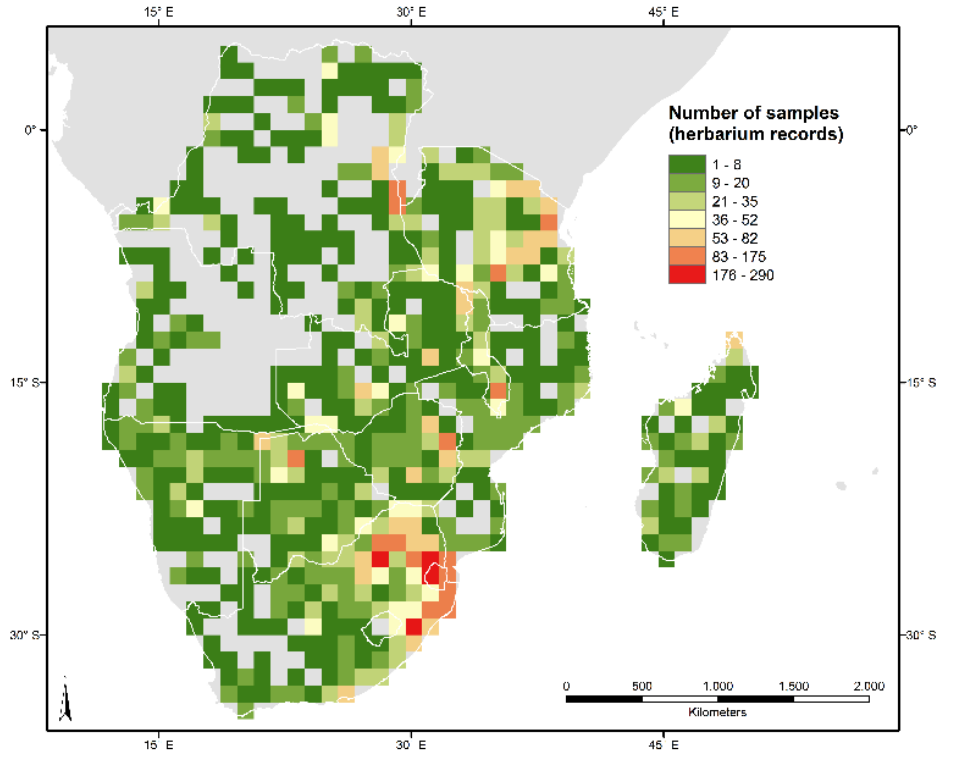
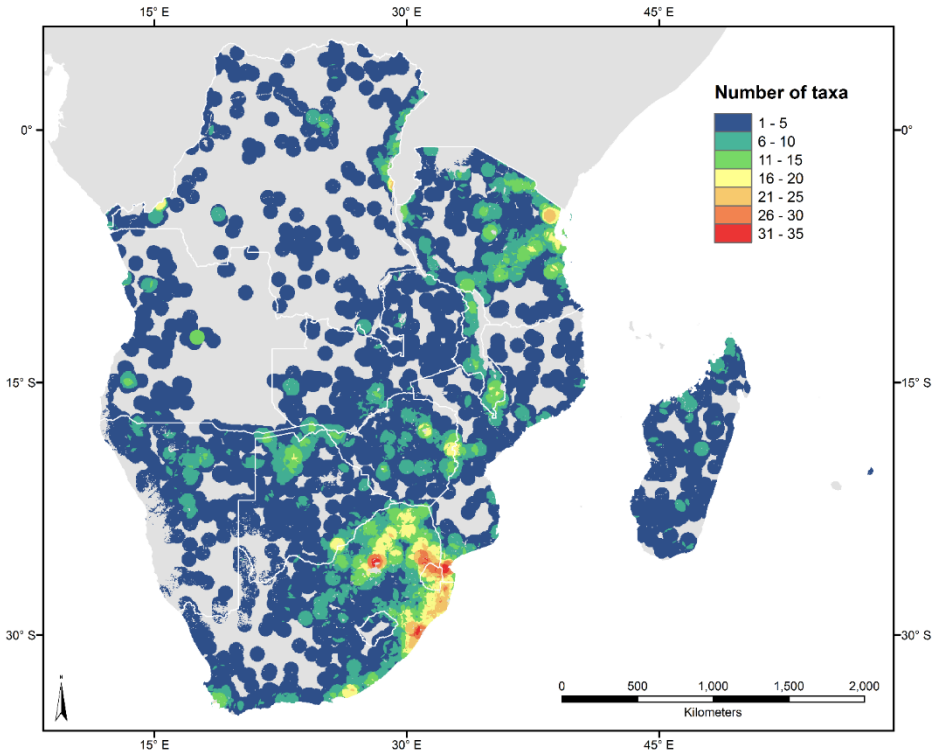
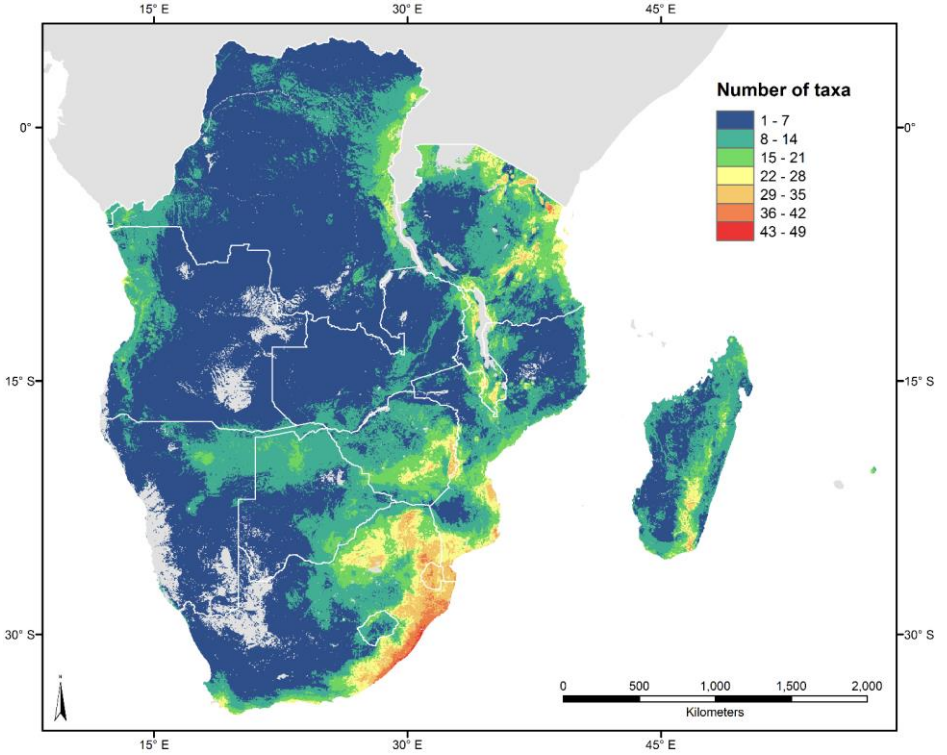




WHERE ARE THE HOTSPOTS OF PRIORITY CWR LOCATED?



Observed taxon richness [circular buffer of 50 km (CA50) around each occurrence point for all priority CWR]



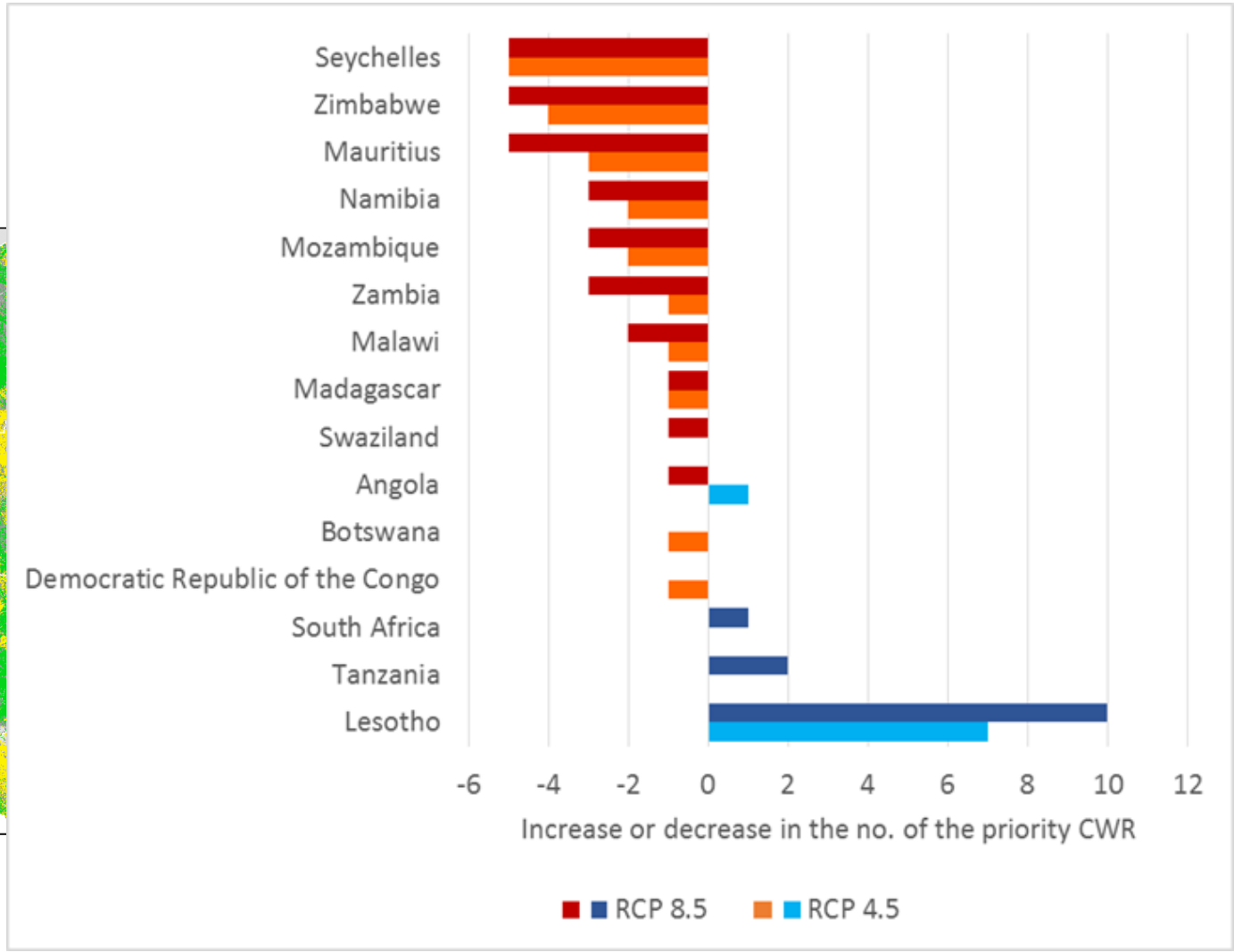
Predicted taxon richness [estimated by SDM (for 75 taxa) combined with CA50 (for 35 taxa)]

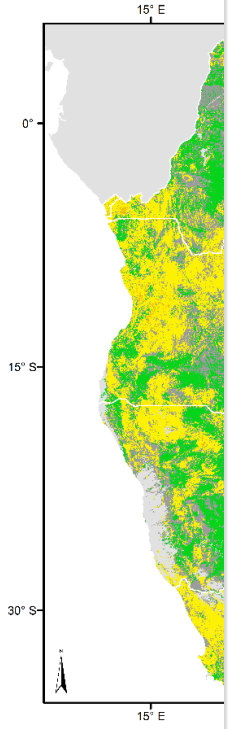
ARE REGIONAL PRIORITY CWR CONSERVED?

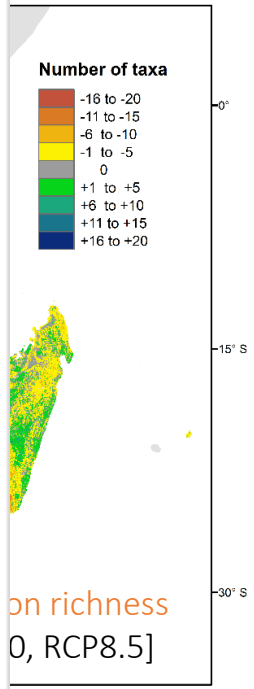
SADC CWR poorly conserved both *ex situ* and *in situ:*

- 50% not conserved *ex situ*
- of those conserved *ex situ*, 40% have <5 pops., and 16% have only 1!
- 17% outside PAs exclusively
- those that occur within PAs are not monitored or actively managed

HOW IS CLIMATE CHANGE PREDICTED TO AFFECT CWR DIVERSITY?







on richness
0, RCP8.5]

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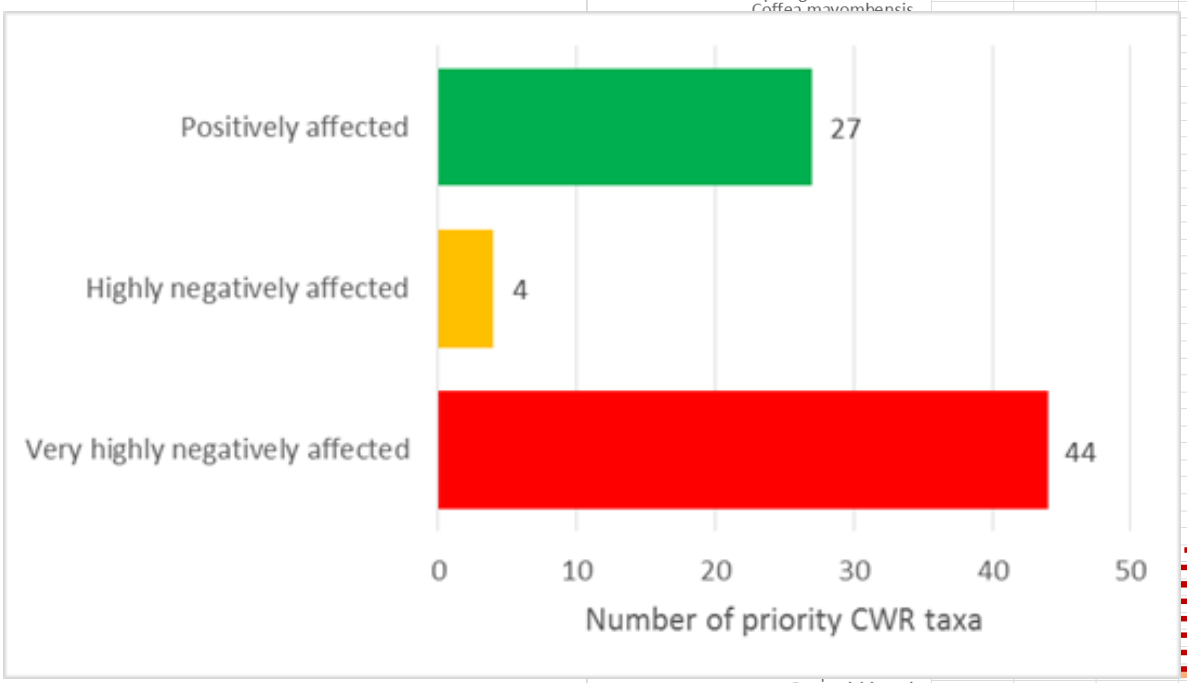
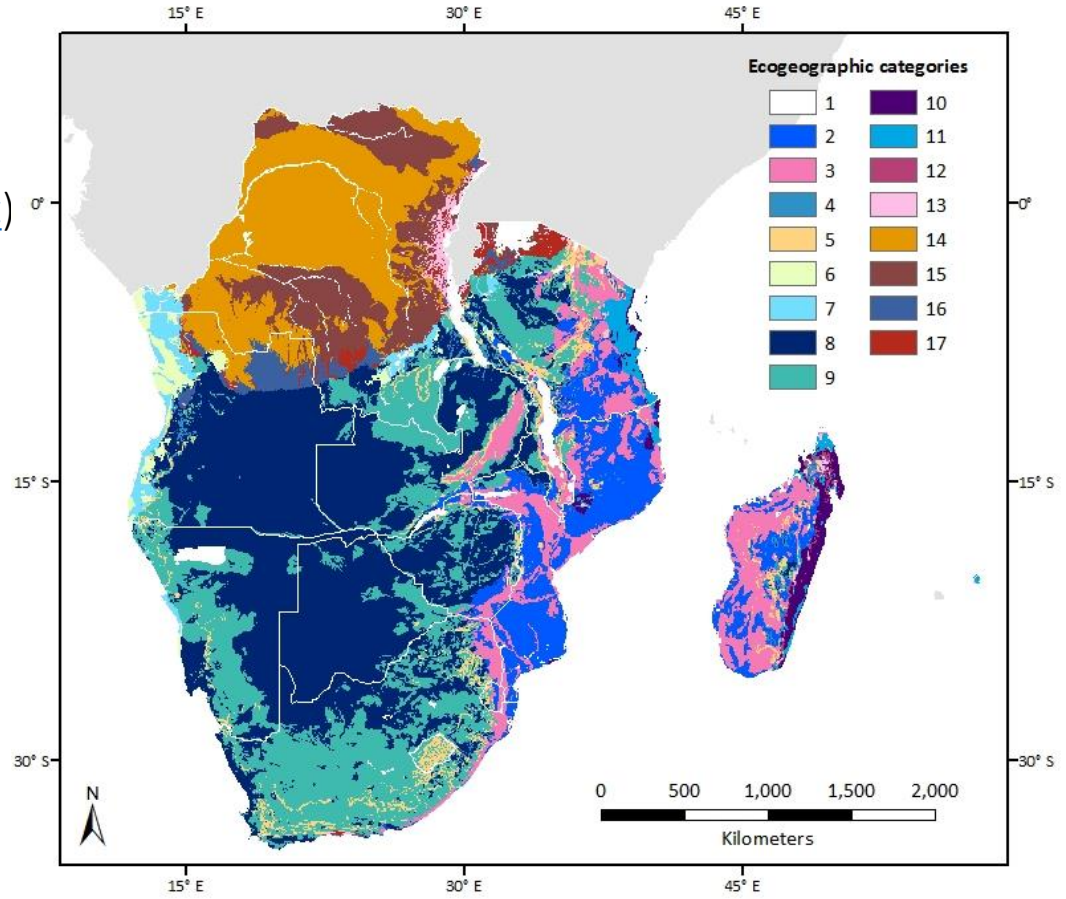


ECOGEOGRAPHIC DIVERSITY AS A PROXY OF GENETIC DIVERSITY

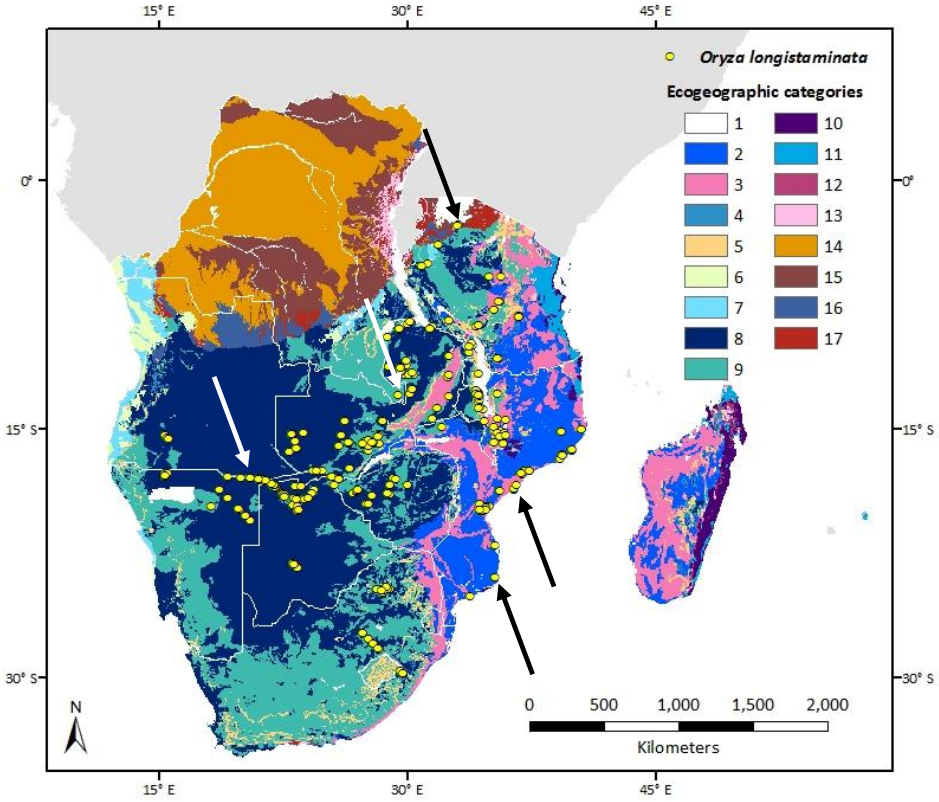
- Describes different environments of territory
- 16 generalist variables, Calinski method
- CAPFITOGEN (http://www.capfitogen.net)

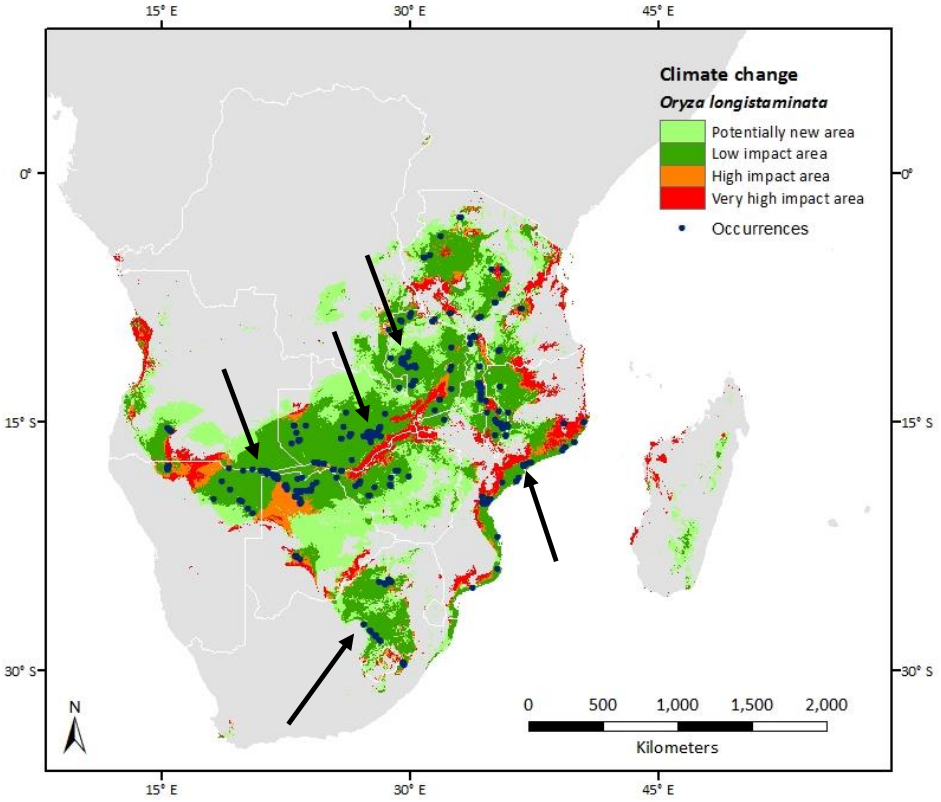
GEOPHYSIC	EDAPHIC	BIOCLIMATIC
Altitude	Topsoil organic carbon	Annual precipitation
Slope	Topsoil pH (H2O)	Precipitation seasonality (coefficient of variation)
Latitude	Topsoil silt fraction	Isothermality
Longitude	Topsoil sand fraction	Max temperature of warmest month
	Topsoil gravel content	Min temperature of coldest month
	Topsoil clay fraction	
	Topsoil TEB	



WHERE TO CONSERVE *IN SITU* PRIORITY CWR DIVERSITY?

Conserve *in situ* whole range of ecogeographic diversity BUT populations that persist in the future





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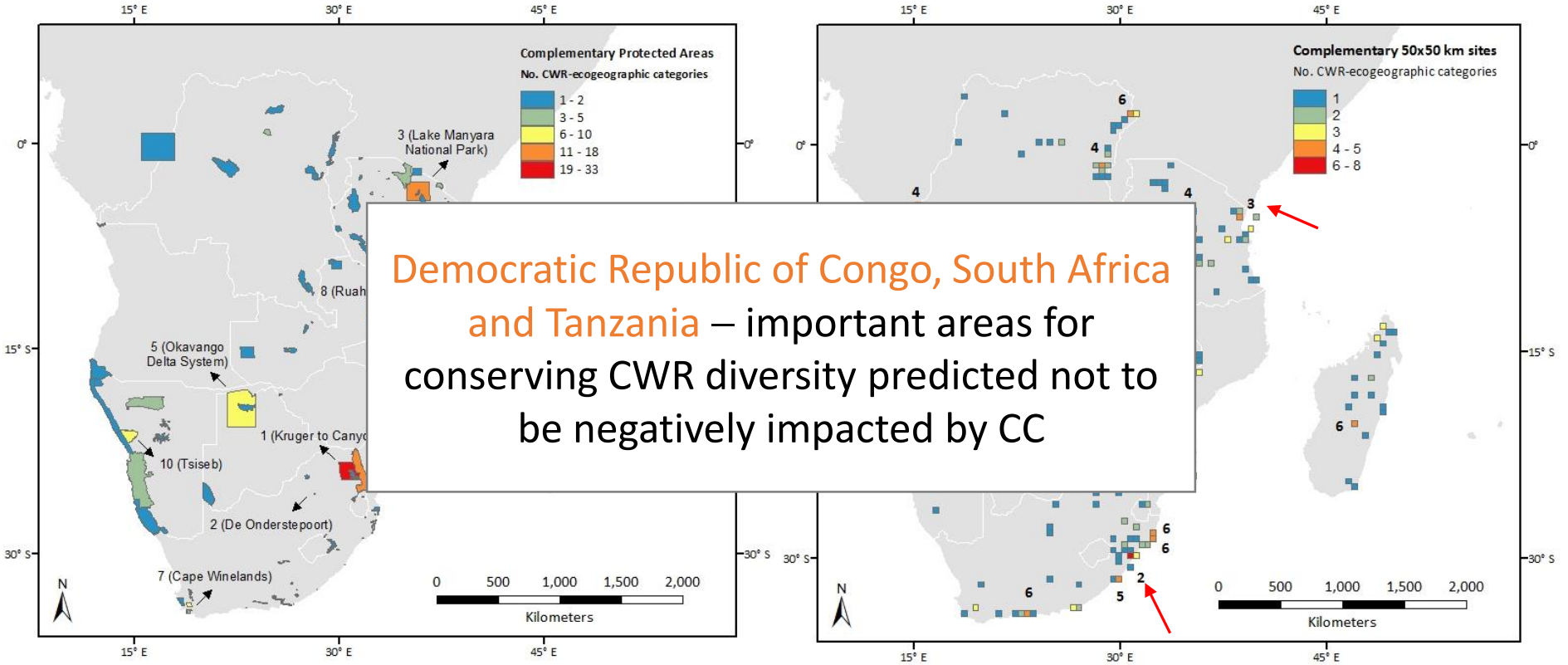


Democratic Republic of Congo, South Africa and Tanzania – important areas for conserving CWR diversity predicted not to be negatively impacted by CC

PA complementarity network:

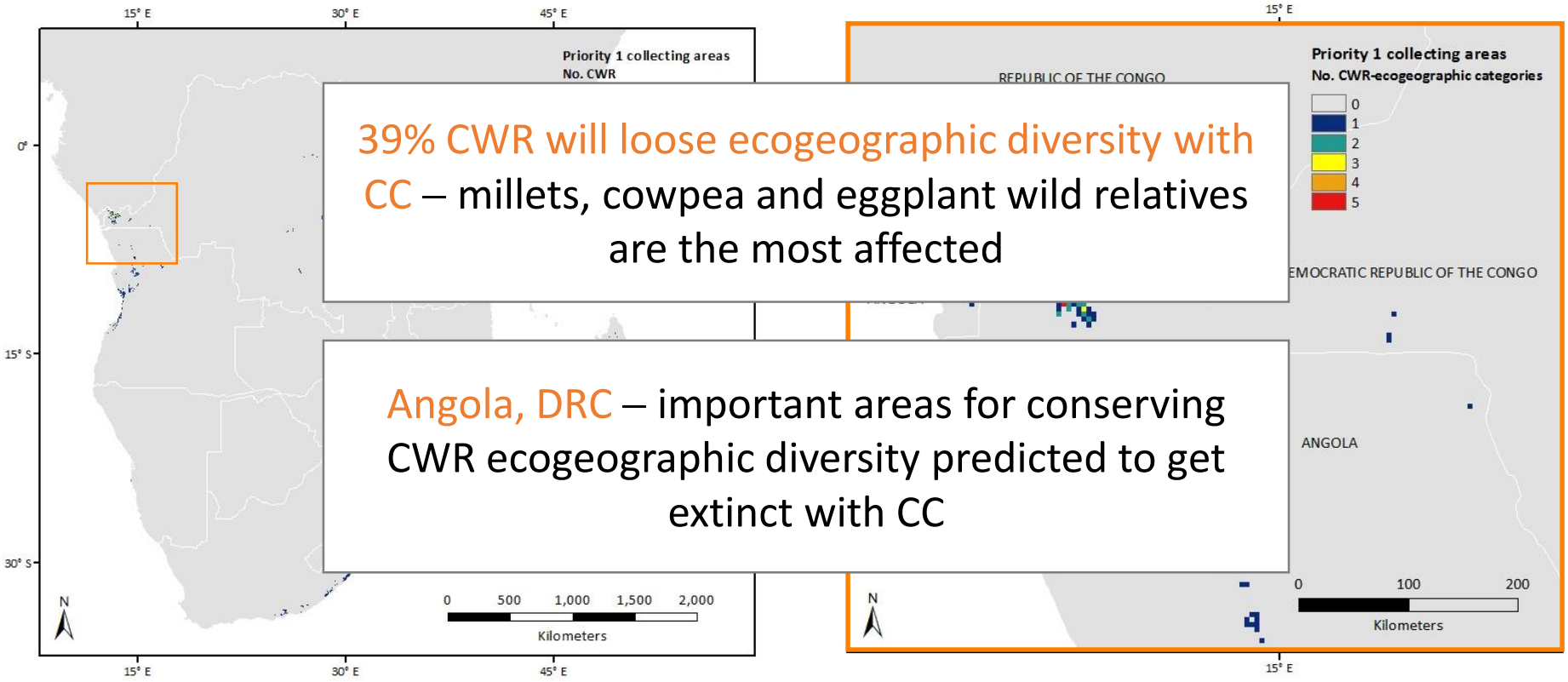
133 PAs in 13 countries cover 89 CWR + 50% their ecogeographic diversity

Outside-PA complementarity network:

163 sites in 13 countries cover 21 CWR + remaining ecogeographic diversity

WHERE TO COLLECT PRIORITY CWR DIVERSITY FOR *EX SITU* CONSERVATION?

PRORITY 1: CWR predicted richness areas of ecogeographic diversity not conserved *ex situ* AND that is likely to disappear with CC

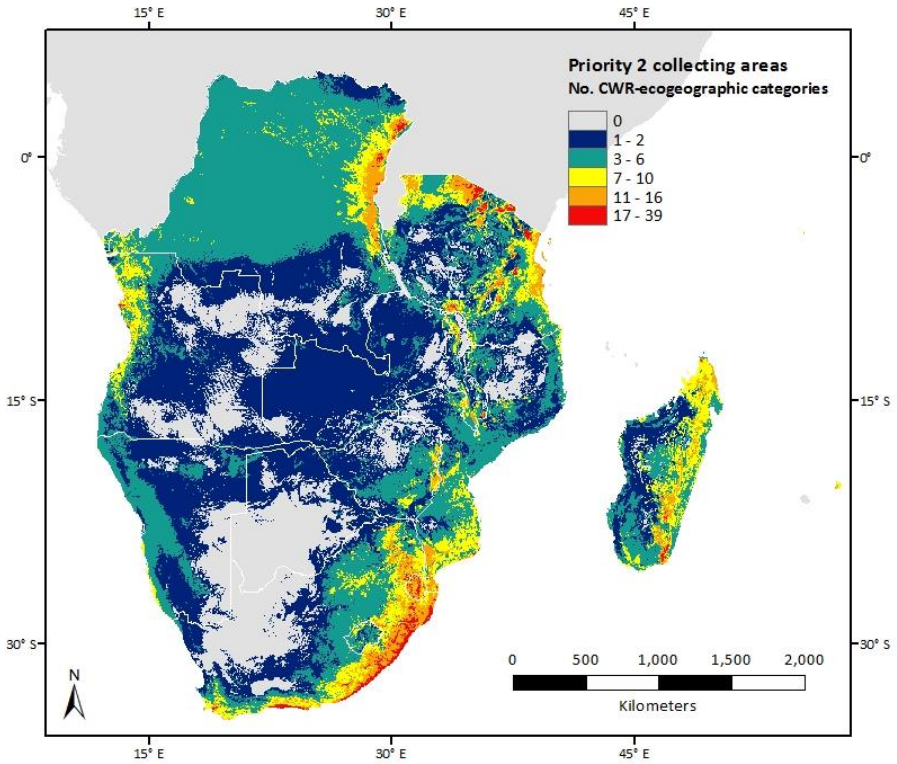


39% CWR will loose ecogeographic diversity with CC – millets, cowpea and eggplant wild relatives are the most affected

Angola, DRC – important areas for conserving CWR ecogeographic diversity predicted to get extinct with CC

WHERE TO COLLECT PRIORITY CWR DIVERSITY FOR *EX SITU* CONSERVATION?

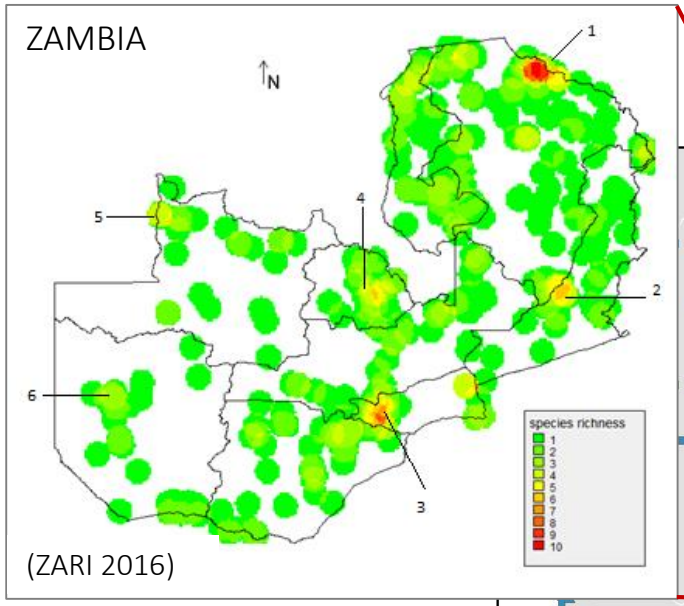
PRORITY 2: CWR predicted richness areas of the remaining ecogeographic diversity not conserved *ex situ* (not unique to areas negatively impacted by CC)

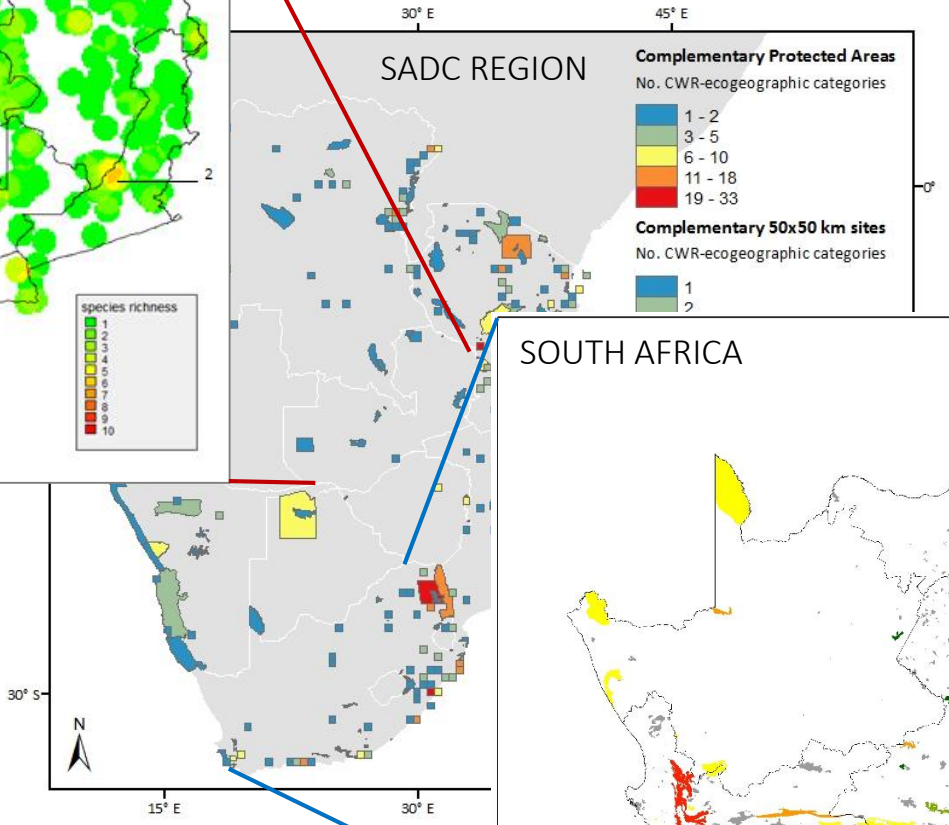


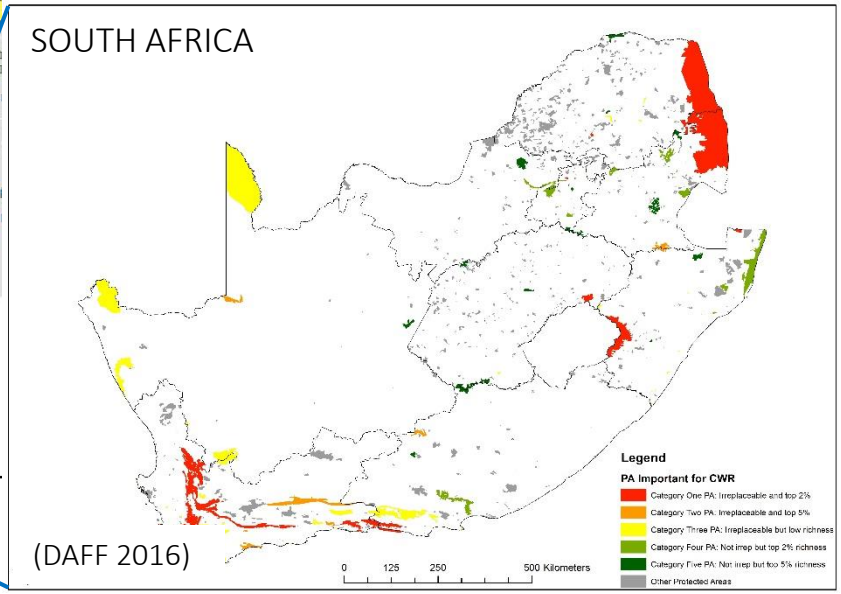
Priority 2 collecting areas [ecogeographic *ex situ* gaps + SDM (for 75 taxa)]

Angola, DRC, Madagascar, Malawi, Mauritius, Mozambique, South Africa, Swaziland, Tanzania, Zimbabwe – important areas for conserving CWR ecogeographic diversity not conserved *ex situ*

INTEGRATING NATIONAL AND REGIONAL CONSERVATION PRIORITIES

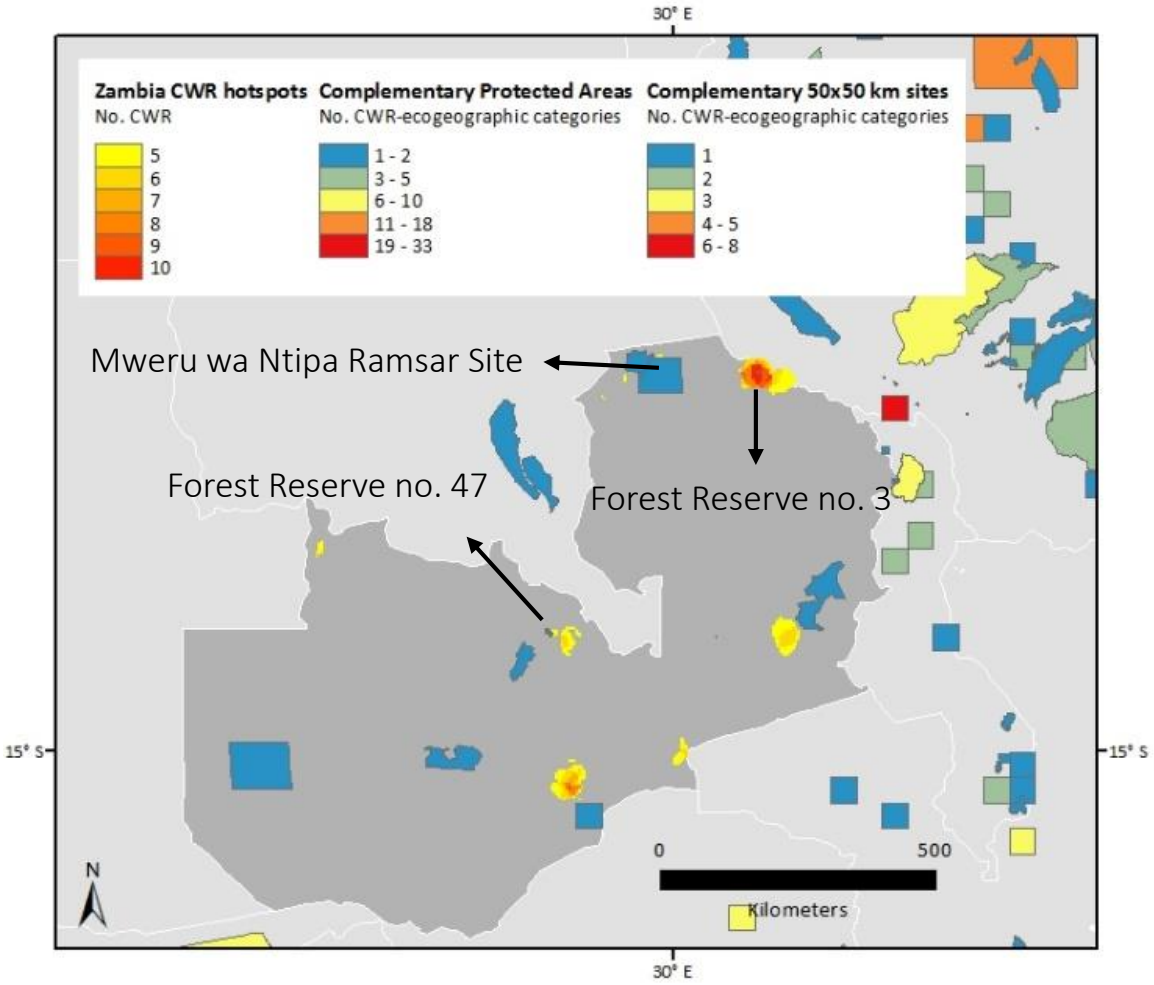






But how?

INTEGRATING NATIONAL AND REGIONAL CONSERVATION PRIORITIES



ZAMBIA:

- ~50% of national priorities are SADC priorities
- 9 regional complementary PA
- 1 regional complementary 50 x 50 Km site

There is not much overlap between Zambia and SADC *in situ* priorities, except for…

KEY MESSAGES

- Mozambique, South Africa, Swaziland, Tanzania… include hotspots of priority CWR in the region.
- SADC priority CWR are poorly conserved both *ex situ* and *in situ*.
- More than 50% of priority CWR will loose distribution area with CC.
- Seychelles, Zimbabwe and Mauritius will loose more priority CWR with CC.
- *In situ* conservation network has been planned taking into account both ecogeographic diversity and CC impact (133 PAs + 163 sites outside PAs).
- DRC, South Africa and Tanzania are key countries for *in situ* conservation of CWR diversity predicted not to be negatively impacted by CC in the region.

KEY MESSAGES

- Priority collecting areas for *ex situ* conservation of CWR diversity have been identified based on both ecogeographic diversity gaps and CC impact.
- Angola, DRC are key countries to conserve CWR ecogeographic diversity that is likely to be lost with CC.
- Angola, DRC, Madagascar, Malawi, Mauritius, Mozambique, South Africa, Swaziland, Tanzania, Zimbabwe are key countries for conserving CWR ecogeographic diversity not conserved *ex situ*.
- National and regional conservation priorities should be integrated and form an Integrated CWR Conservation Strategy.

THANK YOU!

Final Dissemination Meeting

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