

ECPGR and Crop Wild Relatives Conservation: Did we make the grade?

Nigel Maxted and all of you

ECPGR Networking:

Networking among Working Groups for discussing and
Coordinating the implementation of ECPGR objectives

17-18 October 2017, Ljubljana, Slovenia

ECPGR In situ and On-farm Network

- ECPGR Steering Committee recommended establishing of *In Situ* and On-farm Network (1999)
- 1st Network and two Task Forces meet in [Isola Polvese, Italy](#), May 2000
- 2nd Meeting of On-Farm Task Force, June 2006, [Stegelitz, Germany](#)
- 3rd Meeting of On-Farm Task Force, October 2007, [Ljubliana, Slovenia](#) (Home Gardens)
- In Situ / On-farm conservation a priority for ECPGR Phase VIII and IX and made Working Groups
- Two Working group meeting in [Madeira, Portugal](#) Sept 2010
- Enhanced Genepool Utilization – Joint PGR Secure consortium, EUCARPIA & ECPGR Conference, 17–20 June 2014, NIAB Innovation Farm, [Cambridge, UK](#).
- ECPGR Activity Grant Scheme, partners in [Forage and Beta](#) applications 2014
- ECPGR Concept for '*In situ* Conservation of crop wild relatives in Europe'
- 1st Meeting of Wild Species Conservation WG here in [Vilnius, Lithuania](#)



'Crop Wild Relative'
Issues 1-10

88 members

ECPGR Wild Species Conservation WG

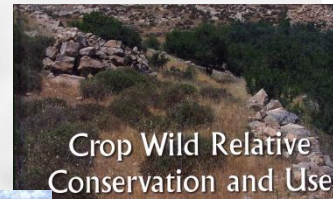
Major achievements:

- Raising professional and public awareness
- Specific projects
 - PGR Forum
 - AEGRO
 - PGR Secure
- Publication of methodologies
- Concept (and background document):
ECPGR Concept for In situ Conservation of crop wild relatives in Europe
- Establishment of a community of experts

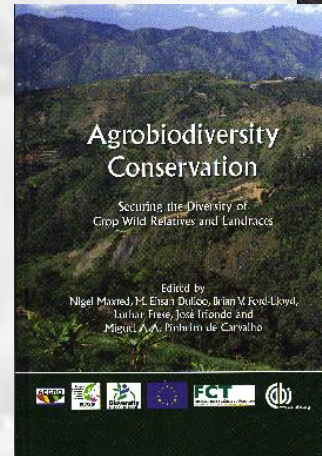


 Crop genetic resources in European home gardens

Proceedings of a Workshop
3-4 October 2007, Ljubljana, Slovenia
A. Bailey, P. Eyzaguirre and L. Maggioni, editors


Crop Wild Relative
Conservation and Use

Edited by
N. Maxted, B.V. Ford-Lloyd, S.P. Kell, J.M. Iriondo,
M.E. Dilloo and J. Turok


Agrobiodiversity
Conservation
Securing the Diversity of
Crop Wild Relatives and Landraces

Edited by
Nigel Maxted, M. Ehan Dilloo, Brian V. Ford-Lloyd,
Luisa Frese, José Iriondo and
Miguel A. Pinheiro de Carvalho



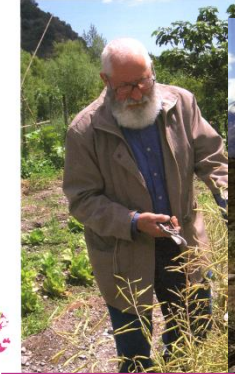
**Genetic Erosion and Pollution
Assessment Methodologies**

Proceedings of PGR Forum Workshop 5,
Terceira Island, Autonomous Region of the
Azores, Portugal, 8-11 September 2004

Brian V. Ford-Lloyd, Sonia R. Dias and Elsaui Bettencourt
(editors)


European landraces:
on-farm conservation,
management and use

M. Veteläinen, V. Negri and N. Maxted (Eds)



Conserving
Plant Genetic Diversity
in Protected Areas

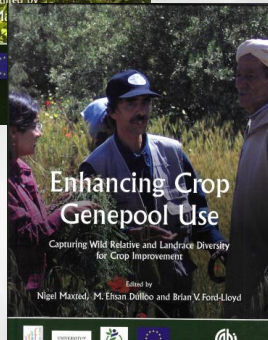
Edited by
J.M. Iriondo, N. M.



**ECPGR Concept
for in situ conservation of
crop wild relatives in Europe**

Nigel Maxted, Alvin Avaryan, Lothar Frese, José Iriondo,
Joana Magos Brehm, Alon Singer and Shetagh Kell

Endorsed by the ECPGR Steering Committee in March 2015


Enhancing Crop
Genepool Use
Capturing Wild Relative and Landrace Diversity
for Crop Improvement

Edited by
Nigel Maxted, M. Ehan Dilloo and Brian V. Ford-Lloyd

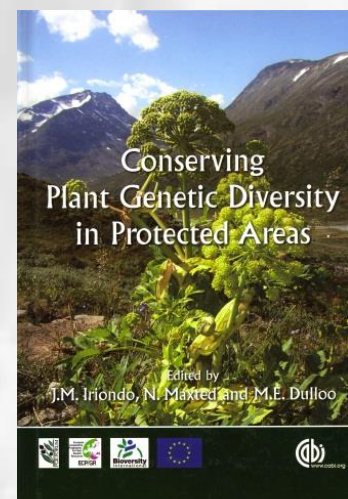
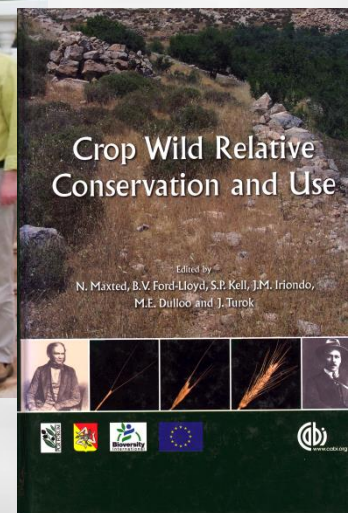
PGR Forum:

- An EC FP5 funded Thematic Network
- European forum to debate catalogues and methodologies associated with the conservation of crop wild relatives, with a focus on *in situ* conservation



Products:

- Web-enabled 'PGR Forum Crop Wild Relative Catalogue for Europe and the Mediterranean'
- Data structure and documentation methodology – CWRIS
- Genetic erosion and genetic pollution assessment methodology
- 1st Int. Conference on CWR Conservation and Use, Sicily Sept. 2005
- Population *in situ* management and monitoring methodology



AEGRO

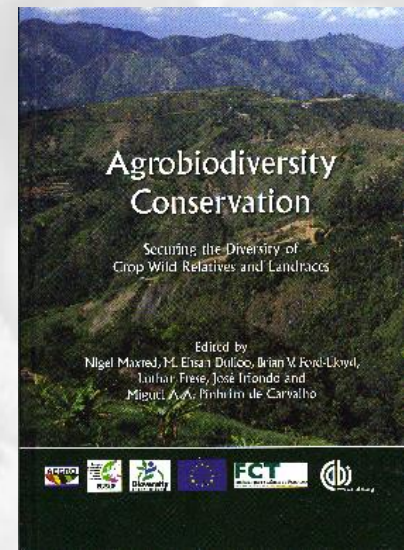


- An EC GEN RES Targeted Action project (led by Lothar Frese)
- European forum to debate catalogues and methodologies associated with the conservation of crop wild relatives, with a focus on *in situ* conservation



Products:

- *In situ* conservation strategies for beet, brassica and oat gene pools and for wild cherry
- CWRIS-PLIS (Population Level Information System)
- Methodologies for the identification of genetic reserves and on-farm conservation sites
- AEGRO / ECPGR In Situ and On-farm Conservation Network symposium, Madeira, Sept 2010 (published by CABI 2012)



PGR Secure

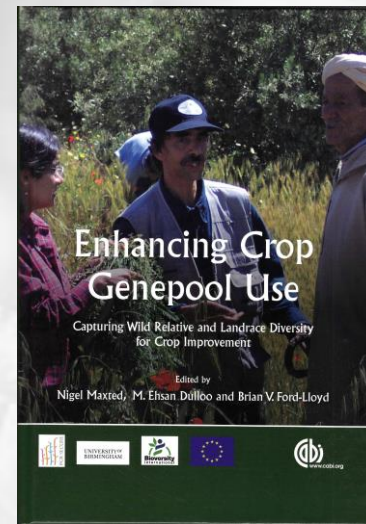


- An FP7 Collaborative Research Project
- Research novel characterization techniques and CWR / LR conservation strategies, as a means of enhancing crop improvement by breeders



Products:

- Novel characterization techniques, genomic, phenotypic, metabolomics and transcriptomic, also predictive characterization
- CWR and LR conservation, Europe-wide CWR inventory and strategy, exemplar national CWR inventories, Europe-wide LR inventory and strategy, and exemplar national LR inventories
- Facilitating breeders' CWR and LR use, SWAT and stakeholder analysis
- Informatics development, CWR and LR inventory information web availability, Novel characterization information web availability
- Enhanced Genepool Utilization – Joint PGR Secure, EUCARPIA & ECPGR Conference, June 2014, Cambridge, UK. (pub. CABI 2016)



Farmer's Pride

HORIZON 2020 – SFS - 04 [2017] **New partnerships and tools to enhance European capacities for in-situ conservation**

Coordination and support action to build a network(s) of *in situ* (including on-farm and on-garden) conservation sites and stakeholders in order to develop new partnerships between the conservation, farming, gardening and breeding sectors and with the wider public

Workpackages:

WP 1: Network Structures / Partnerships

WP 2: Genetic Diversity Conservation

WP 3: Genetic Diversity Management

WP 4: Genetic Diversity Use Promotion

Consortium: 19 European partners (conservation NGO, farmer's NGO, national, regional and international formal sectors, breeders, social scientists, media experts, protected area managers, genebanks and academics) + 20 Farmer's Pride Ambassadors



Farmer's Pride

Products:

- Improved **knowledge of the status and characteristics** of *in situ* CWR / LR resources in Europe
- **Durable network and partnerships** between *in situ* conservation stakeholders, dynamic transfer of plant material and **good practice on conservation and management** issues
- Integration of **national and European *in situ* conservation strategies**
- **Joined up *in situ* and *ex situ* conservation efforts**
- **Raised awareness** among public of the wealth and importance of CWR / LR resources for Europe agriculture and consumers
- **Increased use CWR / LR resources** from *in situ* sources in breeding activities and in the food chain
- **Support competitiveness** among farming and breeding sectors, trigger product innovation and foster healthy diets through provision of more diverse food.



ECPGR Small Grants

- Linked with Forage and Beet group application
- Nordic/ECPGR Joint Workshop: Plant genetic resources for food security and ecosystem services
 - Objectives: Planning and implementing national and regional conservation strategies
 - 19-21 (22) September 2016, Vilnius, Lithuania
 - 12 specific recommendations but they primarily are associated with trying to get complete CWR planning and implementation



Did ECPGR *In Situ* & *On-farm* WGs meet Phase XI commitment?

ECPGR Outcome 3	Outputs	Activities	Responsibility	Indicators	Achieved or not?
<p><i>In situ</i> conservation of priority crop wild relative (CWR) and landrace (LR) populations are implemented throughout Europe.</p> <p>Mechanisms are in place for more effective utilization of the conserved germplasm.</p>	3.1 National CWR conservation strategies produced	3.1.1 Generation of national CWR checklists	3.1.1 – 3.1.6 National <i>In Situ</i> WG members with other national conservation stakeholders	3.1.1.1 Number of national CWR checklists produced	≈√
		3.1.2 Prioritization of CWR checklists			≈√
		3.1.3 Production of national CWR inventories		3.1.3.1 Number of national CWR inventories produced	≈√
		3.1.4 Diversity and gap analysis of national priority CWR taxa			≈√
		3.1.5 Definition of national CWR conservation actions			≈√
		3.1.6 Production of national CWR conservation action plans			≈√

Did ECPGR *In Situ* & *On-farm* WGs meet Phase XI commitment?

ECPGR Outcome 3	Outputs	Activities	Responsibility	Indicators	Achieved or not?
<p><i>In situ</i> conservation of priority crop wild relative (CWR) and landrace (LR) populations are implemented throughout Europe.</p> <p>Mechanisms are in place for more effective utilization of the conserved germplasm.</p>	3.2 Regional (European) CWR conservation strategies produced	3.2.1 Generation of regional (European) CWR checklists	3.2.1–3.2.6 Regional <i>In Situ</i> Conservation WG members with other national conservation stakeholders		✓
		3.2.2 Prioritization of regional (European) CWR checklists			✓
		3.2.3 Production of regional (European) CWR inventories		3.2.3.1 Regional (European) CWR inventories produced and endorsed by <i>In Situ</i> Conservation WG members	≈✓
		3.2.4 Diversity and gap analysis of regional (European) priority CWR taxa			≈X (PGR Secure)
		3.2.5 Definition of regional (European) CWR conservation actions			X (PGR Secure)
		3.2.6 Production of regional (European) CWR conservation action plans			X (PGR Secure)

Did ECPGR *In Situ* & *On-farm* WGs meet Phase XI commitment?

ECPGR Outcome 3	Outputs	Activities	Responsibility	Indicators	Achieved or not?
<p><i>In situ</i> conservation of priority crop wild relative (CWR) and landrace (LR) populations are implemented throughout Europe.</p> <p>Mechanisms are in place for more effective utilization of the conserved germplasm.</p>	3.3 Integrated European strategy for CWR conservation produced	3.3.1 Drafting of integrated European strategy for CWR conservation	3.3.1 Wild Species Conservation in Genetic Reserves WG	3.3.1.1 Integrated European strategy for CWR conservation published	X (PGR Secure)
		3.3.2 Agreement on regional (European) and national MAWPs (Most Appropriate crop Wild relative Population) to form European <i>in situ</i> network	3.3.2 National government agencies responsible for PGR conservation in association with ECPGR National Coordinators and members of the Wild Species Conservation in Genetic Reserves WG	3.3.2.1 List of agreed regional (European) and national MAWPs for inclusion in the <i>in situ</i> network published	X (Farmer's Pride)
	3.4 European MAWP network established	3.4.1 Official designation of national and regional (European) MAWPs at national level	3.4.1 National government agencies responsible for PGR conservation and utilization	3.4.1.1 List of officially designated national and regional (European) MAWPs published	X (Farmer's Pride)

Did ECPGR *In Situ* & *On-farm* WGs meet Phase XI commitment?

ECPGR Outcome 3	Outputs	Activities	Responsibility	Indicators	Achieved or not?
<p><i>In situ</i> conservation of priority crop wild relative (CWR) and landrace (LR) populations are implemented throughout Europe.</p> <p>Mechanisms are in place for more effective utilization of the conserved germplasm.</p>	<p>3.5 Integrated regional (European) CWR conservation strategies operational</p>	<p>3.5.1 Active conservation management of national and regional (European) MAWPs</p>	<p>3.5.1 <i>In situ</i> conservation agencies in association with local administrators and landowners</p>	<p>3.5.1.1 Periodic reports submitted to European Topic Centre for Biodiversity indicating national and regional (European) MAWP conservation status and conservation management actions</p>	<p>X (Farmer's Pride)</p>
				<p>3.5.1.2 Adherence to minimum quality standards for genetic reserve conservation of CWR</p>	<p>X (Farmer's Pride)</p>

Did ECPGR *In Situ* & *On-farm* WGs meet Phase XI commitment?

ECPGR Outcome 3	Outputs	Activities	Responsibility	Indicators	Achieved or not?
<p><i>In situ</i> conservation of priority crop wild relative (CWR) and landrace (LR) populations are implemented throughout Europe.</p> <p>Mechanisms are in place for more effective utilization of the conserved germplasm.</p>	3.6 MAWP network germplasm effectively utilized	3.6.1 Germplasm samples collected and actively managed <i>ex situ</i>	3.6.1 National PGR genebanks	3.6.1.1 Number of germplasm samples of MAWPs collected and actively managed <i>ex situ</i>	X (Farmer's Pride)
		3.6.2 MAWP germplasm characterized	3.6.2 National PGR genebanks and plant breeding research institutes	3.6.2.1 Number of MAWP germplasm samples characterized	X
		3.6.3 Access to MAWP germplasm facilitated	3.6.3 National government agencies responsible for PGR conservation and utilization	3.6.3.1 Number of MAWP germplasm samples provided to users	X (Farmer's Pride)
		3.6.4 MAWP germplasm evaluated	3.6.4 National plant breeding research institutes and public and private plant breeding companies	3.6.4.1 Number of MAWP germplasm samples evaluated	X
		3.6.5 MAWP germplasm utilized in crop improvement programmes	3.6.5 Public and private plant breeding companies	3.6.5.1 Number of MAWP utilized in crop improvement programmes 3.6.5.2 Number of MAWP utilized successfully for crop improvement	X (Farmer's Pride)

ECPGR Wild Species Conservation WG

We live in very exciting times!

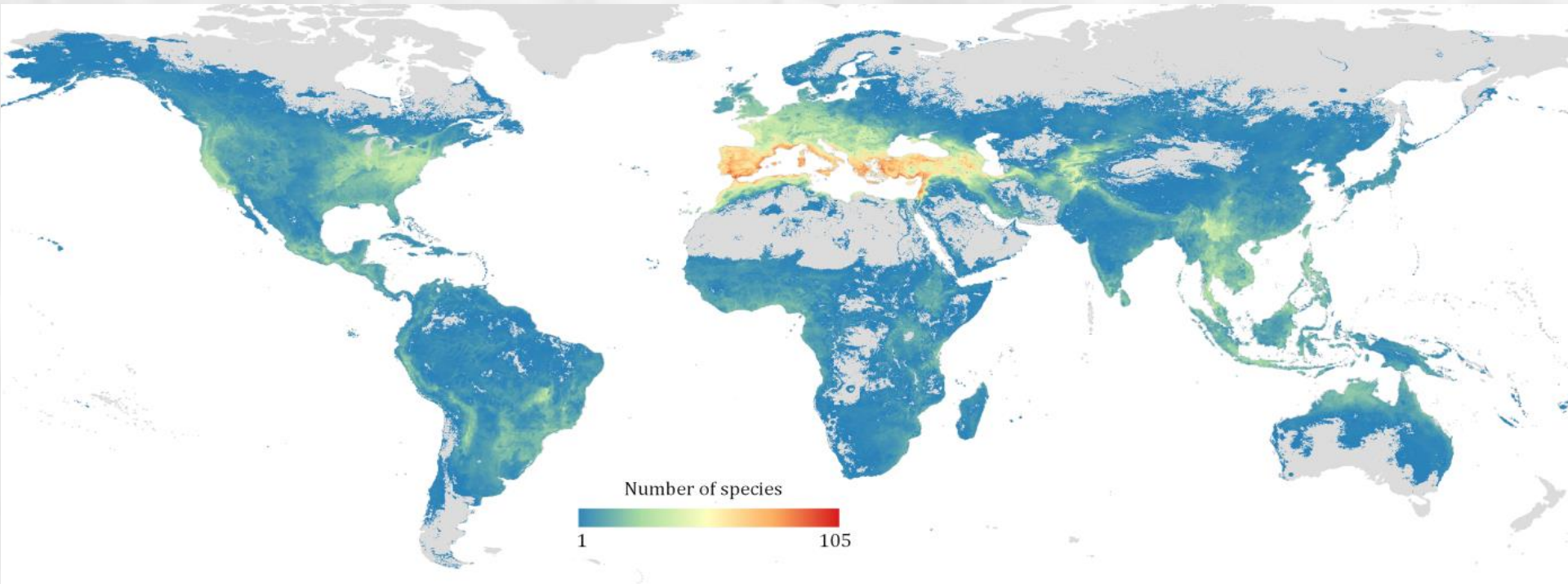


Figure 1. Species richness map for the priority CWR related to 194 crops at five arc minutes resolution (Vincent *et al.*, 2017).

ECPGR Wild Species Conservation WG

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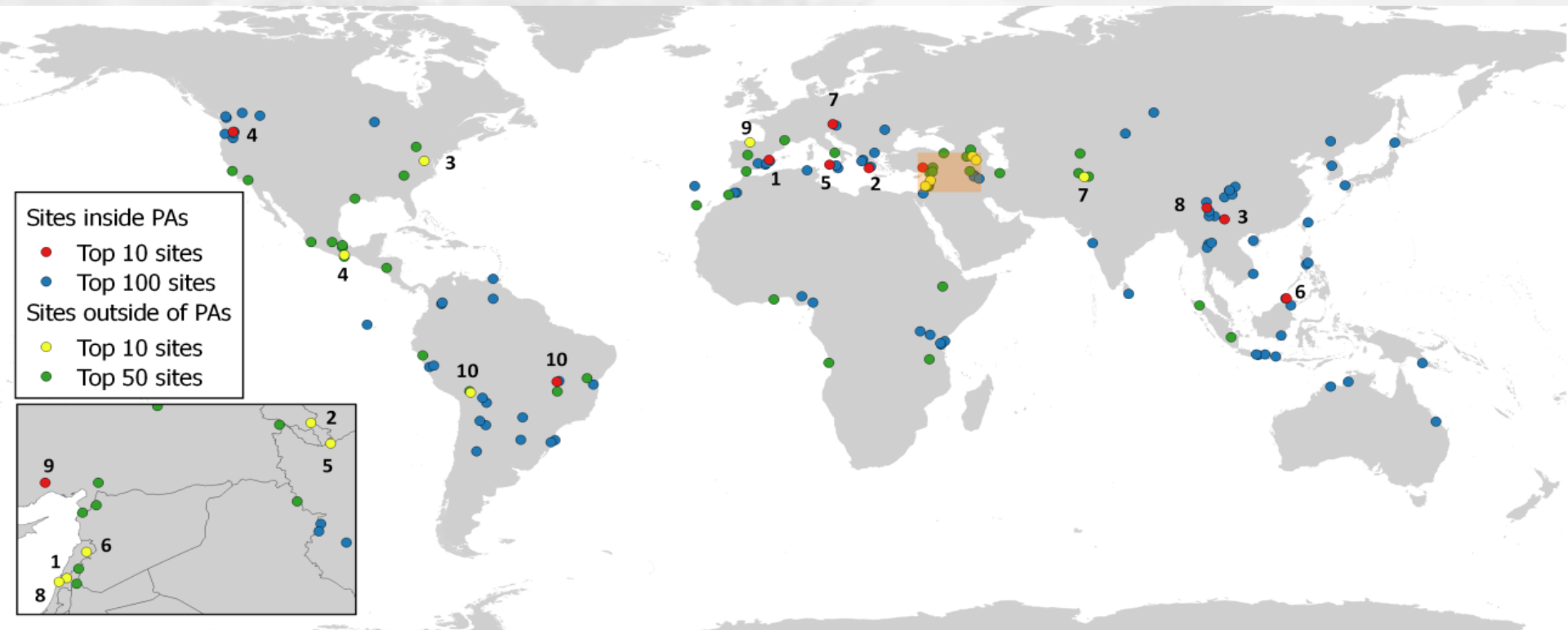


Figure 2 Top 150 sites for global *in situ* CWR conservation (PA and non-PA), with magnification on the Fertile Crescent and Caucasus (Vincent *et al.*, 2017).

ECPGR Wild Species Conservation WG

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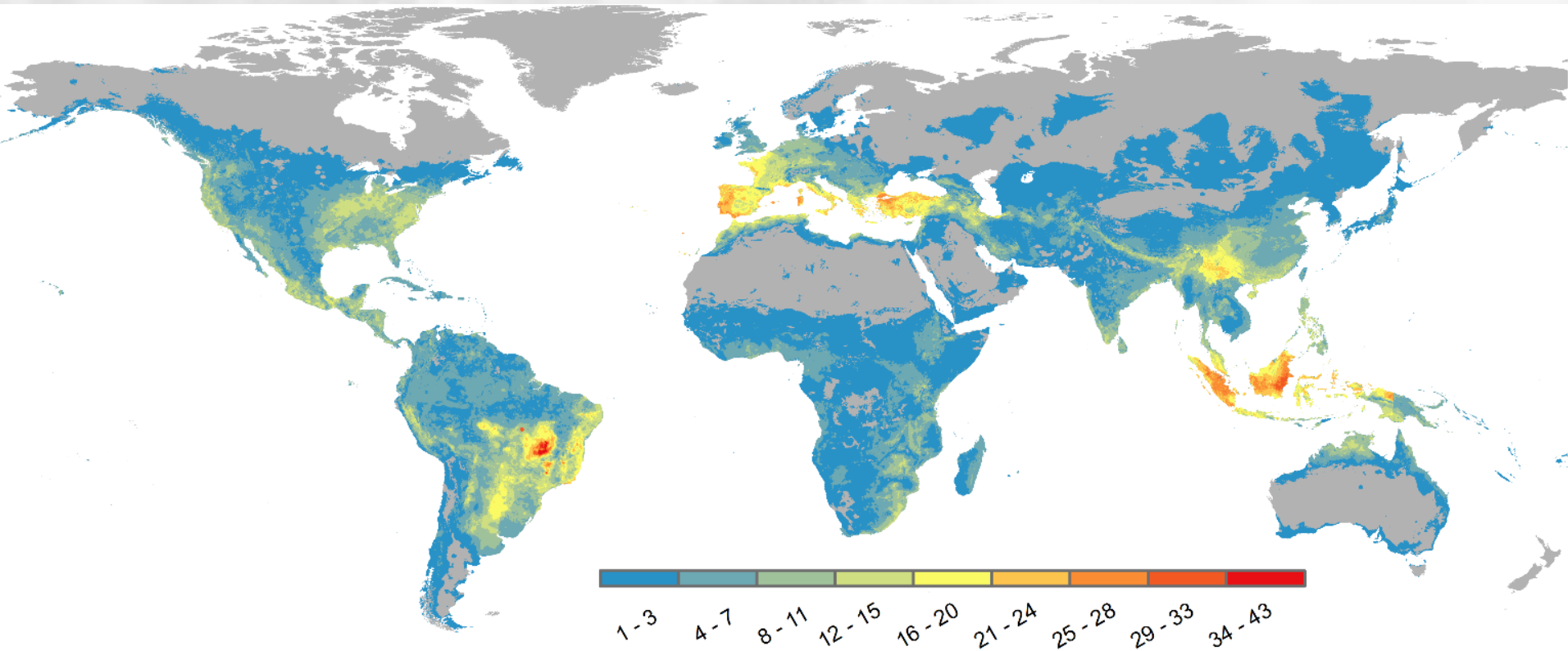


Figure 3. Global collecting hotspots for High Priority CWR for 76 crop gene pools (Castañeda-Álvarez *et al.*, 2016).