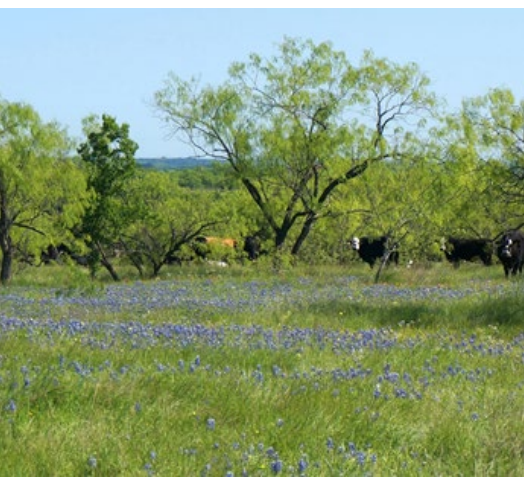




United States Department of Agriculture
Natural Resources Conservation Service

PLANTS

NRCS Documents and Resources for Pollinator Conservation and Enhancements, compiled by Christine Taliga



USDA, NRCS. 2021.
The PLANTS
Database
(<http://plants.usda.gov>, 11/02/2021).

National Plant Data
Team, Greensboro,
NC USA

Pollinator Resources For Working Lands



NRCS State Specific Technical Resources

Insect Pollinators of Alaska. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1361251.pdf

Pollinator Biology and Habitat in California. https://www.earthcorps.org/ftp/ECScience/Projects/Handbook/nrcs143_022094.pdf

Protecting Pollinators. NRCS Caribbean Area. <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/pr/plantsanimals/?cid=stelprdb1256013>

Iowa's Native Thistles. <https://www.nrcs.usda.gov/wps/portal/nrcs/publications/plantmaterials/pmc/west/capmc/pub/>

Pollinator Resources Minnesota. <https://www.nrcs.usda.gov/wps/portal/nrcs/mn/technical/ecoscience/bio/STELPRDB1261677/>

Pollinator Resources Montana. <https://www.nrcs.usda.gov/wps/portal/nrcs/mt/plantsanimals/pollinators/>

New Hampshire Pollinator Resources. <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nh/technical/ecoscience/?cid=stelprdb1078433>

Pollinators. Georgia Association of Conservation Districts. <https://www.gacd.us/pollinators>

Pollinators. New Jersey. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nj/technical/?cid=nrcs141p2_018655

Pollinator Fact Sheet. North Dakota. https://mcscd.com/wp-content/uploads/2013/04/pollinators_fact_sheet.pdf

Pollinator Conservation Resources: North Central Region. <https://xerces.org/pollinator-resource-center/north-central>

Plant Materials for Pollinators and Other Beneficial Insects in Eastern Utah and Western Colorado.
https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/idpmctn11889.pdf

Plants for Pollinators in the Intermountain West. http://www.idabees.org/uploads/6/7/3/6/6736824/pollinatorplants-nrcs-143_022313.pdf

Pollinator Resources Wisconsin. <https://pollinators.wisc.edu/pollinator-resources/>

NRCS National Technical Resources

Preventing or Mitigating Potential Negative Impacts of Pesticides on Pollinators Using Integrated Pest Management and Other Conservation Practices.

<https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=34828.wba>

National Range and Pasture Handbook.

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Be a Friend to Pollinators.

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/plantsanimals/pollinate/?cid=stelprdb1142431>

Pollinator Value of NRCS Plant Releases used in Conservation Plantings.

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/plantmaterials/technical/publications/?cid=stelprdb1044847>

Preventing or Mitigating Potential Negative Impacts of Pesticides on Pollinators Using Integrated Pest Management and Other Conservation Practices.

<https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=34828.wba>



Pollinator Research

Pollinator Nutrition

Alaux Cedric. 2021. [Pollen nutrition fosters honeybee tolerance to pesticides](https://doi.org/10.1098/rsos.210818). R. Soc. open sci. 8210818210818 <http://doi.org/10.1098/rsos.210818>

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Pollinator Research Related to Habitat

Black, S. H., Shepherd, M., & Vaughan, M. (2011). Rangeland management for pollinators. *Rangelands*, 33(3), 9-13.
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Irwin, R. E., Cook, D., Richardson, L. L., Manson, J. S., & Gardner, D. R. (2014). Secondary compounds in floral rewards of toxic rangeland plants: impacts on pollinators. *Journal of Agricultural and Food Chemistry*, 62(30), 7335-7344.
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J L Sless T, Branstetter MG, Gillung JP, Krichilsky EA, Tobin KB, Straka J, Rozen JG, Freitas FV, Martins AC, Bossert S, Searle JB, Danforth BN. [Phylogenetic relationships and the evolution of host preferences in the largest clade of brood parasitic bees \(Apidae: Nomadinae\)](#). *Mol Phylogenet Evol*. 2021 Oct 16:107326. doi: 10.1016/j.ympev.2021.107326. Epub ahead of print. PMID: 34666170.

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<https://doi.org/10.1038/nplants.2016.92>

General Pollinator Research

Bosch J, Osorio-Canadas S, Sgolastra F, Vicens N. [Use of a Managed Solitary Bee to Pollinate Almonds: Population Sustainability and Increased Fruit Set](#). *Insects*. 2021 Jan 11;12(1):E56. <https://doi.org/10.3390/insects12010056>.

Brittain, C., Williams, N., Kremen, C., & Klein, A. M. (2013). Synergistic effects of non-Apis bees and honey bees for pollination services. *Proceedings of the Royal Society B: Biological Sciences*, 280(1754), 20122767. <https://doi.org/10.1098/rspb.2012.2767>

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Otto, C.R.V., 2018, Assessing the impact of the Conservation Reserve Program on honey bee health: U.S. Geological Survey Fact Sheet 2018–3082, 2 p., <https://doi.org/10.3133/fs20183082>.

Otto, C.R.V., Smart, A., Cornman, R.S., Simanonok, M., and Iwanowicz, D.D., 2020, Forage and habitat for pollinators in the northern Great Plains—Implications for U.S. Department of Agriculture conservation programs: U.S. Geological Survey Open-File Report 2020–1037, 64 p., <https://doi.org/10.3133/ofr20201037>.

Simanonok, S., and Otto, C.R.V., 2020, Flowering plants preferred by bees of the Prairie Pothole Region: U.S. Geological Survey Fact Sheet 2020–3038, 2 p., <https://doi.org/10.3133/fs20203038>.

Pollinator Websites and NRCS Technical and Program Resources



Websites

Conservation Webinar Portal Pollinator Programs: <http://conservationwebinars.net/search?SearchableText=pollinators>

Conservation Innovation Grants Pollinator Projects:

<https://www.nrcs.usda.gov/wps/portal/nrcs/cigsearch/national/programs/financial/cig/cigsearch/?svsn=National&generalText=pollinator>

New England Pollinator Partnership:

<https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/me/technical/ecoscience/threat/?cid=nrcseprd1575616>

NRCS Insects and Pollinators:

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/>

How Farmers Help Pollinators:

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/farmers/>

How Gardeners Help Pollinators:

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/gardeners/>

Monarch Butterflies NRCS:

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/plantsanimals/pollinate/?cid=nrcseprd402207>

NRCS Conservation Affects Assessment Projects (CEAP) for Pollinators:

https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/nra/ceap/na/?cid=nrcs143_014151

NRCS Plant Materials Publications Relating to Pollinators

<https://www.nrcs.usda.gov/wps/portal/nrcs/rpublications/plantmaterials/technical/publications/?ptype=PL>

NRCS Plant Materials Publications for Monarch Conservation:

<https://www.nrcs.usda.gov/wps/portal/nrcs/rpublications/plantmaterials/technical/publications/?ptype=mon>

USDA Pollinators:

<https://www.usda.gov/pollinators>

USDA Research, Education, and Economics (REE)

<https://www.ree.usda.gov/pollinators>

US Fish and Wildlife Service: <https://www.fws.gov/pollinators/>

Natural Resources Conservation Service (NRCS) Financial and Technical Programs for Pollinators

NRCS offers more than three dozen conservation practices that can benefit pollinators. Although many of these practices target improving grazing lands or reducing soil erosion, small modifications to the practices can yield benefits to pollinator species. The shared link provides an overview of NRCS conservation work for pollinators and pollinator conservation and habitat enhancement resources.

Agricultural Conservation Easement Program (ACEP):

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/acep/>

Conservation Reserve Program (CRP): <https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index>

Conservation Stewardship Program (CSP), a program for producers who want to take their conservation efforts to the next level:

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/csp/?cid=nrcseprd1708431>

Highlights of Pollinator Enhancement Opportunities

[E327A](#) Conservation cover for pollinators and beneficial insects

[E327B](#) Establish Monarch butterfly habitat

[E328J](#) Improved crop rotation to provide benefits to pollinators

[E328M](#) Diversify crop rotation with canola or sunflower to benefit pollinators

[E386D](#) Enhanced field borders to increase food for pollinators along the edge(s) of a field

[E420A](#) Establish pollinator habitat

[E420B](#) Establish monarch butterfly habitat

[E512I](#) Establish pollinator and/or beneficial insect and/or monarch habitat

[E528B](#) Grazing management that improves monarch butterfly habitat

Environmental Quality Enhancement Program (EQIP) provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits through participation in voluntary conservation programs.

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/>

Honey Bee Initiative

<https://www.nrcs.usda.gov/wps/portal/nrcs/mt/programs/financial/eqip/6c87a831-7061-4378-b564-765fe359a60a/>

Regional Conservation Partnership Program (RCPP)

Improving Wildlife and Pollinator Habitat on Farms:

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ky/programs/farmbill/rcpp/?cid=nrcseprd1447050>

Healthy Forests Reserve Program: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/forests/>



Pollinator Partner Resources and Websites

Agroforestry Notes

Sustaining Native Bee Habitat for Crop Pollination. <https://www.fs.usda.gov/nac/assets/documents/agroforestrynotes/an32g06.pdf>

Improving Forage For Native Bee Crop Pollinators.

https://static1.squarespace.com/static/5a849d4c8dd041c9c07a8e4c/t/5a9efe9d0852293780020460/1520369_310255/agroforestrynotes33-bee_forage.pdf

Enhancing Nest Sites for Native Bee Crop Pollinators. <https://xerces.org/publications/periodicals/articles/enhancing-nest-sites-for-native-bee-crop-pollinators>

U.S. Forest Service

Bat Pollination. <https://www.fs.fed.us/wildflowers/pollinators/animals/bats.shtml>

Bird Pollination. <https://www.fs.fed.us/wildflowers/pollinators/animals/birds.shtml>

Bee Basics. An Introduction of Native Bees https://efotg.sc.egov.usda.gov/references/public/SC/Bee_Basics_North_American_Bee_ID.pdf

Economic Research Service (ERS)

Bond, J., Plattner, K., & Hunt, K. (2014). Fruit and tree nuts outlook: economic insight US pollination-services market. *USDA: Economic Research Service Situation and Outlook FTS-357SA*. https://www.ers.usda.gov/webdocs/outlooks/37059/49131_special-article-september_-pollinator-service-market-4-.pdf?v=6937.9

Hitaj, C., Smith, D., & Hellerstein, D. (2017). Declines in Pollinator Forage Suitability Were Concentrated in the Midwest, the Over-Summering Grounds for Many Honeybees. *Amber Waves*.

Smith, D., & Hitaj, C. (2019). Patterns of Pesticide Use, Exposure, and Toxicity Jointly Determine Impacts on Honeybees and Other Pollinators. *Amber Waves: The Economics of Food, Farming, Natural Resources, and Rural America*, (06). DOI: 10.22004/ag.econ.302723

Arkansas Monarch and Pollinator Conservation Plan. <http://arkansasmonarchs.org/wp-content/uploads/2017/10/Arkansas-Monarch-and-Pollinator-Conservation-Plan-Draft.pdf>

Sustainable Agriculture Research and Education (SARE). Cover Cropping for Pollinators and other Beneficial Insects. <https://www.sare.org/wp-content/uploads/Cover-Cropping-for-Pollinators-and-Beneficial-Insects.pdf?inlinedownload=1>

USDA

[USDA Pollinator Dashboard](#)

U.S.G.S.

[Native Bee Inventory and Monitoring Lab](#).

Additional Pollinator and Habitat Websites and Resources

National Association of Conservation Districts (NACD): <https://www.nacdnet.org/about-nacd/what-we-do/pollinators/>

Keystone Policy Center (Honey Bee Health Coalition and Monarch Collaborative): <https://www.keystone.org/our-work/agriculture/>

Monarch Joint Venture: <https://monarchjointventure.org/> and <https://monarchnet.org/library>

Pollinator Partnership: <https://www.pollinator.org/>

Pheasants and Quail Forever: <https://www.pheasantsforever.org/> and <https://quailforever.org/>

Pollinator Stewardship Council. <https://pollinatorstewardship.org/index.php/creating-pollinator-habitat/>

Xerces Society for Invertebrate Conservation: <https://www.xerces.org>

The Nature Conservancy: <https://www.nature.org/en-us/>

Entomological Society of America: <https://www.ser.org/default.aspx>

Nature Serve: <https://www.natureserve.org/>

Society for Ecological Restoration: <https://www.ser.org/default.aspx>

Society for Range Management: <https://rangelands.org/>

Soil and Water Conservation Society: <https://www.swcs.org/>

Weed Science Society of America: <https://wssa.net/>

State Specific University Extension Services such as:

University of Wisconsin Extension: [Supporting Native Bees](#).

University of Minnesota Extension: [Growing Landscapes to help Bees](#).

University of Hawai'i at Mānoa: [Helping Hawai'i's Pollinators](#).

Resources for Monarchs and Field Guides



Resources for Monarchs

[NRCS Plant Materials Program Resources for Monarchs.](#)

[NRCS Working Lands For Wildlife Monarch Resources.](#)

[NRCS Monarch Butterfly Conservation Report of Activities.](#)

[NRCS Conservation Innovation Grant Projects](#)

[Monarch Joint Venture Conservation Resources](#)

Explore University Extension Resources such as:

[Enhanced Monarch Butterfly Conservation in Iowa.](#) Iowa State University Extension.

Field Guides- a sample of resources available (not intended to be exhaustive)

[Alaska Bee Atlas.](#) University of Alaska Anchorage

[Apoidea of Maryland, images and descriptions from Sam Droege:](#) U.S.G.S

[Bee Genera of Eastern Canada.](#) Biological Survey of Canada

[Bee Identification Guides.](#) Pollinator Partnership

[Bee Identification and Monitoring Guides.](#) Xerces Society for Invertebrate Conservation

[Bees of Maryland.](#) North American Native Bee Collaborative

[Bees of North Carolina.](#) North Carolina State University

[Bees of Ohio.](#) North American Native Bee Collaborative

[Bumble Bees of Alaska: A Field Guide.](#) National Park Service.

[Bumble Bees of the Eastern United States.](#) U.S. Forest Service

[Common Maryland Bees.](#) Maryland Department of Natural Resources

[Guide to MN Bumble Bees.](#) University of Minnesota Extension

[Montana Bee Identification.](#) Montana State University; [Montana Field Guide](#)

[Texas Native Bees.](#) University of Texas at Austin

[Wisconsin Bee Identification Guide.](#) University of Wisconsin Extension