

Information Resources for Crop Wild Relatives

Crop Wild Relatives (CWR) are wild plants that are closely related to cultivated crop species. These natural resources serve as a reservoir of genetic material, with the potential for use in developing new, improved varieties of crops. The United States is home to a wide variety of CWR, ranging from the ancestors of crops domesticated in the region to cousins of crops originating in other parts of the world. Their critical importance in supporting human welfare is often not considered when conservation priorities are being developed. CWR are threatened by the same factors as any wild plant species – these include land use changes, invasive species, pollution, overgrazing and climate change. Complementary conservation of CWR involves linking *ex situ* storage of germplasm and *in situ* preservation of wild populations in a system that preserves the maximum amount of genetic diversity and makes it available for use. Initial steps to support the conservation of CWR have been taken in the United States, including an inventory of CWR, establishment of a framework for complementary conservation, educational activities, and increased collection of germplasm for *ex situ* conservation. The following publications and websites cover the conservation of CWR, with a focus on North America.

Journal articles

[An inventory of Crop Wild Relatives of the United States](#)

Khoury, C.K., S. Greene, J. Wiersema, N. Maxted, A. Jarvis, and P.C. Struik. 2013. An inventory of crop wild relatives of the United States. *Crop Science* 53:1496–1508.

This publication presents the results of an inventory of 4,600 taxa from 985 genera and 194 plant families that occur in the United States. These include crop wild relatives of potential value in breeding as well as wild species of direct use for food, forage, medicine, herbs, ornamental, and/or environmental restoration purposes. The taxa that are mostly closely related to major food crops are prioritized for conservation.

[Crop wild relatives of the United States require urgent conservation action](#)

Khoury, C.K., Carver, D., Greene, S.L., Williams, K.A., Achicanoy, H.A., Schori, M., León, B., Wiersema, J.H., and Frances, A. (2020). Crop wild relatives of the United States require urgent conservation action. *Proc Natl Acad Sci USA* 117(52): 33351-33357. doi: 10.1073/pnas.2007029117

This publication provides conservation assessments for 600 US native plants that are wild relatives of important agricultural crops. Conservation priorities for these plants were determined by developing a national inventory, compiling occurrence information, modeling potential distributions, and conducting threat assessments and conservation gap analyses.

Supplemental Interactive Data is available at https://dcarver1.github.io/cwrUSA_maps/?p=0.

[Toward Integrated Conservation of North America's Crop Wild Relatives](#)

Khoury, C.K., Greene, S.L., Krishnan, S., Miller, A.J., Moreau, T., Williams, K.A., Rodriguez-Bonilla, L., Spurrier, C.S., Zalapa, J., Nabhan, G.P. 2020. Toward Integrated Conservation of North America's Crop Wild Relatives. *Natural Areas J.*, 40(1):96-100 (2020).

Conservation of crop wild relatives requires coordination of efforts among land management, botanical and agricultural science organizations. Five priorities for action on conservation, use and sharing of information on CWR are presented in this paper.

[Trans Situ Conservation of Crop Wild Relatives](#)

Riordan, E.C. and Nabhan, G.P. Trans Situ Conservation of Crop Wild Relatives. 2019. Crop Science 59(6): 2387-2403.

A case study of the conservation of crop wild relatives in the United States-Mexico desert borderlands.

Online mapping application

[Crop Wild Relatives of the U.S.](#)

This interactive mapping application offers an interactive exploration of the distributions and conservation status of the 600 crop wild relatives that were assessed for the Khoury and Carver et al. 2020 publication cited above. It allows the display of occurrences and potential distributions predicted by modeling of the 600 species. It also includes geographic and ecoregion conservation gap analyses that serve to identify areas of priority and conservation needs for selected species. Species information displayed may be filtered by taxonomy, conservation status, or geographic location. An instructional video available on the website provides a helpful introduction to using the maps.

Interagency Framework for Collaboration on Crop Wild Relatives

[The USDA Forest Service and Agricultural Research Service Joint Strategic Framework on the Conservation and Use of Native Crop Wild Relatives in the United States](#)

This Framework presents the approach developed by the USFS and ARS to link *in situ* conservation of CWR on USFS-managed National Forests and Grasslands with *ex situ* conservation of germplasm in the US National Plant Germplasm System.

Books

[Volume 1 of North American Crop Wild Relatives: Conservation Strategies](#)

Greene, S.L., Williams, K.A., Khoury, C.K., Kantar, M.B., Marek, L.F., editors. 2018. North American Crop Wild Relatives. Volume 1: Conservation Strategies. New York, NY: Springer, Cham. 346 p.

The first volume of this book highlights efforts taken by Canada, the United States, Mexico to conserve and use crop wild relatives and wild utilized plants and provides essential information on best practices for collecting and conserving them.

[Volume 2 of North American Crop Wild Relatives: Important Species](#)

Greene, S.L., Williams, K.A., Khoury, C.K., Kantar, M.B., Marek, L.F., editors. 2019. North American Crop Wild Relatives. Volume 2: Important Species. New York, NY: Springer, Cham. 740 p.

The second volume of this book describes in detail the important crop wild relatives and wild utilized species found in Canada, the United States and Mexico. Each chapter covers the crop wild relatives for a specific crop and includes information on the relationship of the wild plants to the crop, challenges for cultivation of the crop, use of the crop wild relatives for crop improvement, wild utilized species, and conservation status (*in situ* and *ex situ*). Maps of the distribution of many of the crop wild relatives are also included.

[Crop Wild Relatives: A Manual of in situ Conservation](#)

Hunter, D. and Heywood, V., editors. 2010. Crop Wild Relatives: A Manual of *in situ* Conservation. London: Earthscan. 452 p.

This downloadable book presents good practices and lessons learned about effective conservation of crop wild relatives from practical experiences in Armenia, Bolivia, Madagascar, Sri Lanka and Uzbekistan.

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