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NATURAL RESOURCES CONSERVATION SERVICE

Monarch Butterfly Conservation on Working Lands

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INTRODUCTION

The monarch butterfly *(Danaus plexippus)* is one of the most iconic butterflies in North America and is known in part for its annual multi-generational migration from overwintering sites in central Mexico and coastal California to as far north as Canada. Multiple critical population stressors including the loss and degradation of habitat across the species' range have led to a significant decrease in the number of monarchs in the U.S. over the past few decades. To help address this declining trend, ongoing conservation efforts are focused on establishing and managing monarch habitats in several important regions.

Specific conservation activities include increasing the abundance of native milkweed plants (*Asclepias* spp.) – the sole source of food for monarch caterpillars – and the availability of native nectar rich flowers throughout the monarch's range.

NRCS is working with America's farmers, ranchers, and forest managers on voluntary conservation efforts to combat the decline of monarchs on private lands by establishing new habitat and managing existing habitat for monarchs and pollinators.

ROLE OF NRCS

Two-thirds of the continental United States is privately owned and agricultural producers are playing a crucial role in helping recover the monarch butterfly. Given the seasonal distribution and migration of the monarch across agricultural lands, NRCS has been making a concerted effort to work with producers to create and enhance monarch habitat on their land in ways that are compatible with their agricultural operations. By creating and maintaining enough habitat through voluntary, production compatible conservation, NRCS provides direct benefits to monarch butterflies while helping to reduce erosion, increase soil health, control invasive species, provide quality forage for livestock, and make agricultural operations more resilient and productive.

In 2015 the USFWS identified the migratory corridor from Texas to the Midwest as a key region for monarch habitat conservation. In this region, 94% of land is private and almost 70% of the land is in private agricultural land use. NRCS launched the Monarch Butterfly Habitat Development Project in November 2015 to provide a targeted approach to help farmers, ranchers, and private landowners voluntarily manage habitat in the core of the monarch's migration route and breeding habitat. Through Farm Bill funded programs, NRCS helps producers integrate butterfly friendly practices on croplands and grazing lands and protect the habitat with conservation easements.

The agency's primary geographic focus for monarch habitat has been on Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Ohio, Oklahoma, Texas, and Wisconsin, the primary eastern monarch migration corridor in a 10-state area of the central U.S. (see map, Figure 1). While monarchs can benefit from more than three dozen NRCS conservation practices, this 10-state effort targets practices at the heart of the eastern migration corridor within the Midwest and Great Plains. In general, the Midwest habitat strategy is focused on the planting of milkweed and nectar-rich plants to support breeding. In the Great Plains habitat strategy, the effort is focused on improving monarch habitat on existing grasslands to support migration.

Monarch Habitat Management: A Unique Partnership Between Naturalist and Rancher - Oklahoma

The naturalist-rancher duo, Bruce Reynolds and Julie Hoffman, found they could compromise when it came to reclaiming grazing lands from encroaching conifers in Murray County, Oklahoma. By removing invading conifers, Bruce has better forage for cattle, and Julie has top-notch monarch habitat.
Photo credit: USDA, NRCS

Figure 1. Targeted states for the NRCS monarch butterfly effort

Monarch Butterfly Conservation on Working Lands

Photo credit: Lance Cheung, USDA

The role of NRCS is providing technical and financial assistance to private landowners to implement conservation practices that are compatible with and supportive of agricultural working lands. The primary programs used for monarch habitat projects include the Environmental Quality Incentives Program (EQIP), the Regional Conservation Partners Program (RCPP), the AgriculturalConservation Easement Program (ACEP), and the Conservation Stewardship Program (CSP).

To support the effective application of conservation practices, NRCS Central National Technology Support Center biologists and State biologists facilitated the development of specific sub-regional wildlife habitat evaluation guides (WHEGs) for the monarch. The purpose of a WHEG is to assess current monarch habitat conditions, provide habitat development alternatives based on these initial findings, and predict and plan habitat improvements. Planned outcomes are achieved through the implementation of selected conservation practice standards and enhancements conditioned by monarch specific measures.

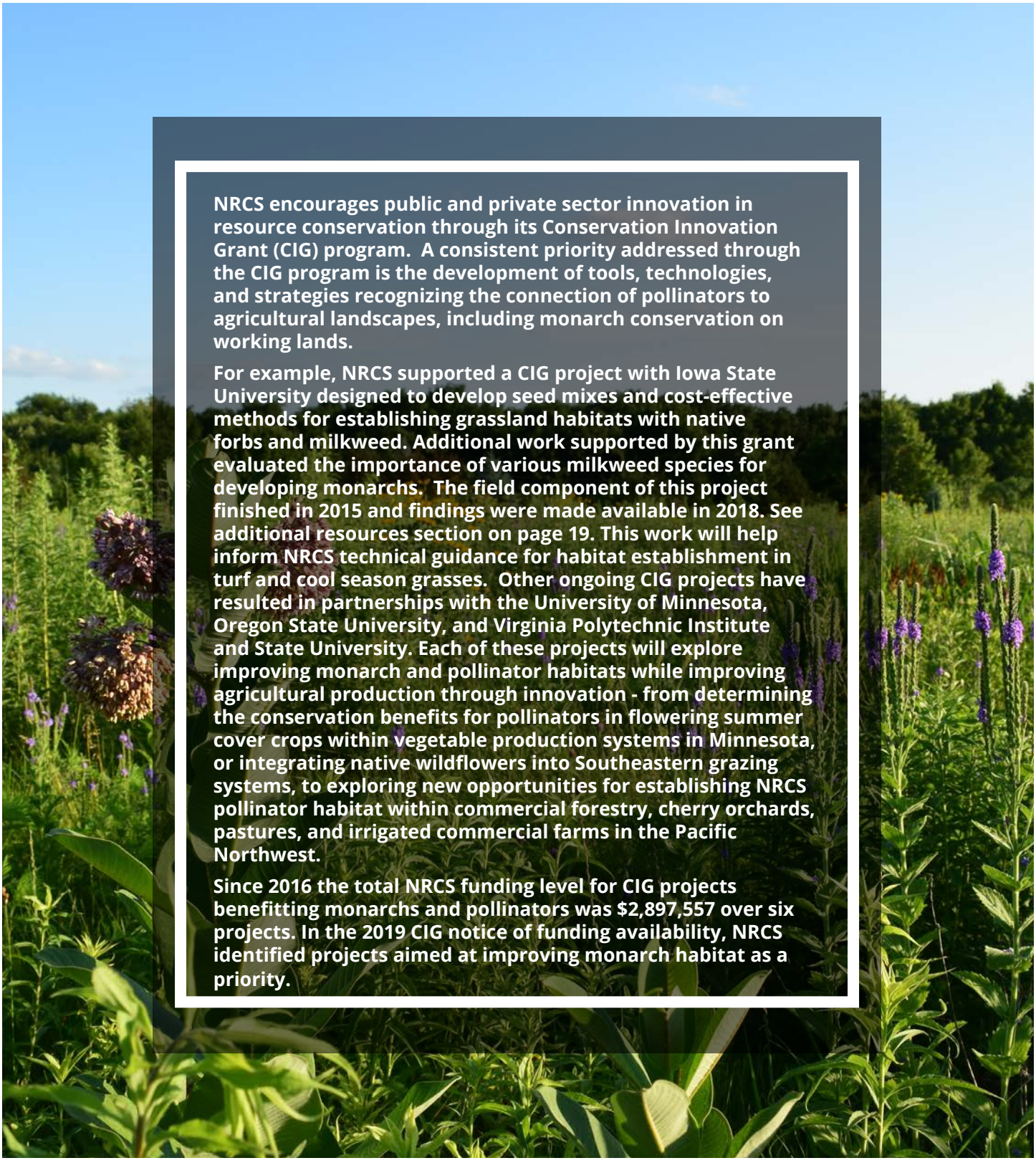
After completing a monarch WHEG, the planner works with the client to develop and evaluate alternatives to address the monarch habitat conditions that do not meet habitat quality criteria. A conservation practice may be a structural or vegetative measure, or a management activity used to restore, enhance, or protect monarch habitat. The suite of practices and enhancements chosen becomes the conservation plan, a record of the client's voluntary decisions.

In addition to the WHEGs, NRCS decision support tools and on the ground training courses support the implementation of monarch conservation activities specific to the Northern and Southern Great Plains, the greater Appalachian Mountains, Midwest and Gulf Coastal Plains. These tools and training courses are used by NRCS biologists, planners, and NRCS partners engaged in implementation of on the ground monarch habitat conservation activities. NRCS also maintains regional plant lists of species preferred by monarch butterflies. See additional resources section on page 19.

NRCS plant materials centers, working with other NRCS staff and Xerces Society partners, have produced online regional milkweed guides and are currently evaluating methods to improve the establishment of milkweed in conservation plantings. See additional resources section on page 19. Plant materials specialists also continue to release geographically appropriate plant species to commercial growers that benefit many pollinators and insects and are nectar sources for monarchs. Plant materials center and NRCS staff working with partners have developed regional plant lists, including milkweed and important nectar rich species to support NRCS monarch habitat efforts.

In addition, to respond to seed shortages, cost challenges, and new species becoming commercially available, NRCS has expanded the monarch butterfly habitat species planting lists for fiscal year 2020.

Figure 2: A patchwork of legume cover crop mixtures being evaluated by researchers at the University of Minnesota for their contributions to soil nitrogen and beneficial insect habitat. Photo by Julie Grossman, principal investigator, the University of Minnesota.



NRCS encourages public and private sector innovation in resource conservation through its Conservation Innovation Grant (CIG) program. A consistent priority addressed through the CIG program is the development of tools, technologies, and strategies recognizing the connection of pollinators to agricultural landscapes, including monarch conservation on working lands.

For example, NRCS supported a CIG project with Iowa State University designed to develop seed mixes and cost-effective methods for establishing grassland habitats with native forbs and milkweed. Additional work supported by this grant evaluated the importance of various milkweed species for developing monarchs. The field component of this project finished in 2015 and findings were made available in 2018. See additional resources section on page 19. This work will help inform NRCS technical guidance for habitat establishment in turf and cool season grasses. Other ongoing CIG projects have resulted in partnerships with the University of Minnesota, Oregon State University, and Virginia Polytechnic Institute and State University. Each of these projects will explore improving monarch and pollinator habitats while improving agricultural production through innovation - from determining the conservation benefits for pollinators in flowering summer cover crops within vegetable production systems in Minnesota, or integrating native wildflowers into Southeastern grazing systems, to exploring new opportunities for establishing NRCS pollinator habitat within commercial forestry, cherry orchards, pastures, and irrigated commercial farms in the Pacific Northwest.

Since 2016 the total NRCS funding level for CIG projects benefitting monarchs and pollinators was $2,897,557 over six projects. In the 2019 CIG notice of funding availability, NRCS identified projects aimed at improving monarch habitat as a priority.

Photo credit: J. Pohl, Iowa State University

Monarch Butterfly Conservation on Working Lands

In 2017, the Monarch Butterfly Habitat Development Project was converted into the Working Lands for Wildlife (WLFW) landscape conservation initiative as its ninth national target species. See additional resources section on page 19. WLFW was launched in 2012 in partnership with the USFWS. This collaborative inter-agency partnership focuses Farm Bill program funds using applied science to achieve specific conservation outcomes. In addition, NRCS provides regulatory predictability to landowners who voluntarily implement habitat conservation for certain at-risk WLFW species. Targeted implementation of NRCS programs not only improves species conservation efforts in strategic landscapes, but also reduces the need for new or increased regulatory protections under the Endangered Species Act (ESA) in the future.

Within the agricultural community in the U.S. there is concern that new regulatory protections for the monarch could be added under the ESA. To address these concerns, the 2016 NRCS-USFWS Monarch Butterfly Conference Report was developed to provide regulatory predictability to producers who participate in voluntary conservation efforts with NRCS.

ESA predictability is not tied to a specific NRCS program. Rather, predictability within the conference report occurs through implementation of an NRCS conservation plan with practices following specific conservation measures that are protective of monarch butterflies or their habitat.

When monarch habitat is identified as a resource concern during the conservation planning process, producers are asked about their interest in establishing or managing monarch habitat. NRCS field staff then develop plans for producers that include monarch-specific conservation practices and associated measures. If the landowner continues to manage their land following this plan, predictability is assured by the USFWS for up to 30 years. Participating landowners do not need to consult with USFWS themselves. The required consultation has already occurred between NRCS and the USFWS. Landowner privacy is protected by accomplishment reporting that aggregates data to be anonymous before it is submitted to USFWS. The emphasis of the partnership is on voluntary rather than mandatory conservation.

CONSERVATION NEED:
Habitat Establishment

NRCS provides technical and financial assistance to establish new habitat for the monarch butterfly. Establishment practices in the Farm Bill include wildlife habitat planting, conservation cover, critical area planting, field border, forage and biomass planting, range planting, and others.

Photo credit: Dennis Larson, USDA, NRCS

CONSERVATION NEED:
Habitat Management

NRCS provides technical and financial assistance to manage existing habitats to make them more suitable for supporting larger numbers of monarchs and pollinators. Management practices in the Farm Bill include brush management, herbaceous weed treatment, prescribed burning, prescribed grazing, and others.

Photo credit: Kristen Baum, Oklahoma State University

Primary WLFW Monarch Butterfly Conservation Practices

Establishment Practices

- Critical Area Planting
- Conservation Cover
- Cover Crop
- Field Border
- Filter Strip
- Forage and Biomass Planting
- Hedgerow Planting
- Range Planting
- Tree/Shrub Establishment
- Wildlife Habitat Planting

Management Practices

- Brush Management
- Early Successional Habitat Development
- Herbaceous Weed Treatment
- Integrated Pest Management Conservation System
- Prescribed Burning
- Prescribed Grazing
- Residue and Tillage Management/ No Till
- Upland Wildlife Habitat Management
- Wetland Wildlife Habitat Management

Monarch Butterfly Conservation on Working Lands

In addition to the WLFW activities, NRCS recently became a partner in the Mid-America Monarch Conservation Strategy by the Midwest Association of Fish and Wildlife Agencies. NRCS staff collaborate to identify conservation targets, focus programs, and coordinate strategies that provide a blueprint for reversing the decline of monarchs from 2018-2038. See additional resources section on page 19. The Mid-America Monarch Conservation Strategy builds on existing efforts of local, state, and federal agencies, and private organizations and individuals. It covers a 16-state region stretching from Texas to the Midwest that encompasses the primary breeding and migration corridor for eastern monarchs. Other eastern monarch states are also collaborating with the plan, which identifies conservation goals and strategies for improving habitats in natural areas, agricultural lands, urban lands, and rights of way. State and federal wildlife agencies and partners establish milkweed plants where it is lacking and create diverse landscapes with nectar-rich plant species that bloom during seasons when monarchs are present.

NRCS has also partnered with the National Fish and Wildlife Foundation, Soil and Water Conservation Districts, Pheasants Forever/Quail Forever, The Xerces Society, and others to increase staffing capacity by providing partner biologists who help customize conservation plans for producers. This helps NRCS' field staff better deliver conservation practices that support monarch recovery.

Monarchs - Texan By Nature

Texan by Nature is a grassroots organization founded by former First Lady Laura Bush to unite business and conservation leaders who believe Texas' prosperity is dependent on the conservation of the state's natural resources. Texan by Nature sponsored the first monarch symposium in Texas in 2017 and has brought numerous agencies and organizations together to address conservation needs of the monarch. NRCS strongly supports this Texas based organization and others in the development of state conservation plan for monarchs.

Photo credit: Lance Cheung, USDA

Photo credit: USDA, NRCS

PROGRESS FOR MONARCH BUTTERFLIES

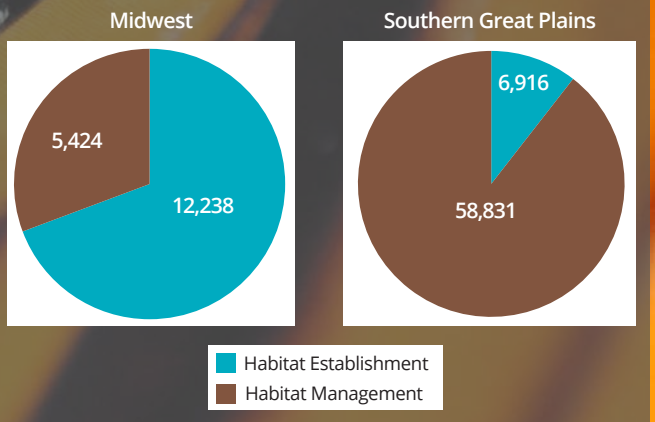
NRCS reports on Farm Bill conservation program outputs such as acres, miles, and feet of conservation practices. NRCS submitted a summary of the WLFW Monarch Butterfly output data to the USFWS in late 2018 for inclusion in the Species Status Assessment (SSA) for the monarch butterfly. The SSA will be used to make a final recommendation regarding an ESA listing decision by USFWS. NRCS periodically conducts multi-year assessments to determine conservation outcomes for target species. For the years 2016 to 2019, WLFW planned and implemented over 19,000 acres of habitat establishment and over 64,000 acres of habitat management in the 10 targeted states.

Habitat establishment acres in the Midwest states totaled 12,238, approximately twice that of the Great Plains states where 6,916 acres were established for monarchs. Minnesota and Iowa had the highest numbers of habitat acres established. Acres of managed habitat were 5,424 in the Midwest while acres managed reached 58,831 in the Great Plains. Effective habitat management can not only restore pre-existing habitat conditions but often results in significant increases in "carrying capacity" - the ability of habitat to support larger numbers of individual monarchs – by, for example, increasing the number of milkweed or nectar rich plants per acre. Total acres managed were highest in Kansas, Texas, and Oklahoma respectively.

WLFW Monarch Butterfly:
Planned and Implemented Acres, 2016-2019

Region	State	Habitat Establishment	Habitat Management
Midwest States	Illinois	281	95
	Indiana	1,356	11
	Iowa	3,038	2,354
	Minnesota	3,103	54
	Missouri	834	128
	Ohio	91	43
	Wisconsin	3,535	2,739
	Subtotals	**12,238**	**5,424**
Great Plains States	Kansas	4,930	21,416
	Oklahoma	85	16,494
	Texas	1,901	20,921
	Subtotals	**6,916**	**58,831**
	Grand Totals	**19,151**	**64,255**

WLFW Monarch Butterfly
Planned and Applied Practices, 2016-2019



Monarch Butterfly Conservation on Working Lands

In addition to the WLFW Monarch Butterfly efforts for the monarch, several other NRCS programs and practices also benefit monarchs by creating habitats for pollinators across the U.S. For example, in 2014 NRCS launched a targeted effort to accelerate conservation activities where more than two-thirds of the managed honeybee population spends the summer months pollinating crops and building strength to survive winter. Assistance is available for producers in Michigan, Minnesota, Montana, North Dakota, South Dakota, and Wisconsin. Now in its sixth year, the effort has already enhanced over 161,000 acres for honeybees.

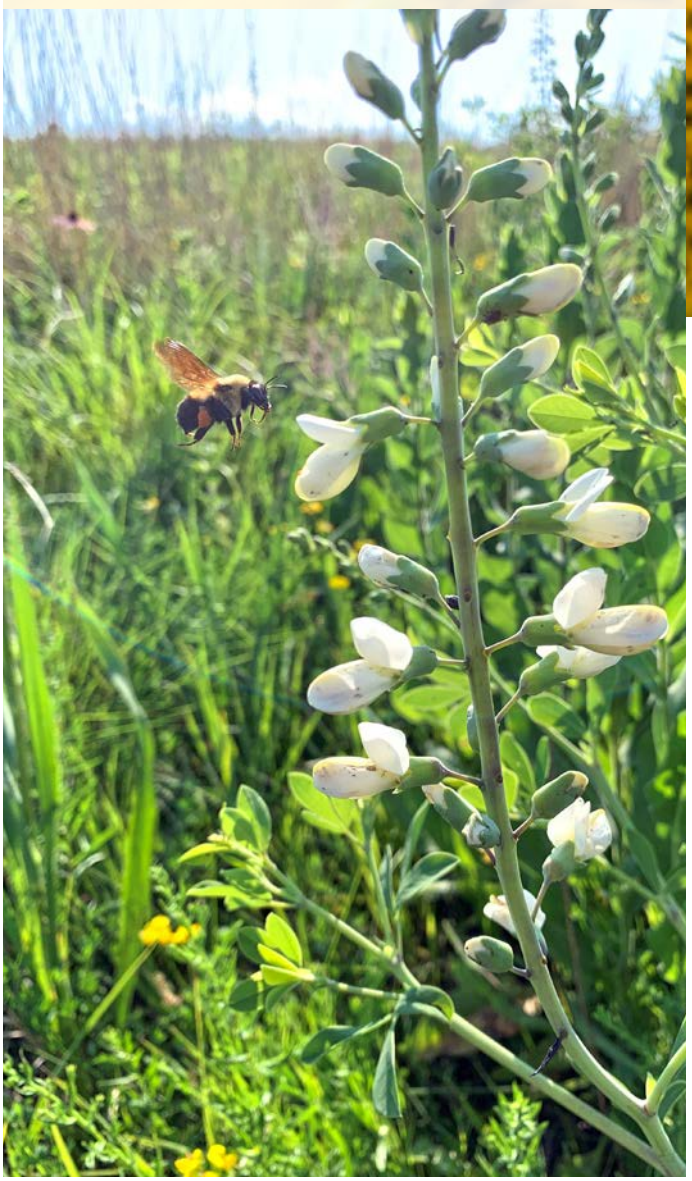


Photo credit: Christine Taliga, USDA, NRCS

Photo credit: Preston Keres, USDA

Partnering for Monarchs in Missouri

The National Fish and Wildlife Foundation and Quail Forever have partnered with NRCS through the Regional Conservation Partnership Program (RCPP) to help landowners manage monarch habitat in Missouri. The “Improving Working Lands for Monarch Butterflies” project has been extremely successful in northwest Missouri. The RCPP program received tremendous interest and resulted in conservation plans for 95 agricultural operations and nearly 1,500 acres of monarch habitat. Additionally, the overwhelming response prompted 12,190 acres of monarch habitat to be established through other NRCS programs.

Through the CSP NRCS offers additional opportunities for producers to enhance wildlife habitat by building on existing conservation efforts while strengthening agricultural operations. In 2016, CSP developed four enhancements (Conservation cover for pollinators and beneficial insects, Establish monarch butterfly habitat, Improved crop rotation to provide benefits to pollinators, Enhanced field borders to increase food for pollinators along the edge(s) of a field) focused on establishing habitat for monarchs and other pollinators. Through these enhancements, over 325,000 acres have been managed to date to improve outcomes for pollinator habitats.

Photo credit: Bob Nichols, USDA

Photo credit: Lance Cheung, USDA

Figure 3. Acres of CSP enhancements in the U.S.

Monarch Butterfly Conservation on Working Lands

A Tour de Force for Pollinators Illinois

With the help of the Conservation Reserve Program and a conservation plan from NRCS, Charli Gregory (above) and husband Mitch have created 30-plus acres of ideal pollinator habitat--so ideal, in fact, that they've hosted large fall migrations of monarchs for the past three years in a row. "For the last two years we have given tours every morning and evening during the migration, so we are definitely spreading the word about the monarch," Charli said.

They continue to work very closely with NRCS staff in Peoria County to learn about management tips, like weed control and burning, to maintain and create new rich habitat for pollinators and other wildlife.

Photo credit: Charli Gregory

In 2019 NRCS, USFWS, and other partners established the New England Pollinator Partnership (NEPP) which provides financial and technical assistance to agricultural producers in Connecticut, Massachusetts, Rhode Island, New Hampshire, Vermont, and Maine to implement conservation practices to address the decline in pollinators, including the monarch. For example, conservation practices may include establishing wildflower gardens or flowering hedgerows adjacent to pollinator-dependent crops as well as managing natural habitats.

Beginning in fiscal year 2020, NRCS seeks to enroll 1,182 producers to promote pollinator conservation on 7,680 acres over the 25-year term of this partnership agreement.

USFWS has extended regulatory predictability to the New England Pollinator Partnership with the "New England Pollinator Partnership: Biological Assessment, Opinion, Conference Report, and Partnership Agreement." It provides regulatory predictability to producers interested in supporting at-risk pollinators on their property by implementing any of 36 conservation practices and associated enhancements. The agreement covers 11 pollinator species including the monarch. Agricultural producers who partner with NRCS to create and implement a conservation plan consistent with the USFWS agreement will not be asked to do more if any of those eleven species become federally listed as endangered or threatened in the future.

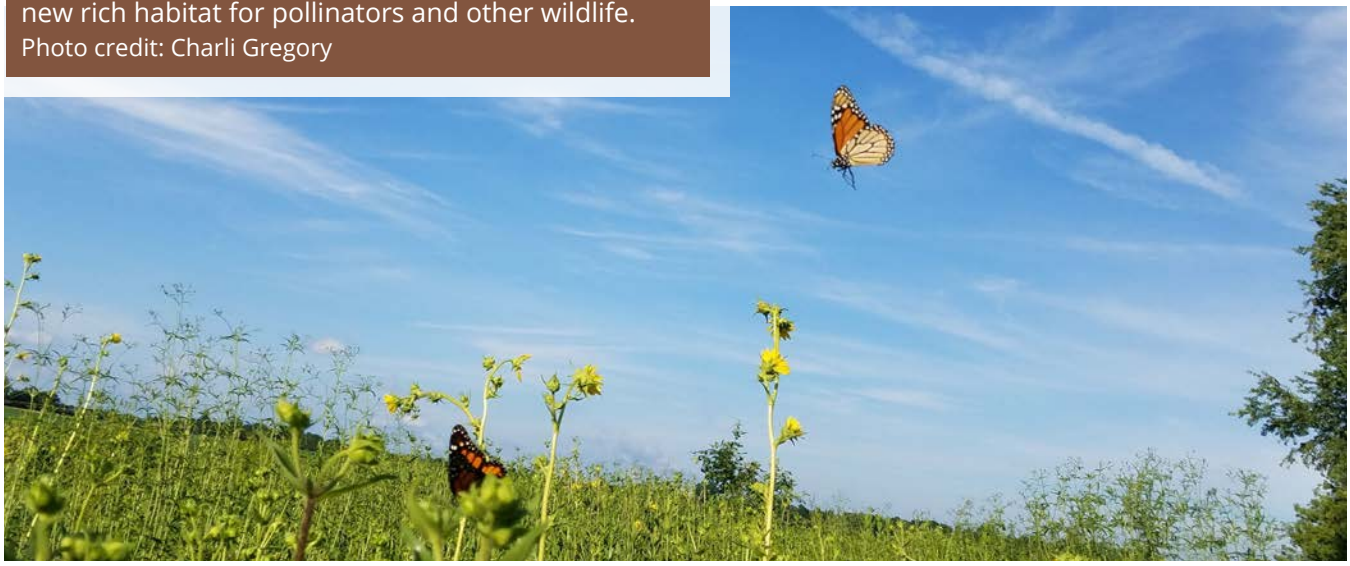
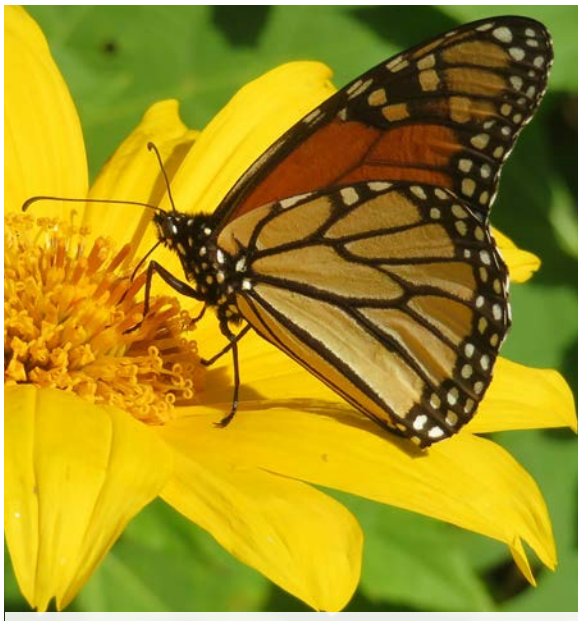


Photo credit: USDA, NRCS



Primary NEPP Conservation Practices

Core Practices

- Integrated Pest Management Plan
- Pollinator Habitat Enhancement Plan
- Fish and Wildlife Habitat Plan
- Herbicide Weed Treatment
- Conservation Cover
- Field Border
- Riparian Forest Buffer
- Wildlife Habitat Planting
- Hedgerow Planting

Supporting Practices

- Forestry Management Plan
- Conservation Plan Supporting Organic Transition
- Brush Management
- Conservation Crop Rotation
- Residue and Tillage Management
- Contour Buffer Strips
- Cover Crop
- Windbreak/Shelterbelt Establishment
- Filter Strip
- Stream Habitat Improvement and Management
- Mulching
- Tree/Shrub Site Preparation
- Obstruction Removal

Photo credit: Christine Taliga, USDA, NRCS

APPLIED SCIENCE & MEASURED OUTCOMES

Photo credit: Lance Cheung, USDA

Accountability is more than outputs of acres; the real and difficult question is whether those outputs bring us closer to achieving the long-term desired outcome of enough suitable habitat and stable or increasing monarch populations. To determine progress on these outcomes, NRCS collaborates on and funds monitoring projects and landscape assessments across the U.S.

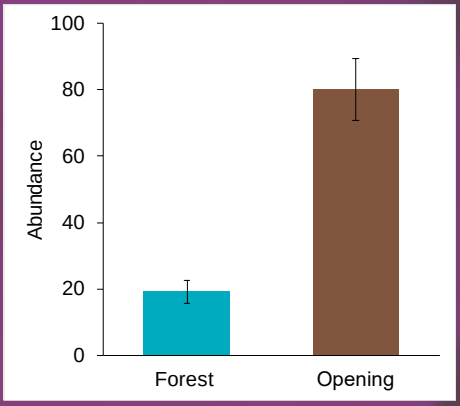
A study underway with the NRCS Wisconsin State Office, NRCS Science and Technology staff, NRCS' Conservation Effects Assessment Project (CEAP)-Wildlife, and the University of Wisconsin assessed monarch and pollinator habitats and population responses on NRCS conservation sites. Results demonstrated that managed easements provide valuable pollinator habitats. Through the targeted implementation of prairie restoration activities and habitat management, planted easements were able to support twice as many bumble bees compared to non-planted sites. Additional monitoring has begun on these NRCS conservation lands and is focused on monitoring habitat quality and outcomes for monarch butterflies and other pollinators. The results for this multi-year evaluation are expected in late 2021.

Pollinators Thrive at Wedel Farm Wisconsin

Eva and Tom Wedel (here with NRCS's District Conservationist Helen Leavenworth) turned their dairy farm into a pollinator oasis. They planted native species on their 400-acre prairie, savanna, and forested property in Argyle, Wisconsin to benefit monarchs and other pollinators. The Wedels benefitted from both CRP and EQIP. "If you visit, you almost can't get in the gate without seeing a monarch," Eva explains. "We have so many butterfly species thriving on our property and benefitting from our conservation plantings."
Photo credit: USDA

A recent effort by CEAP-Wildlife, the University of Massachusetts, and USDA Forest Service's Northern Research Station evaluated the use of small forest openings by shrubland bird and bee communities in southern New England to develop guidelines for optimizing the value of these habitats. Bee abundance and diversity were significantly higher in forest openings than in mature forest.

Results suggest that the creation of small forest openings may help to promote bees and other insects both in openings and adjacent mature forest, with certain guilds benefitting more than others. This finding highlights the important role that NRCS conservation activities such as sustainable timber harvesting could potentially playing in promoting bee populations and associated pollination services.



Mean bee abundance was higher in openings than in mature forests. Data from the University of Massachusetts.

Bee abundance and diversity was higher in landscapes that included both young and mature forests. These results indicate that timber harvests are an important tool in promoting pollinator recovery.

Photo credit: Preston Keres, USDA

Monarch Butterfly Conservation on Working Lands

In another CEAP supported study conducted by Indiana University of Pennsylvania (IUP) and the American Bird Conservancy (ABC), bee and butterfly communities showed a strong positive response for up to 6 years following creation of forest openings through WLFW Golden-Winged Warbler efforts in Appalachia. As expected, all pollinators benefited from a more diverse floral community. For bees, abundant floral resources were clearly of enormous importance, but this pattern was less clear for butterflies. More open sites (i.e., more grass cover, bare ground cover, less canopy cover) had more abundant floral communities throughout the entire growing season.

Results suggest that ensuring an abundance of early-successional habitat (< 6 years post-harvest) within heavily forested landscapes will likely benefit native pollinators, including monarchs, within those landscapes by providing abundant floral and nesting resources across the entire growing season. This could be accomplished by maintaining dynamic forest landscapes where harvests are rotated through time and forest age classes are diversified–leaving some early successional habitat for pollinators on the landscape at all times.

Efforts like the WLFW Golden-Winged Warbler and WLFW New England Cottontail are creating young deciduous forests in the eastern U.S. that provide valuable foraging resources for pollinators where these resources would otherwise not exist without management.

Photo credit: Codey Mathis, Indiana University of Pennsylvania

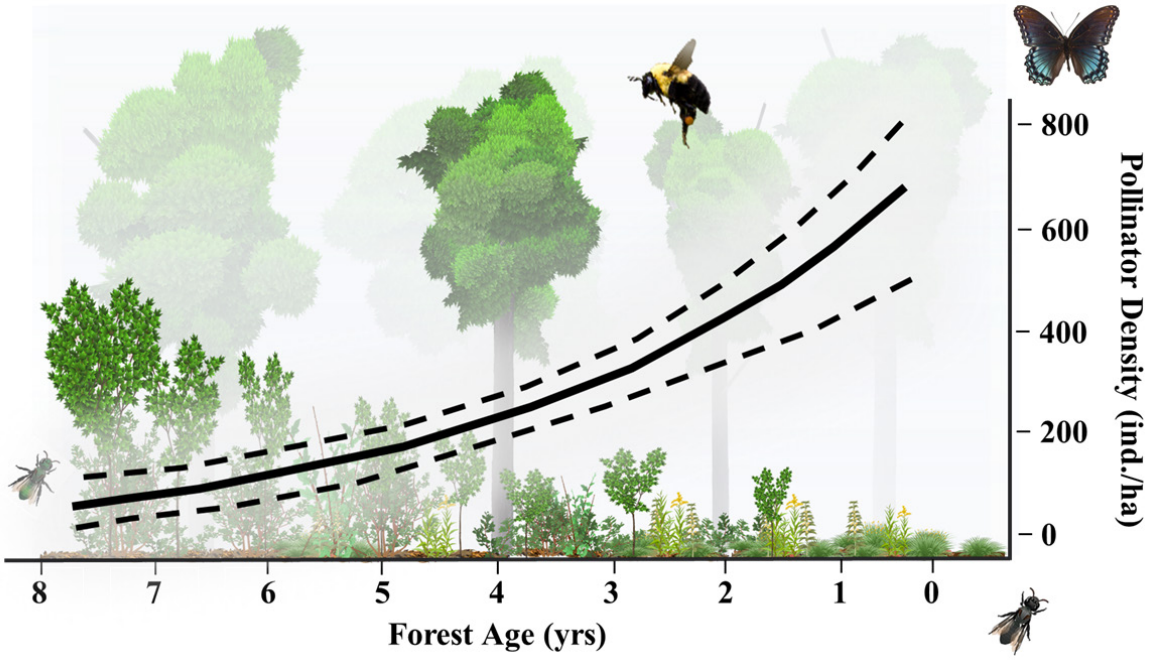


Photo credit: USDA, NRCS-AL

A 2019 study by North Carolina State University and USDA's Animal and Plant Health Inspection Service assessed the effects of prescribed burning in pine savannas on pollinators. Bee abundance was highest after managed burns and declined over time, with 2.3 times more bees observed in recently burned sites. Bee diversity was also highest after managed burns, with 2.1 times more species observed in recently burned sites than in unburned sites. Bee diversity also declined with time since fire, with 2.1 times more species captured in recently burned sites than in controls. Bees nesting above ground were unaffected by fire, contrary to expectations that fire would destroy the wood and stems in which these species nest. Results indicate that prescribed burning is a silvicultural practice consistent with pollinator conservation in longleaf pine ecosystems of the southeastern U.S.

Both NRCS's WLFW Gopher Tortoise effort and the Longleaf Pine Initiative are heavily focused on prescribed burning as a conservation practice essential to native longleaf ecosystems. From 2012 to 2019 these two landscape conservation efforts resulted in almost 100,000 acres of prescribed burn projects.

Monarch Butterfly Conservation on Working Lands

Recent collaborations through Working Lands for Wildlife, Montana State University and CEAP evaluated the role of pollinating insects in the stability and resilience of the sagebrush ecosystem. Findings suggest that diversity of North American native bees is greater in working lands that are periodically grazed by livestock compared to ungrazed set-aside lands. Intermittent areas of bare ground in grazed pastures provide access to soils that 70% of North American native bees species require to reproduce. Bees and other insects pollinate the flowering plants and provide the protein rich food source for sage-grouse and other birds of the sagebrush ecosystem.

An ongoing study between the NRCS North Dakota State Office, USFWS, and other partners is evaluating habitat quality for the regal fritillary butterfly and other pollinators. The species occurrence and plant community structure data along with pollen and nectar usage across ecological sites under differing management conditions will be used to optimize the development of NRCS conservation plans in the region.

Specifically, the development of targeted grazing plans and the improved establishment of pollinator friendly plant communities will benefit the implementation of voluntary conservation efforts under multiple USDA programs.

Photo credit: Lucy Britton, Audubon Dakota

Pollinator abundance is higher in grazed versus ungrazed rangelands.

Photo credit: USDA, NRCS-MT

Photo credit: Kristen Baum, Oklahoma State University

In a study initiated with Oklahoma State University in collaboration with the Monarch Joint Venture, NRCS is monitoring outcomes of conservation efforts for monarch butterflies in the Upper Midwest and Southern Great Plains. The data collected will be used to improve methods for tracking how WLFW efforts contribute to achieving monarch conservation goals. The project aims to help landowners make informed decisions about how to manage their land using WLFW site evaluation tools. Ensuring the effectiveness of these tools is critical to achieving the anticipated monarch habitat and population benefits of NRCS conservation activities.

SUMMARY AND NEXT STEPS

Conservation practices that benefit monarch butterflies and other pollinators are available to producers nationwide. Looking ahead over the next year Washington, Oregon, Idaho, and California are increasingly focused on the Western population of the monarch, placing conservation habitat priorities in support of this dwindling population. Through the implementation of targeted practices, NRCS and partners are working to accelerate conservation delivery and habitat improvements to reverse monarch population declines by providing technical and financial assistance to agricultural producers. To date, these partnership efforts have created or managed nearly 500,000 acres of habitat on private working lands.

NRCS recently added two new conservation practices, wildlife habitat planting and pesticide mitigation, which will be key tools for monarchs. Both practices build on existing practices to better enable producers to manage for monarch habitat and minimize use of insecticides.

WLFW will be developing an implementation strategy for the WLFW Monarch Butterfly, consistent with strategic plans developed for other WLFW national target species. Multi-year work plans under the new strategy will detail milestones and goals for conservation practice outputs. We anticipate completing the first WLFW Monarch Butterfly strategy and a 5-year WLFW Monarch Butterfly work plan in 2021.

Farm Bill programs such as EQIP and CSP remain vital resources to support continued habitat conservation efforts for monarchs and other pollinators on working lands with plans to expand technical support for the western monarch population underway. These efforts are greatly accelerated by continued partnerships that incorporate current scientific knowledge of monarch habitat and nutritional needs in conservation planning application. NRCS remains committed to ongoing and future monarch conservation partnerships to foster productive working lands in harmony with a healthy environment.

ADDITIONAL RESOURCES

- **Working Lands for Wildlife, Monarch Butterflies**
  https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/plantsanimals/pollinate/?cid=nrcseprd402207
- **Publications Relating to Monarch Conservation Effort**
  https://www.nrcs.usda.gov/wps/portal/nrcs/rpublications/plantmaterials/technical/publications/?ptype=mon
- **Monarch Butterflies Show Differential Utilization of Nine Midwestern Milkweed Species**
  https://www.frontiersin.org/articles/10.3389/fevo.2018.00169/full
- **Midwest Association of Fish & Wildlife Agencies, Mid-America Monarch Conservation Strategy**
  http://www.mafwa.org/wp-content/uploads/2018/07/MAMCS_June2018_Final.pdf

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