

2nd Mediterranean Plant Conservation Week

“Conservation of Mediterranean Plant Diversity: Complementary Approaches and New Perspectives”

New tools for plant diversity conservation planning

Joana Magos Brehm, Shelagh Kell, Imke Thormann, Hannes Gaisberger,

Ehsan Dulloo and Nigel Maxted

UNIVERSITY OF
BIRMINGHAM

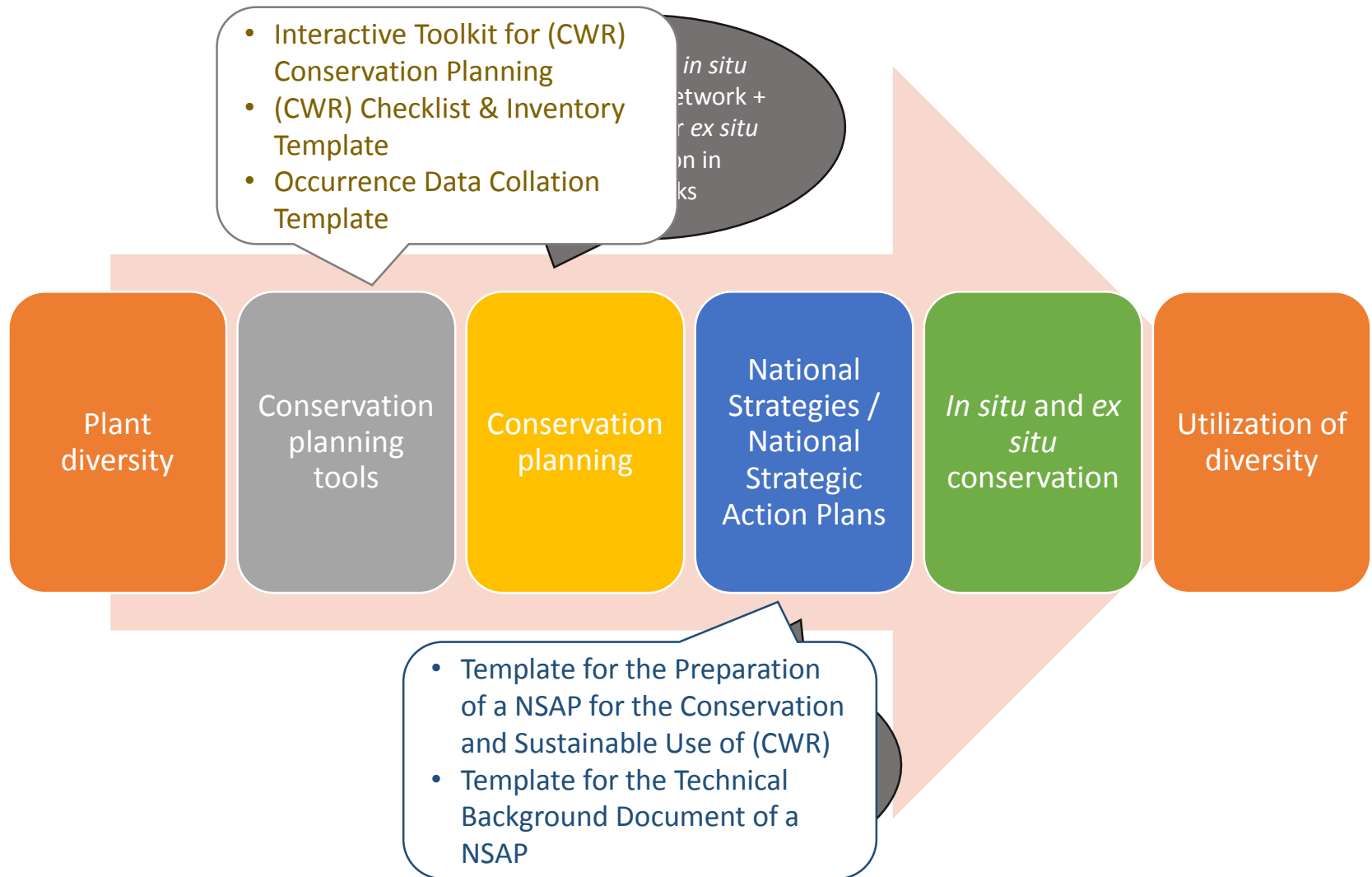


L-Università
ta' Malta

Supported by:



DIVERSITY – CONSERVATION – UTILIZATION



WHY DEVELOP THESE TOOLS?



- PGR Forum project (www.pgrforum.org) (various European countries, 2002-2005)



- PGR Secure project (www.pgrsecure.org) (various European countries, European region, 2011-2014)



- BOT-ERA Project (<http://boterajordan.org/>) (Jordan, 2012-2014)



- Adapting Agriculture to Climate Change: Collecting, Protecting, and Preparing Crop Wild Relatives project (<https://www.cwrdiversity.org/>) (global, 2011-2020)

- SADC Crop Wild Relatives project (<http://www.cropwildrelatives.org/sadc-cwr-project/>) (Mauritius, South Africa, Zambia, SADC region, 2014-2016)

- Other projects (Cyprus, Indonesia, Malawi, Mexico, Norway, Oman, etc, Fertile Crescent, North Africa)

Countries/regions to develop **National Strategies/NSAPs** for the conservation and use of plant diversity (CWR, medicinal plants, etc)

CONSERVATION PLANNING
GUIDELINES AND TOOLS



UNIVERSITY OF
BIRMINGHAM

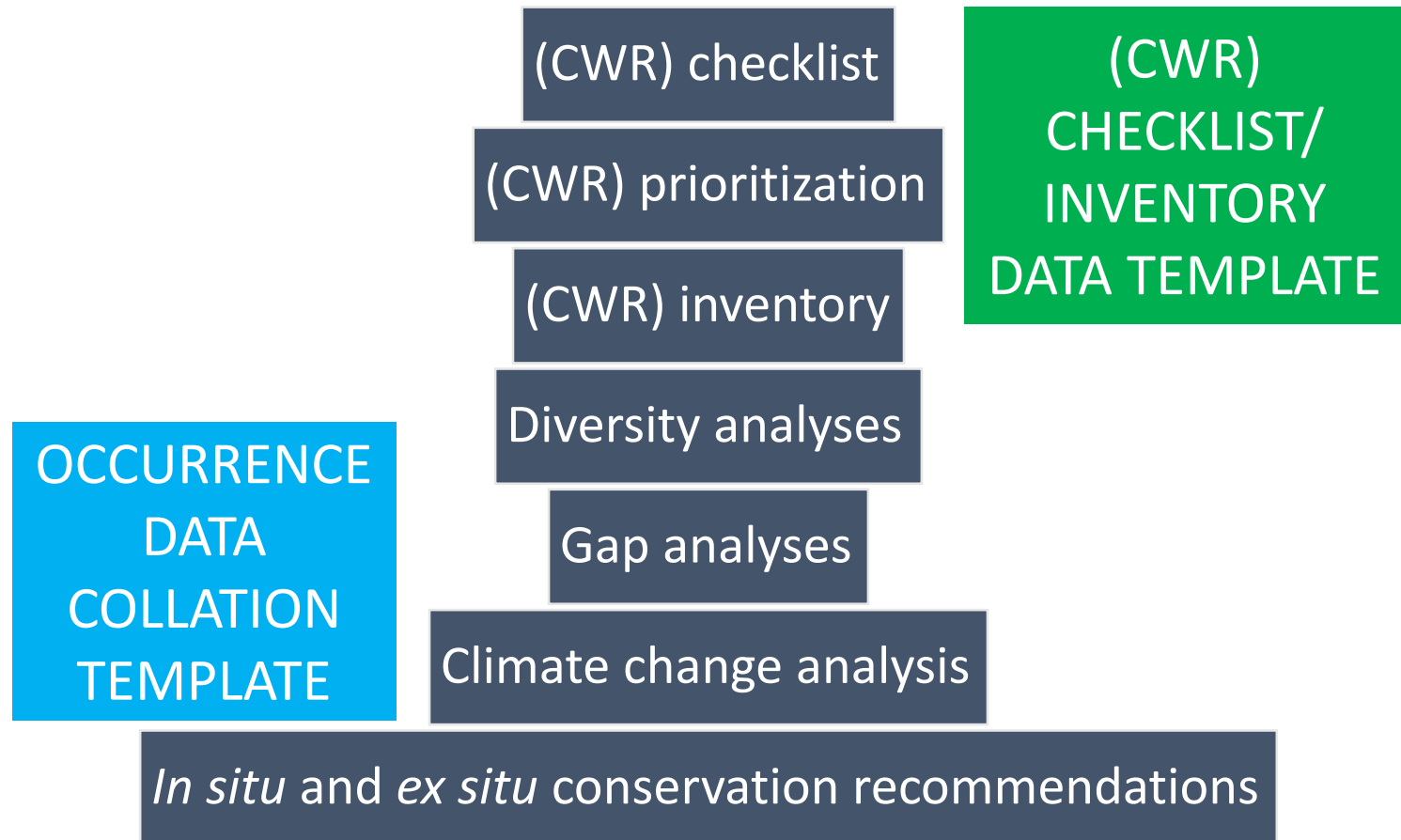
COLLEGE OF LIFE
AND ENVIRONMENTAL
SCIENCES

IMPORTANCE OF CONSERVATION PLANNING TOOLS

- To guide and facilitate countries:
 - Plant diversity conservation planning
 - Development of NSAPs
- To promote standardization of protocols
- Minimize errors and time costs



INTERACTIVE TOOLKIT FOR (CWR) CONSERVATION PLANNING



INTERACTIVE TOOLKIT FOR (CWR) CONSERVATION PLANNING

Conservation Toolkit - Interactive t... X

www.cropwildrelatives.org/conservation-toolkit/

Mais acedidos Getting Started Latest Headlines Saber Vivir casal mistério Getting Started FAO Employment

INTERACTIVE TOOLKIT FOR CROP WILD RELATIVE CONSERVATION PLANNING

ENTER

Beta macrocarpa Guss., primary genetic relative of sugarbeet (*B. vulgaris* L. subsp. *vulgaris*) with confirmed fertility traits, Portugal © Maria Cristina Duarte

UNIVERSITY OF BIRMINGHAM

Bioversity International

SADC

ACP

EUROPEAN UNION

The Interactive Toolkit for Crop Wild Relative Conservation Planning was developed within the framework of the SADC CWR project www.cropwildrelatives.org/sadc-cwr-project (2014-2016), which was co-funded by the European Union and implemented through ACP-EU Co-operation Programme in Science and Technology (S&T II) by the African, Caribbean and Pacific (ACP) Group of States. Grant agreement no FED/2013/330-210.

Web portal developed by [NewtVision](#)

<http://www.cropwildrelatives.org/conservation-toolkit/>

(CWR) CHECKLIST AND INVENTORY DATA TEMPLATE

Crop wild relative

Checklist and Inventory Tool

	H	I	J	K	L	M	N	U	V	W	X
1	FAMILY	GENUS	SPECIES	SPECIES_AUTHOR	SUB_RANK	SUB_TAXON	SUB_AUTHOR	CONCEPT_TYPE	CONCEPT_LEVEL	CONCEPT_REF	RELATED_CR
2	Asparagaceae	Asparagus	macowanii	Baker	-	-	-	Genepool	Tertiary	Harlan & de	Asparagus
3	Brassicaceae	Brassica	elongata	Ehrh.				Genepool	Secondary	Harlan & de	Brassicas
4	Brassicaceae	Brassica	tournefortii	Gouan				Genepool	Secondary	Harlan & de	Brassicas
5	Leguminoseae	Cajanus	scarabaeoides	(L.) Thou				Genepool	Secondary	Harlan & de Wet Inventory	Pigeon pea
6	Cucurbitaceae	Citrullus	ecirrhosus	Cogn.				Genepool	Secondary	Harlan & de	Watermelon
7	Cucurbitaceae	Citrullus	rehmii	De Winte				Genepool	Secondary	Harlan & de	Watermelon
8	Rubiaceae	Coffea	liberica	W. Bull e				Genepool	Secondary	Harlan & de	Coffee
9	Rubiaceae	Coffea	liberica	W. Bull e				Genepool	Secondary	Harlan & de	Coffee
10	Rubiaceae	Coffea	mufindiensis	Hutch. e				Genepool	Secondary	Harlan & de	Coffee
11	Rubiaceae	Coffea	sessiliflora	Bridson				Genepool	Secondary	Harlan & de	Coffee
12	Rubiaceae	Coffea	pseudozanguebariae	Bridson				Genepool	Secondary	Harlan & de Wet Inventory	Coffee
13	Poaceae	Digitaria	longiflora	(Retz.) P				Genepool	Primary	Harlan & de	Millet
14	Dioscoreaceae	Dioscorea	smilacifolia	De Wild.				Genepool	Primary	Harlan & de Wet Inventory	Yam
15	Poaceae	Echinochloa	colona	(L.) Link				Genepool	Primary	Harlan & de	Millet
16	Poaceae	Pennisetum	sieberianum	(Schltdl.) Stapf				Genepool	Primary	Harlan & de	Millet
17	Leguminoseae	Vigna	unguiculata	(L.) Walp.	subsp.	alba	Pasquet	Genepool	Primary	Harlan & de Wet Inventory	Cowpea
18	Leguminoseae	Vigna	unguiculata	(L.) Walp.	subsp.	dekindtiana	(Harms) Verdc.	Genepool	Primary	Harlan & de Wet Inventory	Cowpea

✓ SADC region
 ✓ Mauritius
 ✓ South Africa
 ✓ Zambia

UNIVERSITY OF BIRMINGHAM

OCCURRENCE DATA COLLATION TEMPLATE



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	AB	AC	AD	AE	AF	AG	AH	AI	AJ		
1	ID	TAXO NID	TY PE	SOUR CE	CITATI ON	FILENA	INST	INSTC	STO RAGE	IDSOUR	ACCENUMB	DO	DO	DO	DUP	GENUS	SPECIES	SPA	AUTHOR	RANK1	SUBTAX	SUBTAU	RANK2	SUB-SUBTAX A	SUB-SUBTAX THOR	TAXON	DETBY	DETDD	DETM	DETY	X1_GENUS	X1_SPECIES	X1_SPAU THOR	X1_RAN K1	X T.	
2	1	106	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-1051	NA	N	NA	NA	NA	Vigna	hosei	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_hosei	NA	NA	NA	NA	Vigna	hosei	NA	var.	p	
3	2	106	G	40	NA	African Nat	BEL01	10	NA	NI 321	NA	N	NA	NA	NA	Vigna	hosei	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_hosei	NA	NA	NA	NA	Vigna	hosei	NA	NA	N	
4	3	106	H	10	NA	African Roy	K	NA	NA	NA	NA	N	NA	NA	NA	Vigna	hosei	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_hosei	NA	NA	NA	NA	Vigna	hosei	NA	NA	N	
5	4	106	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	hosei	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_hosei	NA	NA	NA	NA	Vigna	hosei	NA	NA	N	
6	5	106	H	10	NA	African Nat	BR	NA	NA	NA	NA	N	NA	NA	NA	Vigna	hosei	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_hosei	NA	NA	NA	NA	Vigna	hosei	NA	NA	N	
7	6	106	H	10	NA	African Con	G	NA	NA	NA	NA	N	NA	NA	NA	Vigna	hosei	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_hosei	NA	NA	NA	NA	Vigna	hosei	NA	NA	N	
8	7	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
9	8	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
10	9	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
11	10	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
12	11	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
13	12	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
14	13	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
15	14	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
16	15	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
17	16	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
18	17	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
19	18	107	H	10	NA	African Roy	K, P, T	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
20	19	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
21	20	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	(Craib)	Bacl	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
22	21	107	H	10	NA	African Mus	P	NA	NA	NA	NA	N	NA	NA	NA	Vigna	keraudrenii	DuPuy & La	NA	NA	NA	NA	NA	NA	NA	Vigna_keraudrenii	NA	NA	NA	NA	Vigna	keraudrenii	NA	NA	N	
23	22	108	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-1163	NA	N	NA	NA	NA	Vigna	schlechteri	Harms	NA	NA	NA	NA	NA	NA	NA	Vigna_schlechteri	NA	NA	NA	NA	Vigna	schlechteri	NA	NA	N	
24	23	108	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-1164	NA	N	NA	NA	NA	Vigna	schlechteri	Harms	NA	NA	NA	NA	NA	NA	NA	NA	Vigna_schlechteri	NA	NA	NA	NA	Vigna	schlechteri	NA	NA	N
25	24	108	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-1336	NA	N	NA	NA	NA	Vigna	schlechteri	Harms	NA	NA	NA	NA	NA	NA	NA	NA	Vigna_schlechteri	NA	NA	NA	NA	Vigna	schlechteri	NA	NA	N
26	25	108	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-1374	NA	N	NA	NA	NA	Vigna	schlechteri	Harms	NA	NA	NA	NA	NA	NA	NA	NA	Vigna_schlechteri	NA	NA	NA	NA	Vigna	schlechteri	NA	NA	N
27	26	108	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-1377	NA	N	NA	NA	NA	Vigna	schlechteri	Harms	NA	NA	NA	NA	NA	NA	NA	NA	Vigna_schlechteri	NA	NA	NA	NA	Vigna	schlechteri	NA	NA	N
28	27	108	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-1756	NA	N	NA	NA	NA	Vigna	schlechteri	Harms	NA	NA	NA	NA	NA	NA	NA	NA	Vigna_schlechteri	NA	NA	NA	NA	Vigna	schlechteri	NA	NA	N
29	28	108	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-715	NA	N	NA	NA	NA	Vigna	schlechteri	Harms	NA	NA	NA	NA	NA	NA	NA	NA	Vigna_schlechteri	NA	NA	NA	NA	Vigna	schlechteri	NA	NA	N
30	29	108	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-962	NA	N	NA	NA	NA	Vigna	schlechteri	Harms	NA	NA	NA	NA	NA	NA	NA	NA	Vigna_schlechteri	NA	NA	NA	NA	Vigna	schlechteri	NA	NA	N
31	30	108	G	40	NA	African Inte	IITA	10	NA	IITA-TVNu-963	NA	N	NA	NA	NA	Vigna	schlechteri	Harms	NA	NA	NA	NA	NA	NA	NA	NA	Vigna_schlechteri	NA	NA	NA	NA	Vigna	schlechteri	NA	NA	N

SADC region
 South Africa
 Zambia

NATIONAL STRATEGIC ACTION PLANS AIM AT...

- Raising awareness of the value of national plant diversity
- Reviewing existing policy
- Defining the specific actions and resources required to effectively conserve and sustainably utilize national plant diversity
- Identifying capacity building needs
- Integrating plant diversity conservation into existing national, regional and global initiatives
- Making sure the implementation of the objectives of the NSAP are sustainable.

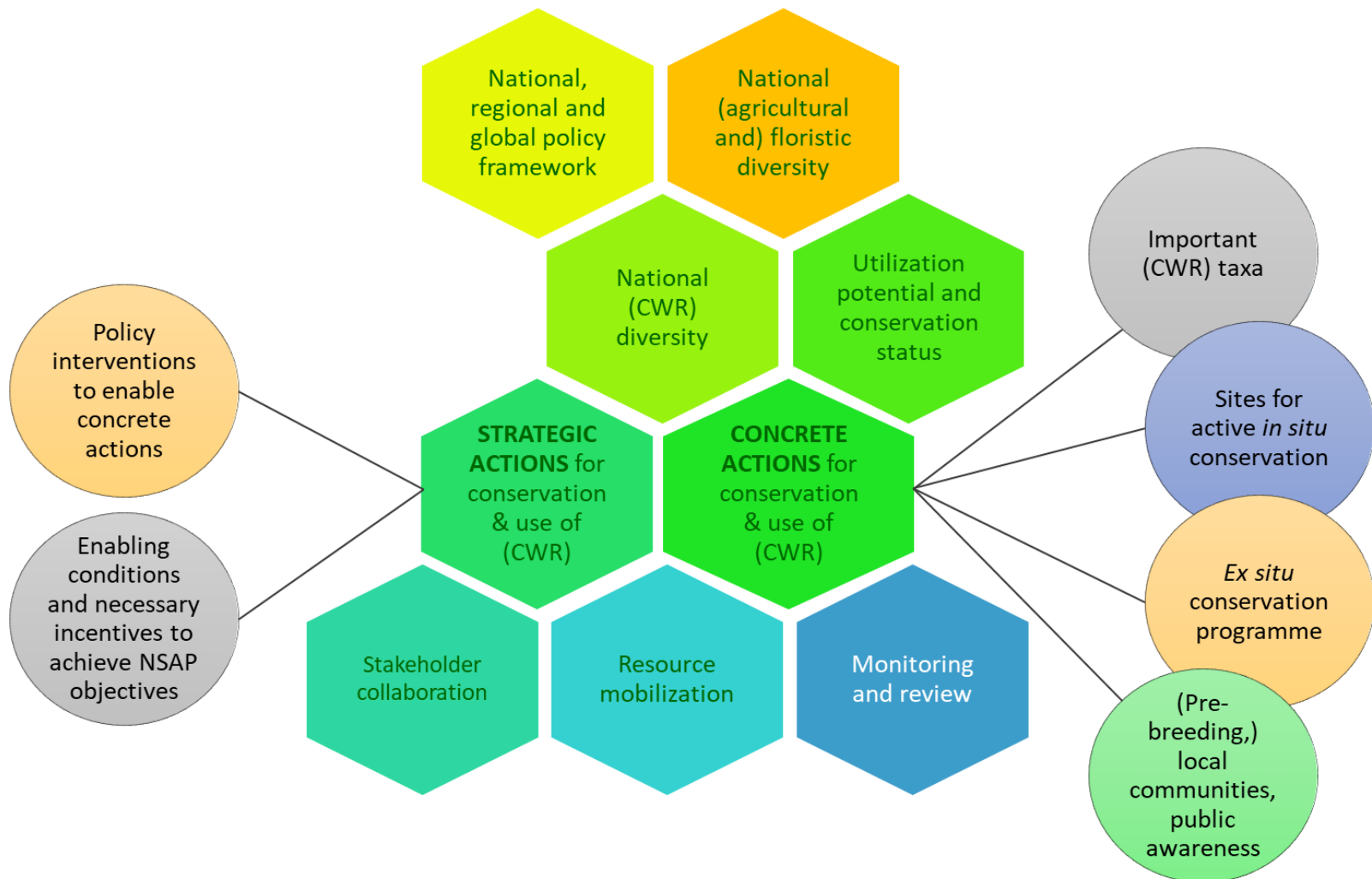


UNIVERSITY OF
BIRMINGHAM

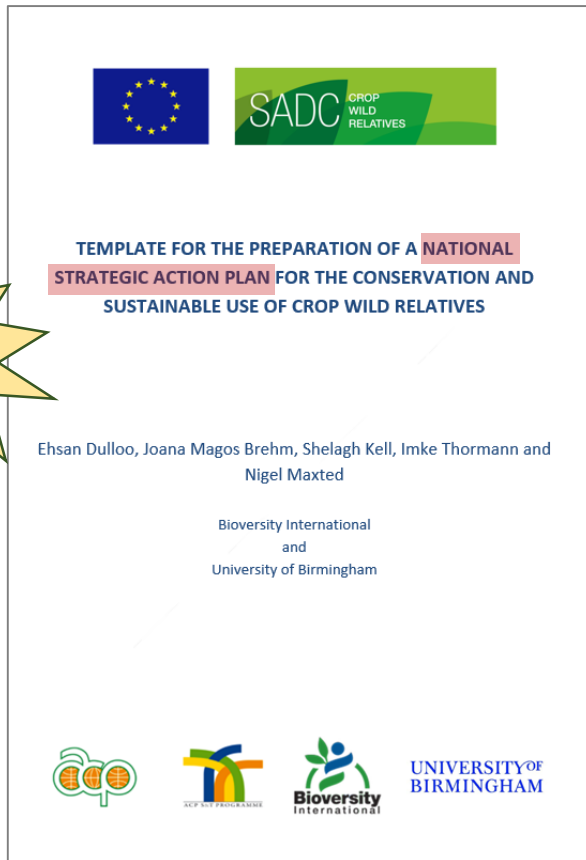
COLLEGE OF LIFE
AND ENVIRONMENTAL
SCIENCES



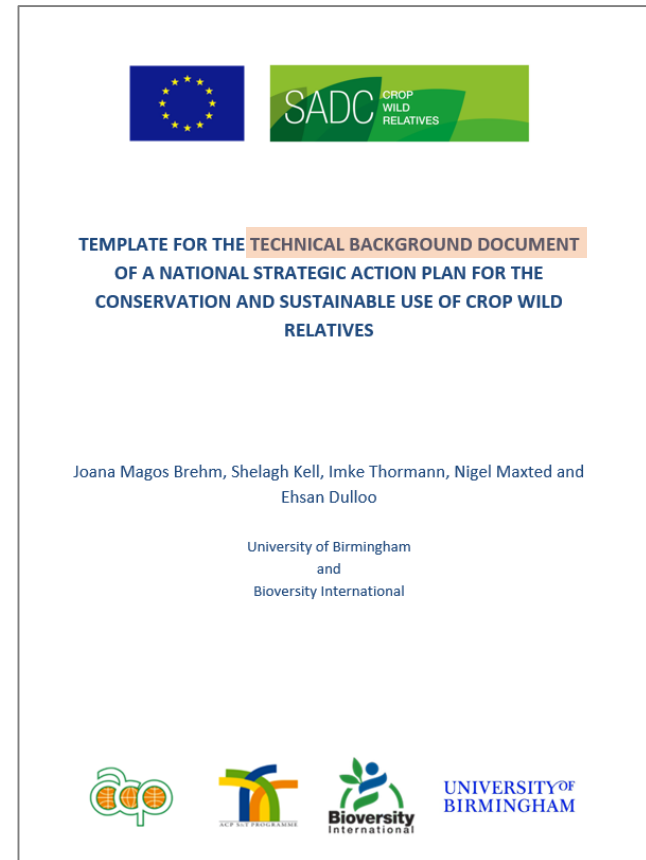
ELEMENTS OF THE NATIONAL STRATEGIC ACTION PLAN



NATIONAL STRATEGIC ACTION PLANS FOR THE CONSERVATION AND USE OF CWR



Dulloo E, Magos Brehm J, Kell S, Thormann I and Maxted N (2017) *Template for the Preparation of a National Strategic Action Plan for the Conservation and Sustainable Use of Crop Wild Relatives*, <https://doi.org/10.7910/DVN/QH9XWB>, Harvard Dataverse, V1.



Magos Brehm J, Kell S, Thormann I, Maxted N and Dulloo E (2017) *Template for the Preparation of a Technical Background Document for a National Strategic Action Plan for the Conservation and Sustainable Use of Crop Wild Relatives*, <https://doi.org/10.7910/DVN/VQVDFA>, Harvard Dataverse, V1.

NATIONAL STRATEGIC ACTION PLANS FOR THE CONSERVATION AND USE OF CWR



MINISTRY OF AGRO-INDUSTRY AND FOOD SECURITY

NATIONAL STRATEGIC ACTION PLAN FOR THE CONSERVATION AND SUSTAINABLE USE OF CROP WILD RELATIVES IN MAURITIUS

Republic of Mauritius

April 2016



UNIVERSITY OF BIRMINGHAM

SADC CWR Project - South Africa

National strategic plan for the conservation and use of priority crop wild relatives in South Africa

Project Overview

Crop wild relatives (CWR) are plant species that are related to cultivated crops. They include the ancestors of cultivated crops.

CWR are a critical source of genes for resistance to diseases, pests and stresses such as drought and extreme temperatures that can be used in plant breeding, with the potential to enhance sustainable food security in the face of challenges such as climate change and population growth.

CWR can be found in all types of habitats. They are often vulnerable and require urgent conservation, but are not commonly included in national conservation programmes. The ACP-EU supported SADC CWR Project, implemented in Mauritius, South Africa and Zambia, aims to enhance the in situ conservation of CWR by developing capacity in the SADC region to conserve and sustainably utilize CWR for climate change adaptation and to persuade governments to endorse national strategies and implement an action plan for the effective conservation of CWR.



Solanum (Lichtenstein)
Credit: Lihleiso Aukhlan Muna

CWR in South Africa

Through the project, South Africa developed a food and fodder CWR checklist of 1593 species. Looking at their potential for crop improvement, the socio-economic value of the crops concerned, their geographic distribution and their conservation status, 258 of the 1593 were categorised as priority CWR (see Figure 1). Of the priority CWR, 70 are of conservation concern.

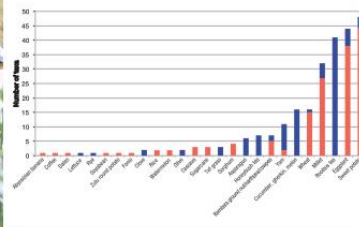


Paspalum specimen
Credit: M. K. M. M. M.



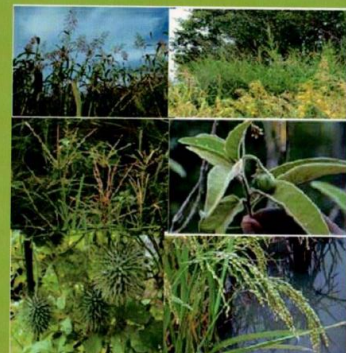
Asteropus
Credit: S. M. B.

Figure 1. Number of priority CWR in South Africa. Blue shading shows the number of endemic CWRs while red shading shows those CWR that may be indigenous or naturalized but are not endemic to South Africa.



Republic of Zambia
Ministry of Agriculture

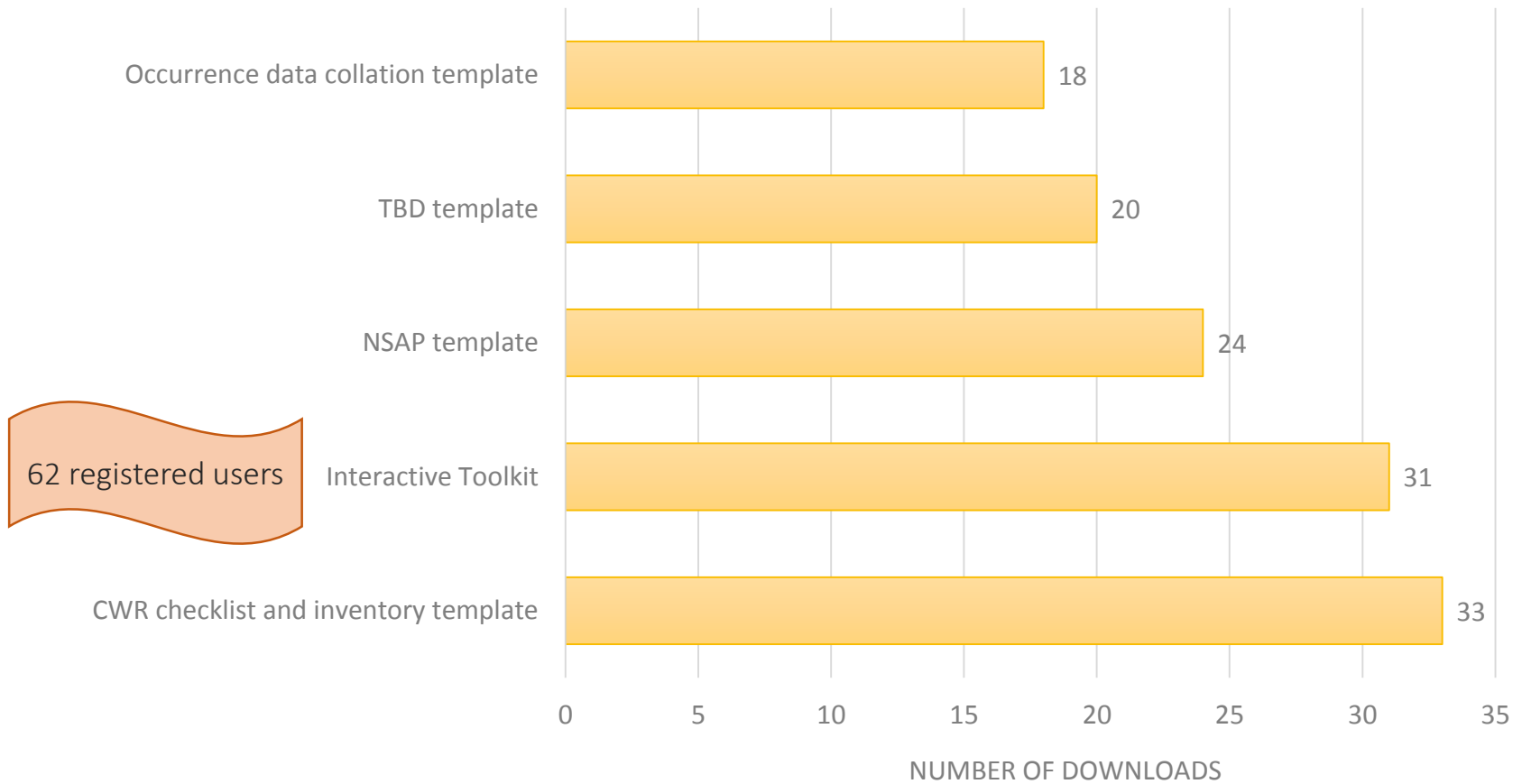
NATIONAL STRATEGIC ACTION PLAN FOR THE CONSERVATION AND SUSTAINABLE USE OF CROP WILD RELATIVES IN ZAMBIA



2017-2020

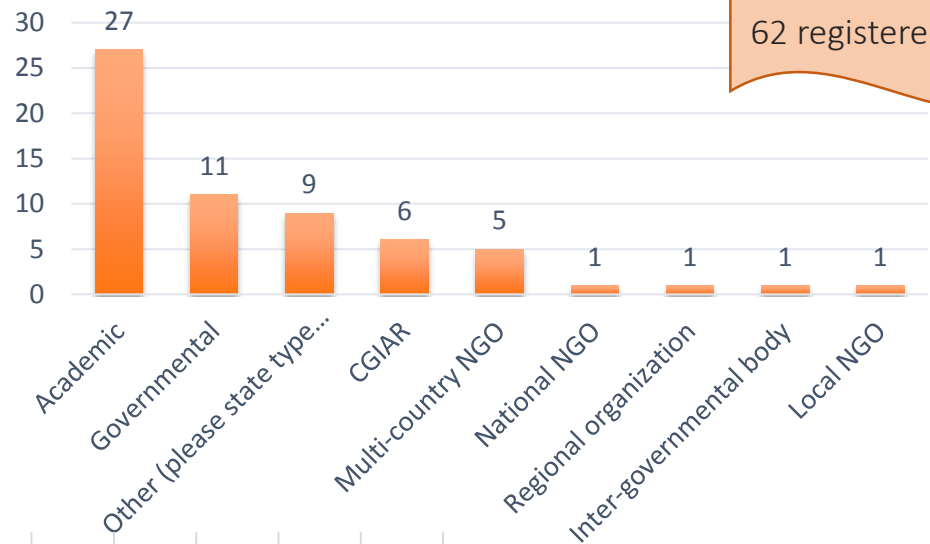
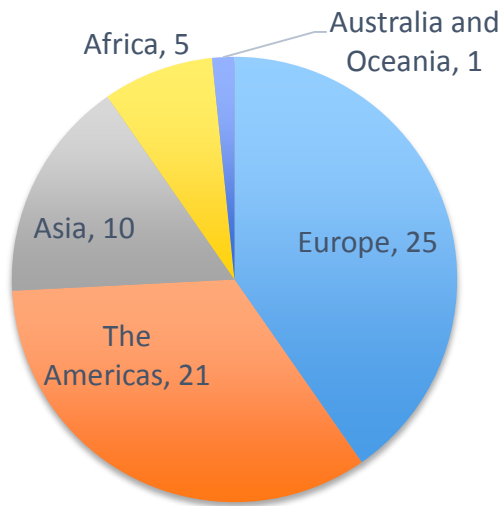
Ministry of Agriculture, 2016

HAVE THE TOOLS BEEN USED?

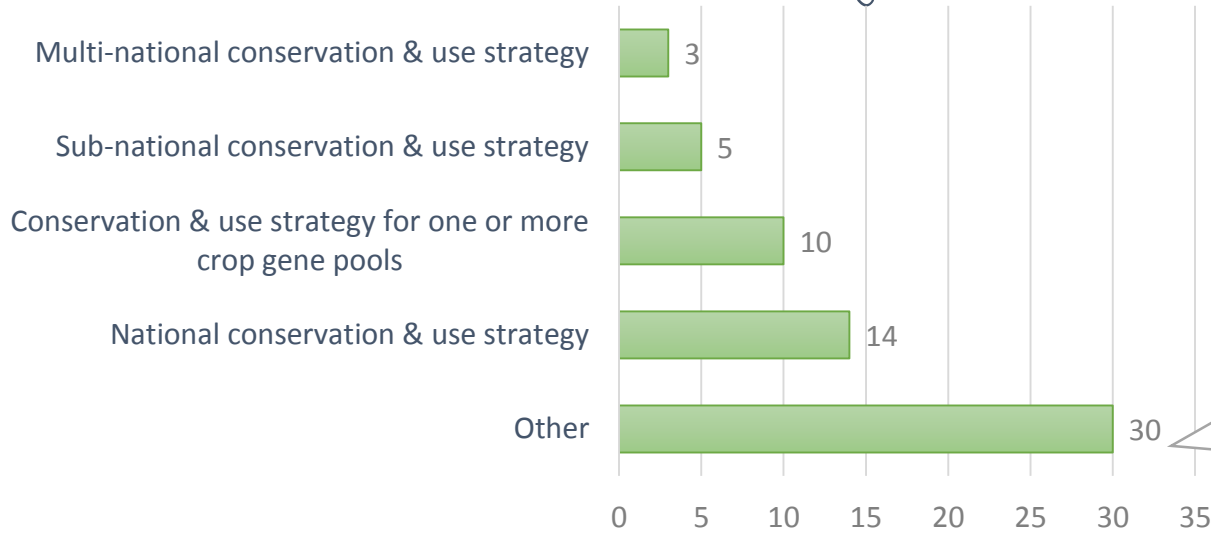


(08-Nov-2018)

INTERACTIVE TOOLKIT FOR CWR CONSERVATION PLANNING – THE USERS –



62 registered users



- Development of other toolkits
- Research
- MSc and PhD projects
- Teaching tools
- Exploring
- Exhibition
- Design
- Etc...

IN SUMMARY...

Freely available
online

3 conservation planning tools:

- Interactive Toolkit for (CWR) Conservation Planning
- (CWR) Checklist and Inventory Data Template
- Occurrence Data Collation Template

2 NSAP-related tools:

- Templates for the Preparation of a NSAP for the Conservation and Sustainable Use of (CWR) and for the associated Technical Background Document

Any wild plant group!

(not just CWR)

THANK YOU!

2nd Mediterranean Plant Conservation Week

“Conservation of Mediterranean Plant Diversity: Complementary Approaches and New Perspectives”



UNIVERSITY OF
BIRMINGHAM

