

IUCN SSC Crop Wild Relative Specialist Group

2020 Report



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Number of members

91

CWRSG
CROP WILD RELATIVE SPECIALIST GROUP

Mission statement

The vision of the Crop Wild Relative Specialist Group (CWRSG) is the effective conservation and use of crop wild relatives (CWR) and their increased availability for crop improvement, for the benefit of the environment and human society worldwide.

Projected impact for the 2017-2020 quadrennium

By the end of 2020, we hope to have established a global network of *in situ* conservation sites to complement current *ex situ* conservation activities. Our vision is a developing world in which the full potential of crop wild relative diversity is used to maximise the development of healthy, resilient food systems, where rural communities/family farmers are recognised for their sustaining of vital conservation action, and where nutritional security is not limited by climate change or breeders' access to crop wild relative diversity.

Targets for the 2017-2020 quadrennium

Assess

Red List: complete threat assessment of 1,400 global priority CWR taxa (500 new Red List assessments).

Plan

Planning: (1) establish global networks of CWR *in situ* conservation (25 genetic reserves for the *in situ* conservation of CWR populations); (2) establish European regional networks of CWR *in situ* conservation (25 genetic reserves for the *in situ* conservation of CWR populations); (3) establish regional networks of CWR *in situ* conservation (25 genetic reserves for the *in situ* conservation of CWR populations) outside

Europe; (4) establish national networks of CWR *in situ* conservation (25 genetic reserves for the *in situ* conservation of CWR populations); (5) advance CWR conservation planning (2,000 plans published).

Policy: improve CWR conservation policy context (all 16,000 global CWR).

Act

Conservation actions: advance *ex situ* conservation of CWR diversity in gene banks (1,392 priority CWR species conserved).

Communicate

Communications: (1) publish papers and other publications on CWR conservation and use; (2) maintain and update CWR related websites; (3) organise webinars on CWR conservation; (4) publish two issues of the newsletter *Crop wild relative*; (5) produce technical guidelines on CWR conservation and use.

Activities and results 2020

Assess

Planning

i. In 2020, the Farmer's Pride project (www.farmerspride.eu) made several advances towards the establishment of the European network for *in situ* conservation and sustainable use of plant genetic resources: (i) the importance of the Natura 2000 sites for the conservation of CWR in Europe was studied and highlighted (https://more.bham.ac.uk/farmerspride/wp-content/uploads/sites/19/2020/10/MS19_Crop_Wild_Relatives_in_the_Natura_2000_Network.pdf); (ii) the foundations of the network were laid (https://more.bham.ac.uk/farmerspride/wp-content/uploads/sites/19/2021/04/Farmers_Pride_Network_Concept_English.pdf), and a coalition of support for its establishment was initiated (see <https://more.bham.ac.uk/farmerspride/network/>). (KSR #42)



Allium angulosum L., a tertiary wild relative of onion, photographed in Lithuania
Photo: Laima Sveistyte

ii. The Darwin Initiative-funded project ‘Bridging Agriculture and Environment: Southern African Crop Wild Relative Regional Network’ (SADC CWR Network for short; www.cropwildrelatives.org/sadc-cwr-net) made several advances towards the establishment of the Southern African Development Community (SADC) network for *in situ* conservation of CWR: (i) a white paper on the governance structure, functions and funding mechanism of the regional SADC CWR network was prepared, discussed with the SADC Secretariat, endorsed by the SADC Technical Committee, and tabled at the SADC Director Committee who endorsed the documents for submission to the SADC Council of Ministers. (KSR #42)

iii. Malawi, Tanzania and Zambia have worked closely with national parks, wildlife and forestry departments to revise the management plans of the protected areas identified in their conservation planning towards the establishment of the national network of CWR *in situ* conservation (SADC CWR Network). (KSR #42)

iv. Advances on the establishment of a national network of genetic sites of CWR together with medicinal and aromatic plants were made in Lithuania (Labokas, J. and Karpavičienė, B. (2020). National network of genetic reserve sites for medicinal, aromatic plants and CWR conservation in Lithuania. *Crop wild relative* 12:17–22.). (KSR #42)

v. In Finland, a second phase of the Finnish CWR conservation project (funded by the Finnish Ministry of Agriculture and Forestry) was carried out between 2019 and 2020; in this phase, practical actions needed to establish a CWR genetic reserve in a pilot *in situ* conservation area (Nuuksio National Park) that contains a potential future CWR genetic reserve site, were defined and the plan for the National CWR

network was prepared (Fitzgerald, H., Eisto, K. and Kiviharju, E. (2020) Finnish crop wild relative networking activities. *Crop wild relative* 12: 14-16.) (KSR #42)

vi. In the Czech Republic, the Hop Research Institute made a preliminary proposal for active conservation of populations of wild *Humulus lupulus* in the Jeseniky Mts. Protected Landscape Area. (KSR #42)

vii. In 2020, the German network of wild celery genetic reserves (<https://netzwerk-wildsellerie.julius-kuehn.de/>) increased from 13 to 17 genetic reserves. (KSR #42)

viii. The SADC CWR Network project has made several advances towards CWR conservation planning: (i) the draft of a paper that was initiated in a previous project (the ACP-EU funded project, ‘SADC Crop Wild Relatives–*In Situ* Conservation and Use of Crop Wild Relatives in Three ACP countries of SADC Region’, www.cropwildrelatives.org/sadc-cwr-project) about conservation planning of SADC priority CWR, with the recommendation of an *in situ* regional network for *in situ* conservation that comprises 120 existing protected areas, was completed in 2020 (Magos Brehm, J., et al. (in prep). Conservation planning of crop wild relative diversity in the SADC region); (ii) *in situ* conservation planning of CWR was carried out in Malawi and Tanzania; (iii) within the context of the Training Programme on CWR Conservation Planning, 10 SADC countries (Angola, Botswana, Comoros, Democratic Republic of the Congo, Eswatini, Lesotho, Madagascar, Mozambique, Seychelles, Zimbabwe) and two other countries (Nigeria, Peru) initiated the formulation of conservation plans for national CWR.

ix. In the Czech Republic, selected localities of critically threatened and/or important CWR have continued to be monitored with the aim to propose to plan for their *in situ* conservation.

x. National CWR conservation planning was published for Sweden (Weibull, J. and Phillips, J. (2020). Swedish crop wild relatives: Towards a national strategy for *in situ* conservation of CWR. *Genetic Resources* 1(1):17–23. <https://doi.org/10.46265/genresj.2020.1.17-24>). (KSR #42)

Policy

i. SADC CWR Network project: (i) a document on harmonisation of the Access and Benefit Sharing (ABS) of *in situ* genetic resources within CWR networks was drafted; (ii) both Malawi and Tanzania initiated the preparation of their National Strategic Action Plans (NSAP) for the conservation and use of CWR, while Zambia has revised their existing NSAP. (KSR #26)

ii. A call for policymakers to work with Farmer’s Pride and other stakeholders to ensure adequate policies are in place for *in situ* conservation and sustainable use of plant genetic resources in Europe was published and sent to relevant stakeholders in European countries (see https://more.bham.ac.uk/farmer-spride/wp-content/uploads/sites/19/2020/03/Farmers_Pride_policy_brief_English.pdf). (KSR #26)

iii. In Germany, the regional nature protection authorities were made aware of the importance of using locally grown and multiplied seeds and wild plant species in restoration. (KSR #26)

Act

Conservation actions

i. In Germany, the 3-year project ‘*In-situ* conservation of crop wild relatives with a priority for food and agriculture using umbrella species’, financed by the Federal Ministry of Food and Agriculture, was initiated; one of the objectives is the identification of CWR hotspots and the establishment of genetic reserves in identified sites. (KSR #42)

Collecting CWR in Morocco
Photo: Nigel Maxted



ii. The project 'Vegetation, Culture, and Cultivation: Crop Wild Relatives in Israel' kick-started in 2020 to ensure *in situ* conservation of the wild ancestors of important crops. The project aims to identify CWR hotspots that will be the basis for proposing a World Heritage Tentative Listing linking culture and nature, and creating management instructions for area-based conservation; it involves a consortium of Israeli organisations including the Israel Nature and Parks Authority, the Agricultural Research Organization, the Israel National Gene Bank, KKL (the Jewish National Fund), the Hebrew University, Bar-Ilan University, Tel Aviv University and the Bezalel Academy of Arts and Design, together with other private entities. (KSR #42)

iii. As there is no specific data currently available on the 1,392 global priority CWR, we report on collections made on CWR in general: (1) Within the SADC CWR Network project three main activities regarding CWR *ex situ* conservation took place: (i) Malawi, Tanzania and Zambia collected 47, three and 24 seed samples of CWR, respectively; (ii) some efforts were made in Malawi to distribute the CWR collected to breeders; (iii) the Malawi Plant Genetic Resources Centre (MPGRC) genotyped 35 accessions of wild relatives of rice that have been identified to harbour some drought tolerant genes to share with rice breeders for their use, and documented traits of economic importance of *Vigna unguiculata* L. var *unguiculata*, *Sorghum arundinaceum*, *Oryza barthii*, *O. longistaminata* and *O. punctata* to be shared with breeders for their reference. (2) Within the framework of the 'Multiplication of Crop Wild Relatives (CWR)' project, funded by the Crop Trust, between 2018 and 2020 the ICARDA genebank–Lebanon received from the Millennium Seed Bank

(MSB) a total of 1,166 accessions of various wild relatives and forages for multiplication, characterisation, conservation, safety duplication and distribution; by 2020, a total of 551 accessions out of the 746 that were planned for multiplication were successfully multiplied; a total of 445 accessions were sent for safety duplication to ICARDA–Rabat Genebank, and 469 were deposited in the Svalbard Global Seed Vault. (3) *Aegilops* collection samples being held in the Czech Republic were sent to the Svalbard Seed Vault. (4) *Ex situ* conservation of CWR in Belarus has taken place. (KSR #42)

Communicate

Communications

i. Articles published: (1) Álvarez Muñoz C, et al. (2020). *A list of crop wild relative in situ conservation case studies*. https://more.bham.ac.uk/farmerspride/wp-content/uploads/sites/19/2020/04/MS5_Crop_wild_relative_in_situ_conservation_case_studies.pdf; (2) Bönisch, M. and Frese, L. (2020). 'Designation of genetic reserves for wild celery species in Germany'. *Crop wild relative* 12:4–7.; (3) Engels, J.M.M. and Thormann, I. (2020). 'Main Challenges and Actions Needed to Improve Conservation and Sustainable Use of Our Crop Wild Relatives'. *Plants* 9(8):968. <https://doi.org/10.3390/plants9080968>; (4) Jara, E., et al. (2020). '*Ipomoea noemana* (Convolvulaceae) a new species from Ancash eastern slope in Peru'. *Phytotaxa* 461(4):286–294. <https://doi.org/10.11646/phytotaxa.461.4.5>; (5) Fitzgerald, H., Eisto, K. and Kiviharju, E. (2020). *Viljelykasvien luonnonvaraisten sukulaislajien suojelu Suomessa: Tärkeimmät lajit ja keinoja suojelun toteuttamiseksi*. Luonnonvaraja biotalouden tutkimus 38/2020. Helsinki: Luonnonvarakeskus. <https://jukuri.luke.fi/handle/10024/545929>; (6) Fitzgerald, H., et al. (2020). 'A Nordic network for crop wild relative

conservation'. *Crop wild relative* 12:10–13.; (7) Fitzgerald, H., Eisto, K. and Kiviharju, E. (2020). 'Finnish crop wild relative networking activities'. *Crop wild relative* 12:14–16.; (8) Holubec, V. and Janovská, D. (2020). 'Proč posíláme semena našich zemědělských plodin na Špicberky?' (Why we send seeds of agricultural crops to Svalbard?). *Selská revue* 3:73–74.; (9) Kersey, P.J., et al. (2020). 'Selecting for useful properties of plants and fungi – Novel approaches, opportunities, and challenges'. *Plants, People, Planet* 2:409–420. <https://doi.org/10.1002/ppp3.10136>; (10) Labokas, J. and Karpavičienė, B. (2020). 'National network of genetic reserve sites for medicinal, aromatic plants and CWR conservation in Lithuania'. *Crop wild relative* 12:17–22.; (11) Luke Uutiset. 'Viljelykasvien luonnonvaraisten sukulaislajien suojelu on osa tulevaisuuden ruokaturvaa'. Luonnonvarakeskus uutiset [website], (16 June 2020). Available at: <https://www.luke.fi/uutinen/viljelykasvien-luonnonvaraisten-sukulaislajien-suojelu-on-osa-tulevaisuuden-ruokaturvaa/>. (Accessed 15 August 2021).; (12) Magos Brehm, J., et al. (in prep). Conservation planning of crop wild relative diversity in the SADC region.; (13) Maxted, N., Hunter, D. and Ortiz Rios, R.O. (2020). *Plant Genetic Conservation*. Cambridge, UK: Cambridge University Press.; (14) Mponya, N.K., et al. (2020). 'Development of a prioritised checklist of crop wild relatives for conservation in Malawi'. *African Crop Science Journal* 28(2):279–311. <https://doi.org/10.4314/acsj.v28i2.12>; (15) Negri, V., Raggi, L. and Gigante, D. (2020). 'The Italian Network of Biodiversity: searching for CWR in protected areas'. *Crop wild relative* 12:8–9.; (16) Phillips, J. and Maxted, N. (2020). 'Strength through integrating networks: Combining forces for Genetic Resource Conservation across Europe and the Near East'.



Vicia bithynica (L.) L., a tertiary wild relative of faba bean, with potential to confer resistance to several diseases (*Ascochyta* blight, broomrape and rust), photographed in Portugal
Photo: Joana Magos Brehm

Crop wild relative 12:29–31.; (17) Thormann, I. (2020). 'The German Network of Genetic Reserves'. *Crop wild relative* 12:23–25.; (18) Viruel, J., et al. (2021). 'Crop wild phylorelatives (CWPs): phylogenetic distance, cytogenetic compatibility and breeding system data enable estimation of crop wild relative gene pool classification'. *Botanical Journal of the Linnean Society* 195(1): 1–33. <https://doi.org/10.1093/botlinnean/boaa064>; (19) Weibull, J. and Phillips, J. (2020). 'Swedish crop wild relatives: Towards a national strategy for *in situ* conservation of CWR'. *Genetic Resources* 1(1):17–23. <https://doi.org/10.46265/genresj.2020.1.17-24>; (20) Weibull, J., Hagenblad, J. and Palmé, A. (2020). 'List of Swedish priority Crop Wild Relative taxa'. [Online dataset], (28 September 2020). Available at: <https://doi.org/10.6084/m9.figshare.13135334.v1>. (Accessed 15 August 2021).; (21) Wood, J.R.I., et al. (2020). 'A foundation monograph of *Ipomoea* (Convolvulaceae) in the New World'. *PhytoKeys* 143:1–823. <https://doi.org/10.3897/phytokeys.143.32821>; (22) Zair, W., et al. (2020). 'Complementarity analysis for crop wild relatives in the Fertile Crescent'. *Crop wild relative* 12:26–28. (KSR# 43)

ii. Websites maintained and updated: (1) CWR Global Portal: www.cropwildrelatives.org; (2) Farmer's Pride project: www.farmerspride.eu; (3) LUKE (Natural Resources Institute Finland): <https://www.luke.fi/uutinen/viljelykasvien-luonnonvaraisten-sukulaislajien-suojelu-on-osa-tulevaisuuden-ruokaturvaa/>; (4) Nordic website on CWR: <https://www.nordgen.org/en/our-projects/cwr-conservation-planning/>; (5) SADC CWR Network: www.cropwildrelatives.org/sadc-cwr-net. (KSR# 28)

iii. Eurosite/Farmer's Pride webinar: 'Crop wild relative conservation – adding value to Europe's natural sites' (https://www.youtube.com/watch?v=jz_eb9lloFU). (KSR# 28)

iv. Issue 12 of the newsletter *Crop wild relative* was published in 2020; this issue is focused on reviewing progress in CWR conservation and showcasing examples of good practice. See: https://more.bham.ac.uk/farmerspride/wp-content/uploads/sites/19/2020/09/CWR_Newsletter_Issue_12.pdf. (KSR# 28)

v. Technical guidelines produced: (1) Rubio Teso, M.L., et al. (2020). *Crop wild relatives in Natura 2000 network*. https://more.bham.ac.uk/farmerspride/wp-content/uploads/sites/19/2020/10/MS19_Crop_Wild_Relatives_in_the_Natura_2000_Network.pdf; (2) Rubio Teso, M.L., et al. (2020). *Farmer's Pride: Identifying in situ areas with useful adaptive traits*. https://more.bham.ac.uk/farmerspride/wp-content/uploads/sites/19/2020/10/D3.3_Identifying_in_situ_areas_with_useful_adaptive_traits.pdf; (3) Weise, S., Kreide, S. and Maxted, N. (2020). *Concept for a possible extension of EURISCO for in situ crop wild relative and on-farm landrace data*. https://more.bham.ac.uk/farmerspride/wp-content/uploads/sites/19/2020/10/D2.5_EURISCO_in_situ_extension_concept.pdf; (4) The development of the *Descriptors for Crop Wild Relatives conserved under in situ conditions (CWRI v.1)* by the International Treaty on Plant Genetic Resources for Food and Agriculture involved several members of the CWRSG (Alercia, A., et al. (2020). *Descriptors for Crop Wild Relatives conserved under in situ conditions (CWRI v.1)*. International Treaty on Plant Genetic Resources for Food and Agriculture. Rome: FAO. <http://www.fao.org/3/cb0681en/cb0681en.pdf>). (KSR# 28)

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Summary of activities 2020

Components of Species Conservation Cycle: 3/5

Plan **13**

Act **3**

Communicate **5**

Main KSRs addressed: 26, 28, 42, 43