SADC CROP WILD RELATIVES

Identifying conservation priorities for Crop Wild Relatives in South Africa

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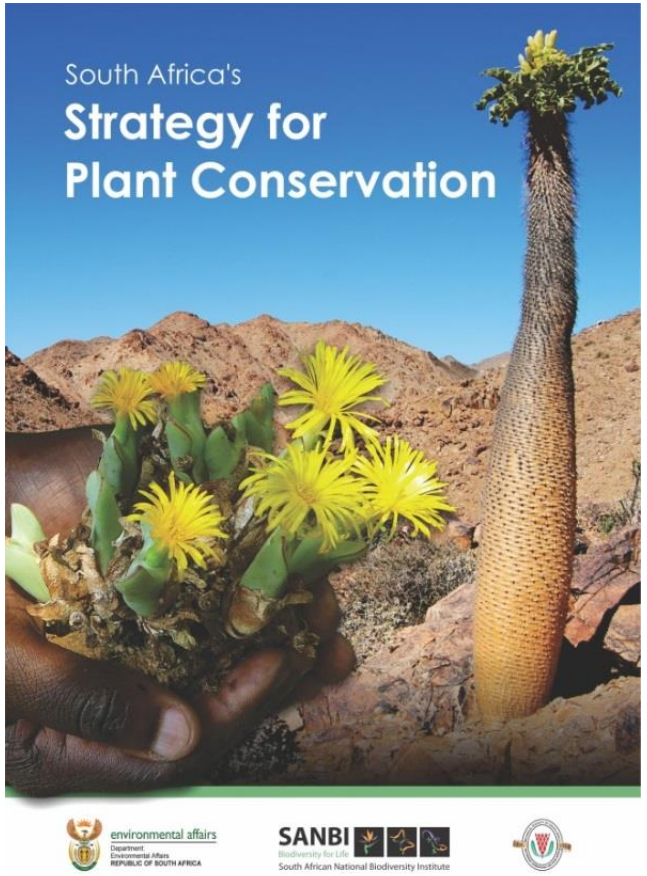
Why this work is a priority for South Africa

- The conservation of Crop Wild Relatives is important for food security.
- Forms part of the work on Benefits from Biodiversity that will be communicated to policy makers via South African National Biodiversity Assessment.
- One of the targets of South Africa's Plant Conservation Strategy a CBD linked commitment.



Process followed to identify CWR:

- SANBI Biosystematics division developed a checklist of wild relatives of human food (including beverages) and fodder crops.
- Checklist includes both indigenous and naturalised taxa present in South Africa, that are relatives of cultivated crops, with a focus on major crops, but also including some less established but potentially important crops..
- A total of 1593 taxa (species, subspecies and varieties), (or 7% of the total number of plant taxa in South Africa) form part of this checklist.

Prioritisation of CWRS

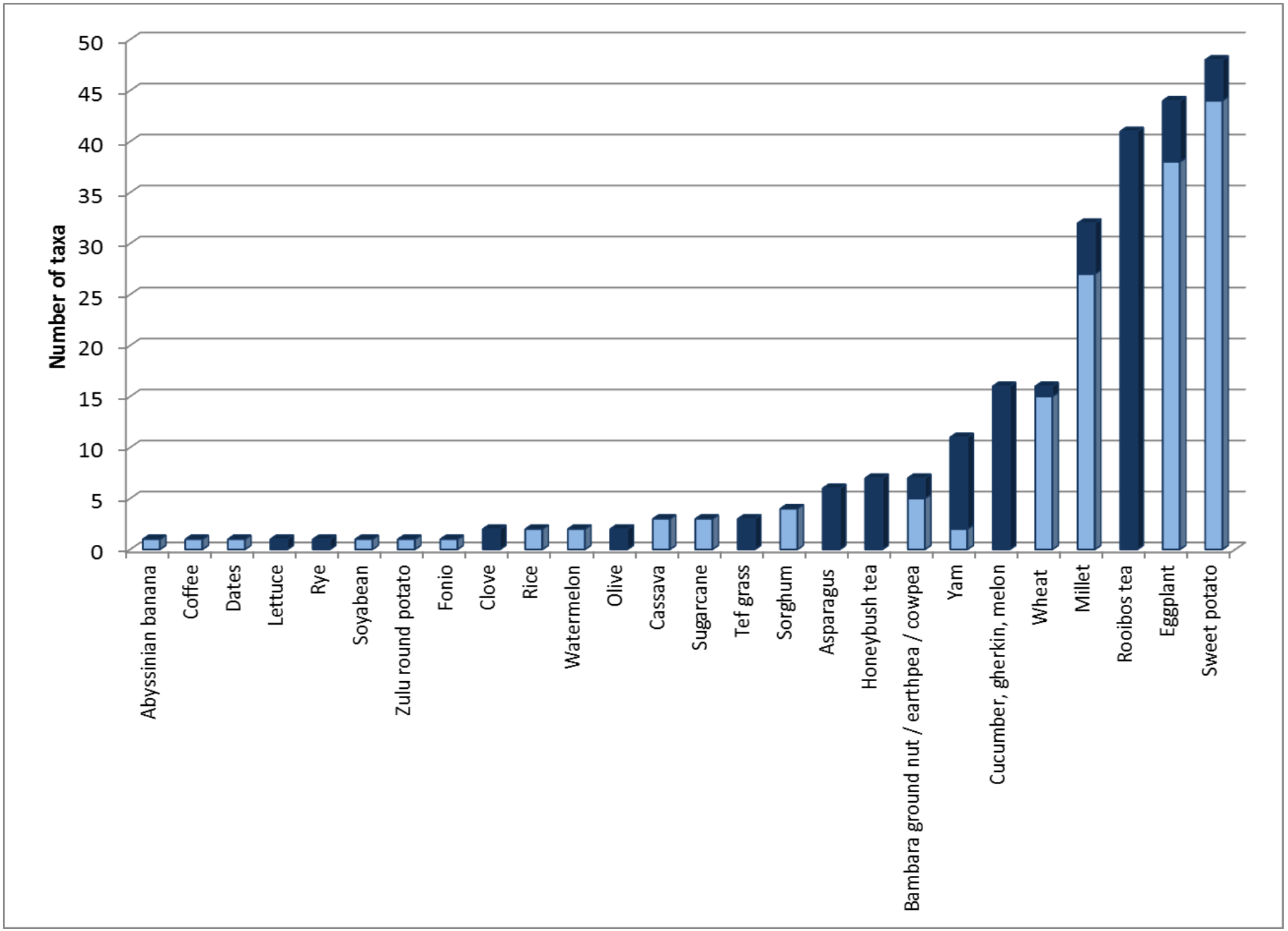
The South African CWR checklist has been prioritized. Four criteria were used:

- socio-economic value of the related crop (at a global, continental and regional scale)
- potential for use of the wild relative in crop improvement
- threat status and distribution (whether indigenous or naturalized and if indigenous
- whether it is restricted to South Africa, ie. endemic

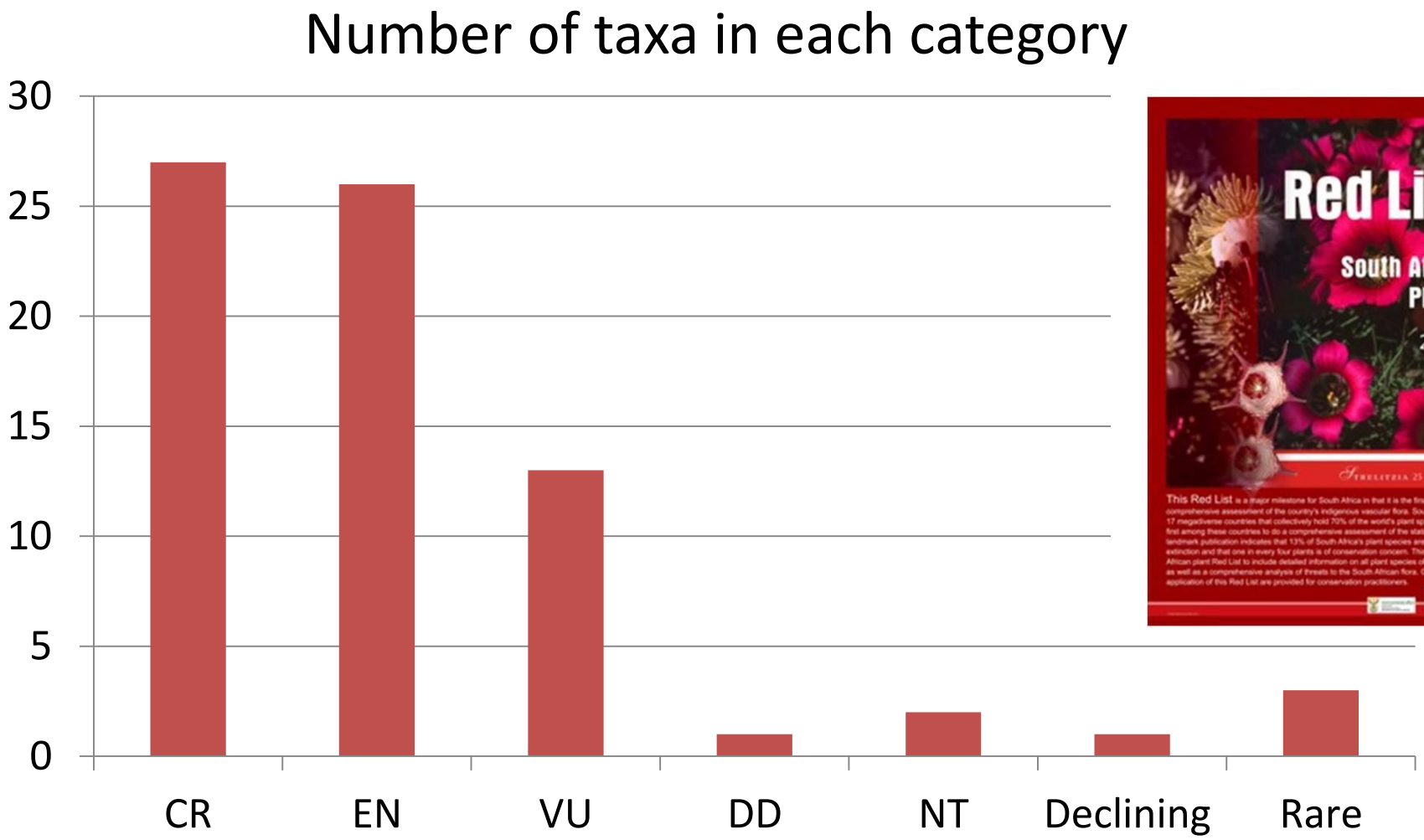
The Priority list

- 15 families, 33 genera and 258 taxa.
- The predominant families in the list are the Poaceae, Fabaceae and Solanaceae
- 258 taxa of which 93 are endemic to South Africa
- Nine species on the priority list are included in the National List of Alien and Invasive Species (*Ipomoea alba, I. purpurea, Solanum chrysotrichum, S. elaeagnifolium, S. mauritianum, S. pseudocapsicum, S. seaforthianum, S. sisymbriifolium and Sorghum halepense).*





Number of taxa
0
5
10
15
20
25
30
35
40
45
50
Abyssinian banana
Coffee
Dates
Lettuce
Rye
Soyabean
Zulu round potato
Fonio
Clove
Rice
Watermelon
Olive
Cassava
Sugarcane
Tef grass
Sorghum
Asparagus
Honeybush tea
Bambara ground nut / earthpea / cowpea
Yam
Cucumber, gherkin, melon
Wheat
Millet
Rooibos tea
Eggplant
Sweet potato

The priority list: threat status



Example of a threatened Crop Wild Relative - Wild Rye a Critically Endangered Species.

Secale strictum subsp. africanum

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Red List of South African Plants

Search the Red List
Search

Sutherland, Voëlfontein Farm. Sutherland. (See PRE 25921).

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6.44 km

Image © 2015 DigitalGlobe

le earth

Population trend Stable

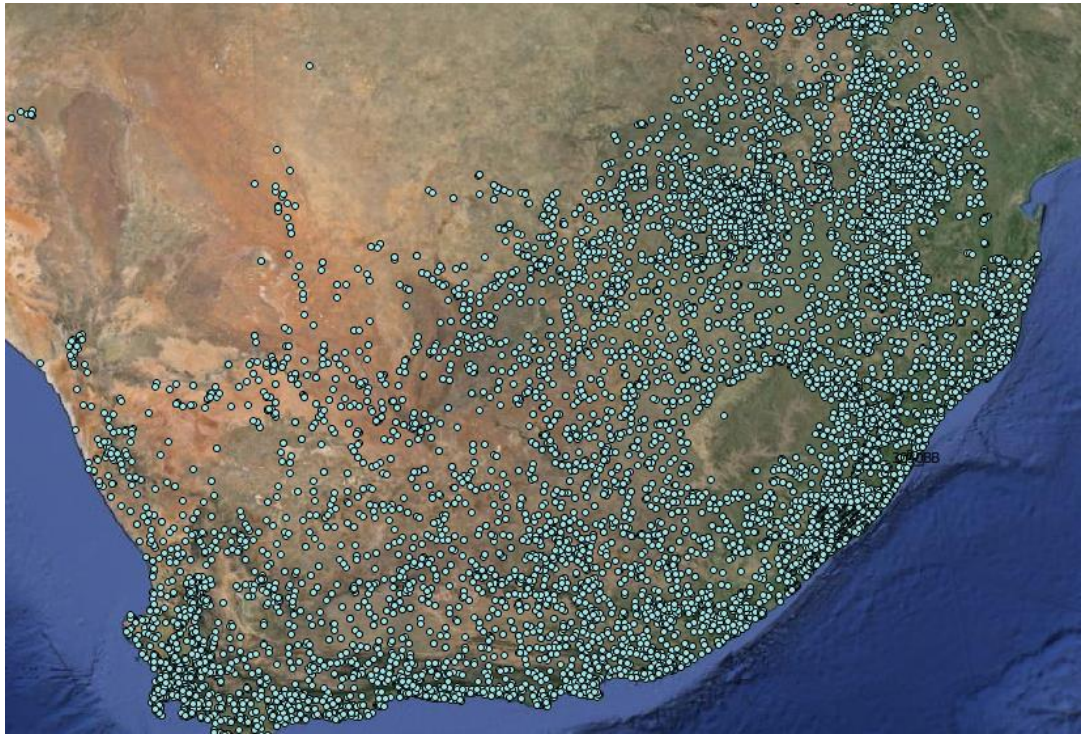
Assessment History

Conducting fieldwork

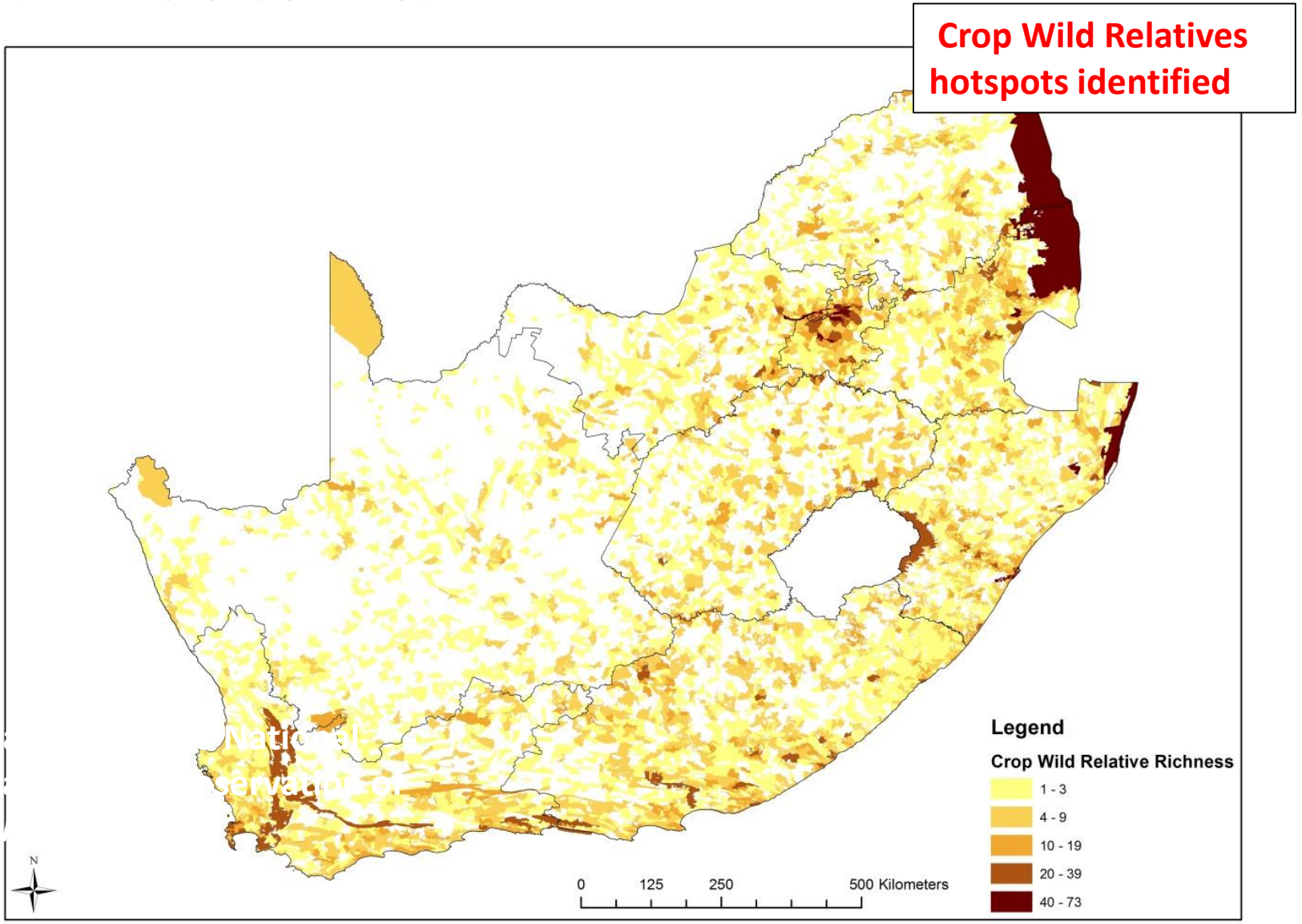
- Conservation and Gardens Directorate led the fieldwork component.
- Fieldwork was conducted on 30 of the priority CWR.
- Fieldwork identified which CWR were common weedy species and which needed pristine habitat.
- Fieldwork provided an opportunity for DAFF staff to be trained in collecting indigenous wild species by SANBI staff.

Producing accurate occurrence records of CWR

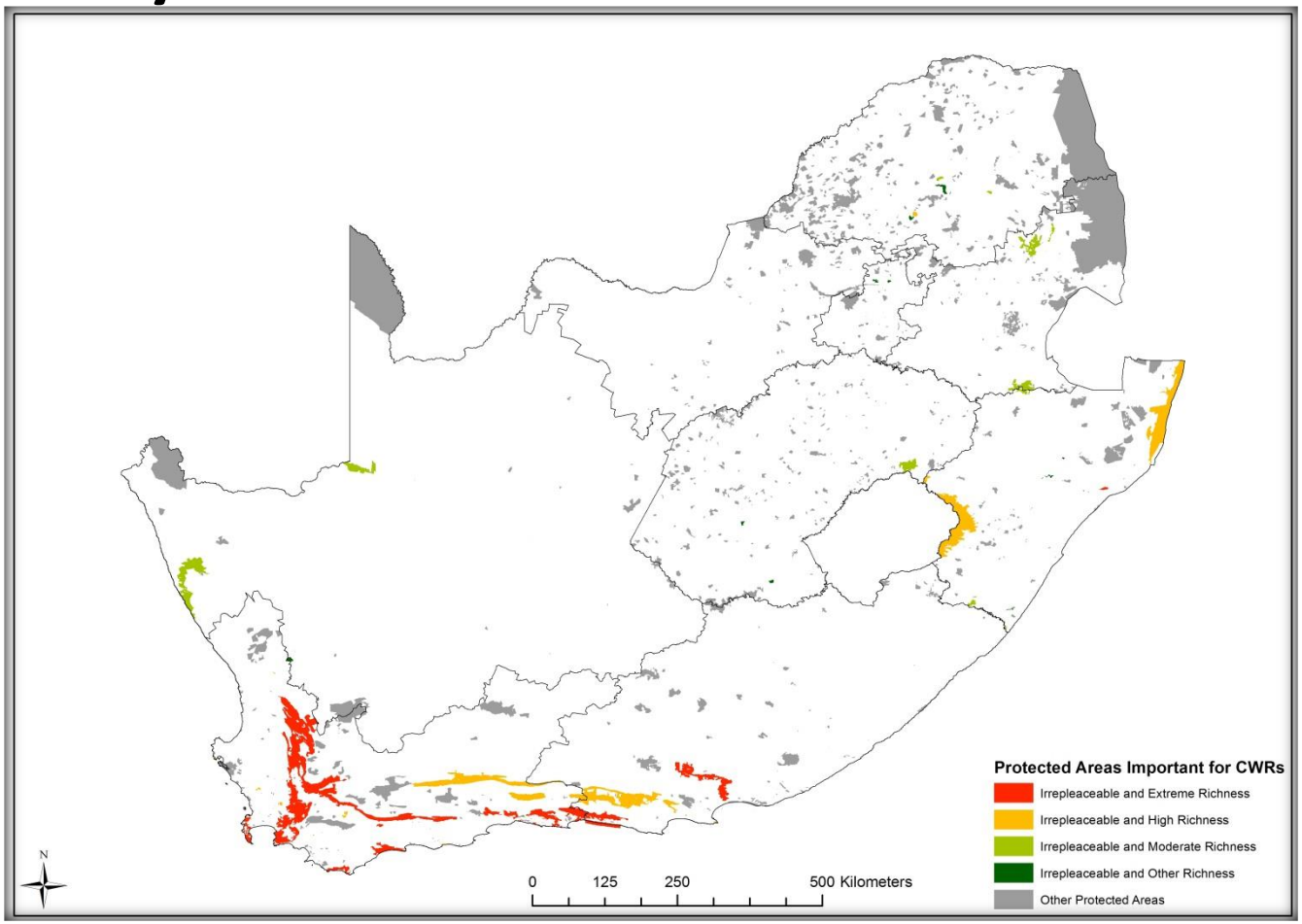
- 23 527 records obtained from 6 different herbaria and citizen science virtual museums for the 258 priority CWR.
- Records accurately georeferenced by team from BIM.
- Data were provided to BAM for quality checking and then fed through to Spatial Biodiversity Planner – Stephen Holness.



The priority areas of the country with the highest numbers of CWR were identified.



Priority Protected Areas identified

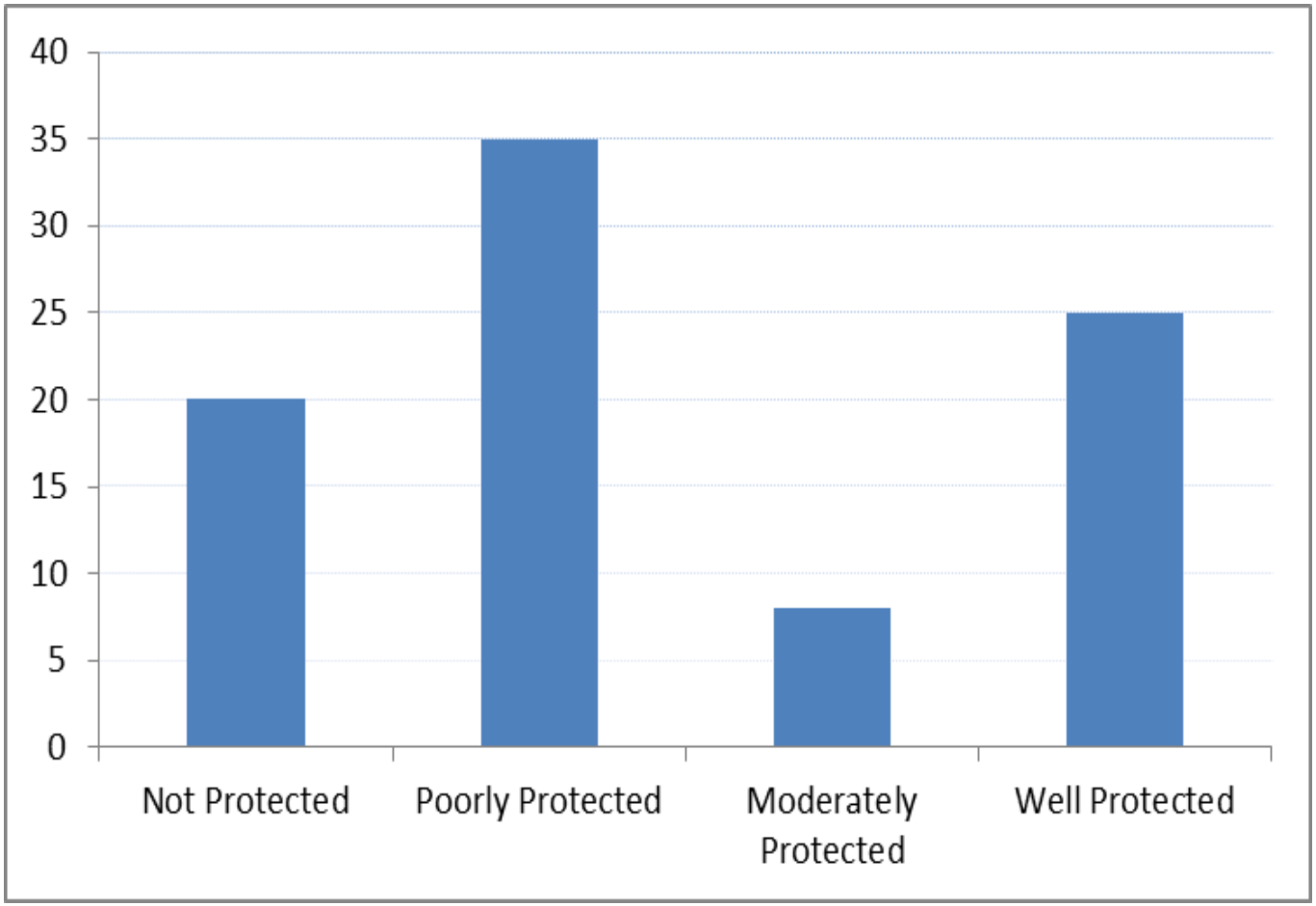


- Analyses conducted to determine which CWR are already protected and which species are in each PA.
- Identified priority Protected areas based on:

- Endemic CWR protected - Combined with overall richness.

Identifying additional sites for in situ conservation

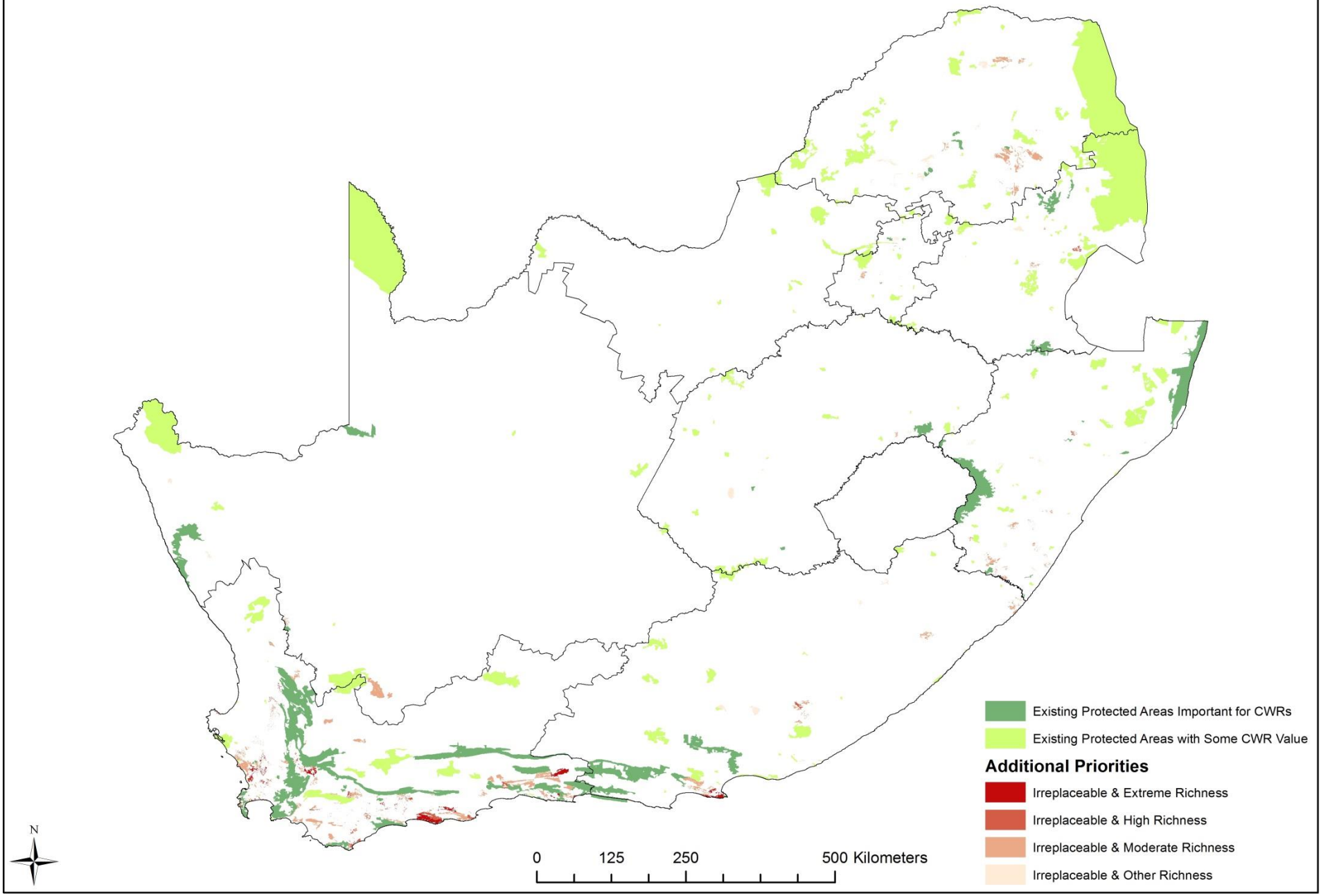
- Due to the megadiverse country context in South Africa and limited conservation capacity needed to be efficient in identification of additional sites.
- Used systematic conservation planning methodology to identify the best sites to conserve priority CWR.
- Separated from the list of 258 priority species those that are endemic or near endemic to South Africa, 88 species. In situ targets set only for these.



- The majority (63%) of these endemic CWR are poorly protected.

Identifying additional sites for in situ conservation

- The most important sites for protecting un protected CWRs identified.
- Sites compatible with existing Protected Area Expansion Strategy prioritised for in situ conservation attention in the next 5 years.
- Areas likely to support resilience to climate change impacts and are areas least impacted by land transformation.


Existing Protected Areas Important for CWRs
Existing Protected Areas with Some CWR Value
Additional Priorities
Irreplaceable & Extreme Richness
Irreplaceable & High Richness
Irreplaceable & Moderate Richness
Irreplaceable & Other Richness
N
0
125
250
500 Kilometers

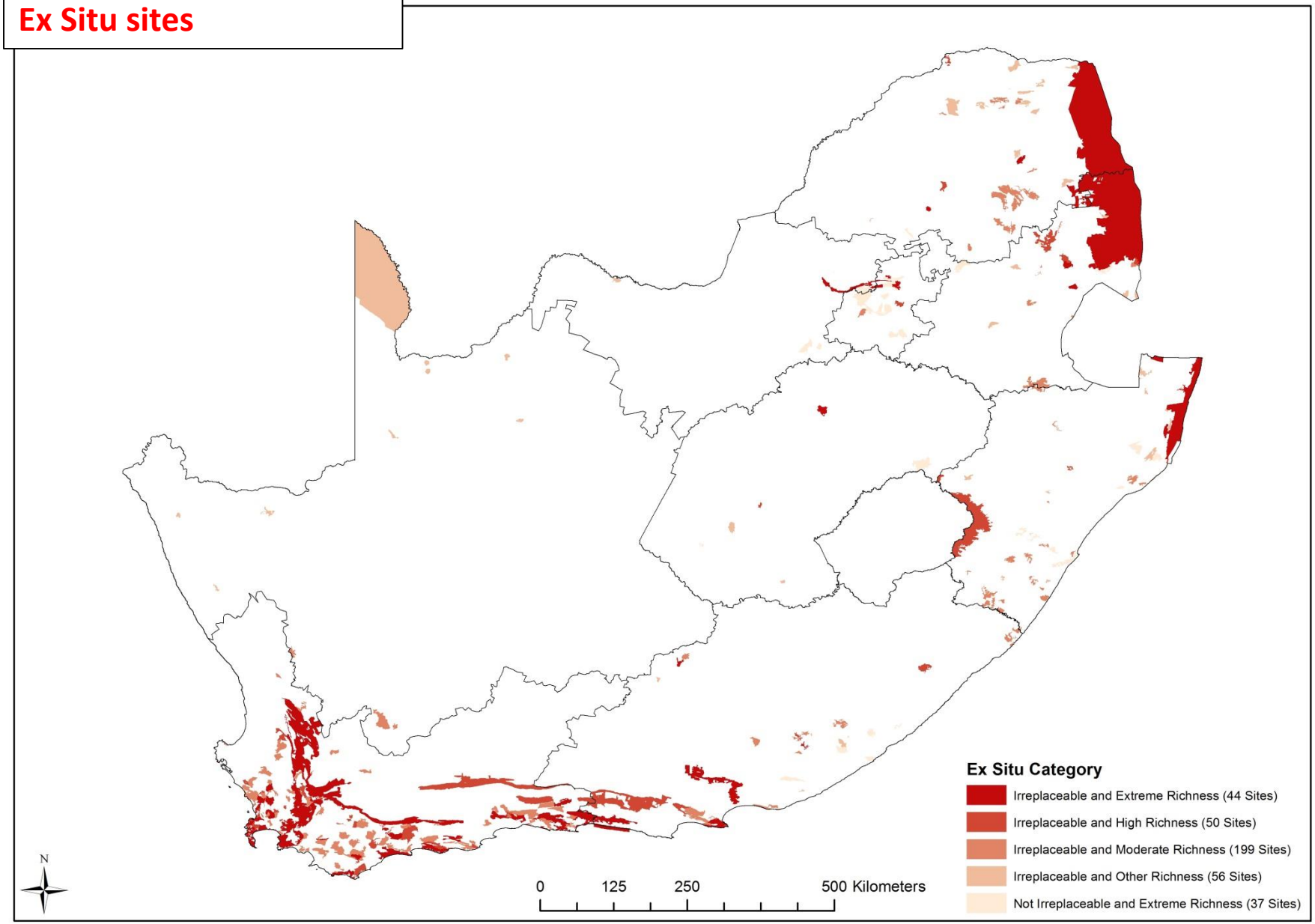
Next steps for in situ conservation

- Engage with conservation authorities via Department of Environment's Working Group 1 – on the agenda for January 2017.
- Will be engaging with Stewardship National Forum (group responsible for expansion of Protected Areas) April 2017 to ensure sites are prioritised for conservation.

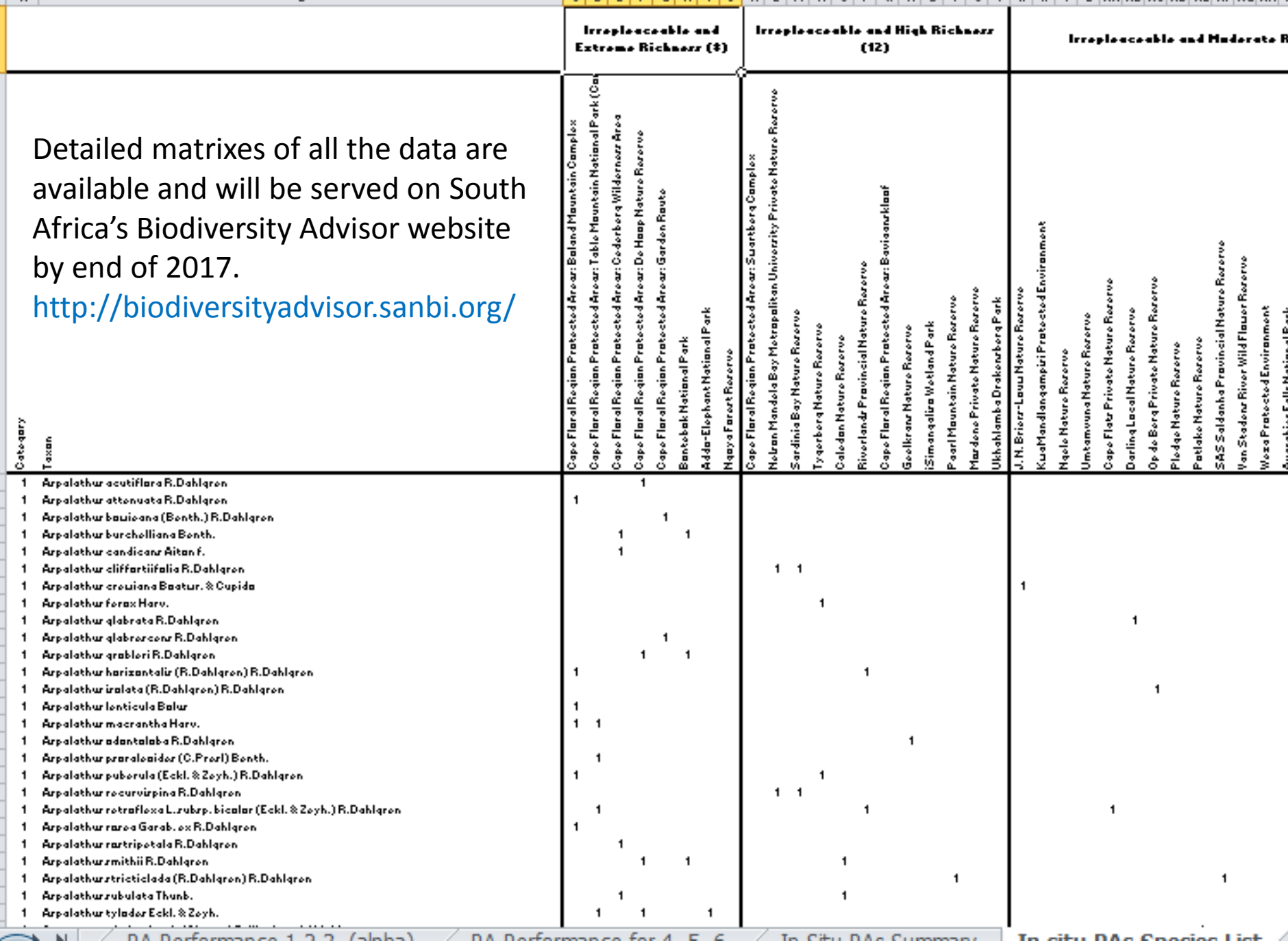
Ex Situ Conservation

- *Ex situ* conservation is required to provide genetic material for crop improvement.
- A minimum of five different original populations should be represented in a gene bank for each of the prioritized CWR taxa, to adequately cover the genetic diversity of the species.
- Existing collections in the National Genebank indicate that only seven prioritized CWRs have five distinct populations conserved *ex situ*.
- Based on the poor representation of the priority CWR taxa in the National Genebank, sufficient samples to ensure that the genetic diversity for all 258 priority CWR taxa need to be collected.
- The CWR systematic spatial biodiversity assessment identified 387 sites that would allow *ex situ* target collections to be achieved.
- These have been broken down into priority collection categories based on species richness and endemicity.

Crop Wild Relatives 387
Ex Situ sites



Detailed matrixes of all the data are available and will be served on South Africa's Biodiversity Advisor website by end of 2017.
http://biodiversityadvisor.sanbi.org/



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