

Monarch Conservation Partner Meeting and MJV Partner Updates: 2018

Aerulean Plant Identification Systems

This year we created a booklet for MJV titled: Butterflies in Mind – Asclepias. Aerulean Plant Identification Systems, Inc., aka Findplants.net, provides online software that enables gardeners to select and identify plants and to sort plants that are attractive to specific butterflies. This system has the potential to greatly increase the number of native nectar plants available for pollinators by empowering individuals to customize their gardens. The software has over 37,000 images, references over 1,800 nectar plants, and allows users to select plants that feed butterflies based on 200 filters, including water, height, flower color, butterfly species, and site location. You can use the program to select plants for landscaping purposes or to identify an unknown plant species. Findplants.net is an excellent resource for MJV partners and the public alike. Use this link to access the master butterfly taxa page: <https://www.aerulean.com/butterfly>

American Soybean Association

The American Soybean Association (ASA) took time this fall to highlight the importance of monarch habitat and U.S. soybean growers' part in preservation, with the goal of underscoring ASA's involvement with coalitions like Farmers for Monarchs and the Monarch Collaborative, while also encouraging growers to get involved and plant their own habitats. ASA ran a month-long photo contest asking farmers and other ASA friends and followers to upload snapshots of their efforts to plant milkweed and protect the pollinators. The campaign featured:

- Social outreach across Facebook and Twitter, encouraging growers to share monarch and habitat photos
- Links to resources on how to incorporate habitats on your farm and mentions of industry partners and their tools.
- Retweets, likes and collages featuring user generated content to encourage more entries and thank participants
- A prize for three randomly-selected winners.

RESULTS:

- 96 user photos/videos of monarch butterflies/habitats
- 142,624 social media impressions

Arkansas Department of Transportation

We have seven areas scheduled to be planted in wildflowers this fall. ArDOT's mowing regime was recently modified to help keep wildflowers on the roadside, in bloom, year-round. Also, we are actively engaged in other pollinator efforts.

Arkansas Field Office – U.S. Fish and Wildlife Service

The USFWS AFO and AR Game and Fish Commission co-chaired the Arkansas Monarch Conservation Partnership Steering Committee. Together, we finalized and published the Arkansas Monarch and Pollinator Conservation Plan. On November 1, the partnership hosted the Arkansas Monarch and Pollinator Forum 2018 to bring together stakeholders and interested parties to introduce and solicit assistance from them in implementing the plan. On behalf of the AMCP, Quail Forever secured a grant from the Natural Resources Conservation Service to hire a Monarch Coordinator to take over and lead the partnership in implementing the plan. The USFWS funded a short video, "Wings of Hope: Monarchs in the Natural State" to further the message of monarch conservation in Arkansas among the general public. Several habitat restoration projects on private lands through the Partners for Fish and Wildlife Program specifically for monarch butterflies and pollinators were implemented.

Arkansas Monarch Conservation Partnership

The Arkansas Monarch Conservation Partnership completed the statewide monarch and pollinator conservation plan in May 2018. This plan sets goals, objectives, and actions for habitat restoration, research and monitoring, and outreach and education to be completed in the next 5 years. The partnership in cooperation with Quail Forever and NRCS hired a statewide coordinator in November 2018 to help oversee the implementation of the plan. To keep momentum and broad collaboration going, the partnership convened the 2018 Monarch Forum on November 1st. This meeting was well attended (over 120 participants) by state, federal, non-profit agencies, universities, and interested citizens. Information on creating habitat (both large and small acreages) was given along with general information on how everyone can contribute to monarch conservation.

Armand Bayou Nature Center

During 2017 Armand Bayou Nature Center (ABNC) continued to feature monarch butterfly migration and pollinator habitat themes in community outreach events and educational programs. The newly qualified Monarch Waystation "Home Habitat Demonstration Garden" at the center's admissions building greeted and inspired over 20,000 visitors with monarch activity. The monarch life cycle continues to be a popular lesson plan for classes at all levels. ABNC continued to host Texas Master Naturalist and Native Plant Society of Texas training sessions, adding dozens of new volunteer advocates and community emissaries for pollinator conservation. The neighboring community of El Lago earned a Mayors for Monarchs designation. Six other ABNC demonstration gardens, including the McGovern Children's Discovery Area, will soon be ready to qualify for Monarch Waystation status. Perhaps most importantly, ABNC was able to coordinate with local agencies to minimize the impact of Zika-management and post-hurricane mosquito broadcast treatment on much of the preserve's pollinator habitat management area.

Association of Fish & Wildlife Agencies

The Association of Fish and Wildlife Agencies (AFWA) continues to coordinate state agency engagement in monarch conservation, and serves as a representative on the MJV steering committee. AFWA represents North America's fish and wildlife agencies to advance sound, science-based management and conservation of fish and wildlife and their habitats in the public interest. They are a voice for their state agency members on Capitol Hill and before the Administration to advance favorable fish and wildlife conservation policy and funding and work to ensure that entities work collaboratively on important conservation issues.

Audubon International

Audubon International and partners are scaling up the program we launched in 2018 to create monarch habitat on North America's golf courses. With more than 250 participating properties, recent grant funding from the National Fish & Wildlife Foundation will allow the program to expand to nearly 1000 courses. Funding is available for free native, regionally-appropriate milkweed and other wildflower seed to intensify efforts in 10 states through the Monarchs In The Rough initiative (monarchsintherough.org).

Back to Natives Restoration

Back to Natives has worked hard to create a habitat demonstration site at the Back to Natives Native Plant Reserve (called Cuesta Kato). Monarch monitoring was led by Fiorella Gardella, an experienced researcher, credentialed teacher and trained informal environmental educator. She lead small groups of high school and college students in monitoring the site for monarchs, engaging them in real-world research and data collection. Students watched for migrants, and looked for eggs, caterpillars, and chrysalises. Protocols from Journey North, the MLMP and Project Monarch Health were utilized. Back to Natives uses the environment as a context for learning while maximizing hands-on outdoor engagement opportunities for community members, especially local urban and underserved youth. Volunteer groups from monitored the habitat, removed non-native, invasive species, and planted with appropriate native plant species, focusing our efforts on establishing a healthy population of locally native nectar plants. BTN also holds at least 4 volunteer days each month in our native plant nursery, where we grow plants for use in habitat restoration projects. Volunteers and interns document the successes and failures of milkweed growth in order to increase understanding of milkweed propagation.

Bee and Butterfly Habitat Fund

The Bee & Butterfly Habitat Fund provides free pollinator seed mixtures on projects in a 12 state area of the Midwest and Great Plains that are critical to pollinator health and habitat needs. The habitat projects are designed and delivered using innovation and technology to deliver increased pollinator benefits. Online applications are accepted throughout the year. Each application is scored and ranked for its opportunity to deliver pollinator health and habitat benefits.

Bee City USA

Today there are 135 certified Bee City/Campus USA affiliates in 36 states, all committed to pollinator habitat creation and enhancement, aimed at changing America's ornamental landscaping paradigm. Guided by citizen committees, currently totaling 828 members, affiliates develop IPM plans and a locally native plant list, including milkweed. Our 2018 reports are due February 2019. In 2017, with the help of 5,493 volunteers working 19,498 hours, they planted 72,895 native and 1,627 milkweed plants. They also hosted 41 courses, 141 presentations and 54 tabling events that included monarch education. At least 2 hosted all day Monarch Festivals attended by more than 1500 people. Bee City USA and

its affiliates educate the public using social media and events stressing planting appropriate milkweed. We provide ongoing technical support through webinars, resource & referral, individual counseling and networking. In 2017 we hosted the “Monarchs and Milkweed 101” webinar for affiliates.

Blank Park Zoo

Blank Park Zoo’s Plant.Grow.Fly. encourages the planting of pollinator gardens. To date, we have 1200 gardens registered, 140 registered in 2018. Pollinator outreach efforts have reached 5,431 people this year. In September we hosted our 4th annual Monarch Festival. We partner with the Latino Heritage Festival and celebrate the monarch migration and the Iowa – Mexico connection. Over 3,000 people attended and over 20 partners offered pollinator activities. The event included traditional Mexican dancers, monarch tagging, seed ball making and the Bug Parade, where kids dress up as their favorite insect and take a symbolic migration through the zoo. A giant “Chinese-dragon” style monarch caterpillar and butterfly also marched in the parade. We also collaborate closely with the Iowa Monarch Consortium and serve on the urban/suburban habitat subcommittee. We just received a grant to give away 10,000 native plant plugs in 2019 in collaboration with Neal Smith National Wildlife Refuge.

Bureau of Land Management

- Partnered with WAFWA to write Western Monarch Conservation Strategy.
- BLM added monarch butterfly to sensitive species list in Nevada, Utah, New Mexico, and Arizona.
- Funded printing 10,000 copies of Monarch Biology booklet translated to Spanish by Monarch Watch.
- Removing non-native saltcedar and planting over 500 Desert Willows in Afton Canyon to support local pollinators.
- Ukiah Field Office collected milkweed at several sites and GPSed the locations.
- 2016 NFWF grant awarded to BLM’s Colorado Plateau Native Plants Program to fund projects in UT, CO, AZ. Accomplishments include: collected 14 lbs of seed, established two seed fields, produced 2000 milkweed/nectar seedlings; restored 5 acres of riparian habitat; initiated or improved 11 demonstration gardens; provided educational materials, seed collection training for volunteers, oral presentations, and email/social media posts. CPNPP was instrumental in the recent Xerces/Southwest Monarch Study and Milkweed Workshop in Salt Lake City.

Cibolo Nature Center

The Cibolo Nature Center & Farm continues its monarch education and outreach efforts throughout the San Antonio region by providing workshops, presentations, and festivals. In 2018 we hosted a train-the-trainer workshop to train enthusiasts to provide Monarch outreach. Based upon this model, we are collaborating with the National Wildlife Federation and other regional organizations to offer a series of train-the-trainer programs in 2019. Our 20 acre Monarch Restoration Area will be seeded with native grasses and forbs this winter. This will be a demonstration site for regional landowners and an educational resource for both our center and Texas Parks & Wildlife. TPWD recently hired a biologist to office at our center and promote land restoration throughout the region. The nature center continues to monitor our 2 Monarch Waystations as well as collaborate with the San Antonio Zoo to train their staff and interns to conduct Monarch citizen science.

Cincinnati Nature Center

Cincinnati Nature Center’s Milkweed to Monarchs Regional Conservation Initiative continues to be a success, and we have recently expanded our focus to include other pollinators. To date, we have engaged tens of thousands of people and organizations throughout the greater Cincinnati region in planting native milkweed and other native plants. Since October, 2014, we distributed over 300,000 packets of native milkweed. These packets helped to spread awareness about the plight of monarchs and the importance of planting native milkweed. Our staff have made educational presentations, provided consultations on effective planting techniques, and cultivated partnerships with more than 120 local businesses as “Merchants for Monarchs”, each providing support including promotion, educational programs and/or milkweed seeds to their customers. Over 100 acres of CNC old field habitat has been cleared of non-native invasive species and planted with native plants supporting monarchs and pollinators. We have also created a native plant nursery to support on-going restoration efforts on Nature Center land as well as to provide plants to the public.

Corteva Agriscience

Corteva Agriscience™, Agriculture Division of DowDuPont, recently announced a partnership with National 4-H Council and Pheasants Forever to support monarch butterfly and pollinator habitat at approximately 50 production and research

locations throughout the United States. Through this program, Corteva Agriscience will engage 4-H youth to help increase pollinator habitats and populations, supporting biodiversity. The program will also strengthen pollinator education efforts through the Pheasants Forever Pollinator Education Program.

Desert Botanical Garden

Desert Botanical Garden is approaching monarch conservation from three main angles: propagation for habitat development, research, and outreach. In 2018, we propagated six native Arizona milkweed species, which are still a limited resource for homeowners and landmanagers, and are trying to propagate species not currently in cultivation. This year, we also started collecting wild seeds across the state for known-source seed amplification geared toward habitat restoration. To inform propagation and habitat development, we have been researching monarch oviposition and larval performance. We are in the process of publishing now, but it is clear that not all native Arizona milkweeds are equal to monarchs. We have done a lot of outreach and education this year. We planted pollinator gardens at six local schools and community centers, and did five presentations. This year, we also piloted a workshop for the teachers to get more involved in collecting monarch citizen science data.

Desert Danaus Project

The Desert Danaus Project focuses on better understanding interactions between monarchs and closely related queen butterflies (herein “Danaus” butterflies) and solar energy development in the Mojave Desert. They focus on elucidating effects of solar energy development on “bottom-up” interactions affecting the Milkweed-Danaus Trophic System, which includes soils, rare Mojave milkweed, and monarch and queen butterflies. A self-sustaining, solar-powered video camera system records ecological events at milkweed locations; the project is currently testing the sensitivity of this method to document pollination events at milkweed, predation of and herbivory by Danaus caterpillars, and oviposition by adult Danaus butterflies. They believe the use of this system can be broadly applied to monarch conservation by providing a relatively cheap, self-sustaining video recording option for collecting continuous data (~up to 2 months straight) of monarch-milkweed interactions and ecological events. A primary contribution to MJV’s mission will continue to be providing insight on how rapid renewable energy development may affect monarch butterflies and finding synergies between energy development and monarch conservation moving forward.

Energy Resources Center

The Energy Resources Center (ERC) facilitates the Rights-of-Way as Habitat Working Group, which engages more than 160 organizations primarily from the transportation and utility sectors to promote pollinator habitats and healthy ecosystems on rights-of-way and other managed lands. The ERC also helps lead the Illinois Monarch Project, which brings together stakeholders from across Illinois to develop and coordinate strategies for monarch butterfly conservation; key sectors include rights-of-way, agriculture, natural/protected lands, and urban areas. The Rights-of-Way as Habitat Database (Database) aims to collect data on pollinator habitat managed on ROW and other landscapes across the United States. It will enable better quantification of habitat managed by ROW organizations, provide benchmarks for habitat restoration activities, highlight the ecosystem benefits that ROW provide, and promote new conservation partnerships and collaborations. One of the primary objectives of the Rights-of-Way as Habitat Working Group is to educate the ROW industry, government agencies, partner organizations, and the public on methods and benefits of conserving and creating pollinator habitat. The working group also leverages knowledge and resource-sharing across industry sectors through workshops, webinars, and an online resources webpage. The ERC maintains the Rights-of-Way as Habitat Working Group Resources Page to support working group participants in habitat planning, restoration, management, and maintenance activities. <http://rightofway.erc.uic.edu/>

Environmental Defense Fund

The Monarch butterfly conservation issue is changing the way we approach conservation. To reach the magnitude of change needed to recover the species will require changing the practices of tens of thousands of farmers across a huge swath of North America. Conservation problems are complex and it is becoming increasingly apparent that conservation itself is a societal issue. That is, the human behavioral patterns that result in the ecosystem impacts we observe are driven by societal systems and structures operating at different social scales (i.e. governance, institutions, communities, organizations). Systems thinking is a framework for thinking through complex problems with the intent of identifying points of leverage that could drive social change. EDF is using this approach to analyze how we can create the magnitude of social change necessary to recover the Monarch butterfly.

EPRI

EPRI is working with the Xerces Society to develop a report describing the conservation actions for monarch habitat protection, management, enhancement, and restoration that are applicable to electric power companies. The research includes a review published scientific papers and a survey with scientific experts to understand which conservation actions are the most important from the perspective of the monarch. A comprehensive survey with EPRI member power companies will illuminate the extent to which specific conservation practices are being implemented, barriers to implementation, and case studies of current efforts. Detailed consideration of which property types are most appropriate for different conservation efforts will be discussed in the report (ROWs, solar sites, power plants, etc). The report will serve as an important resource for understanding current conservation efforts and selecting which BMPs are most important going forward, whether the monarch is listed or not.

First Energy Corporation

FirstEnergy is in the initial stages of initiating pollinator programs, including Monarch conservation. We are a member of the CCAA. Also, this year we have started a rhabitati research program in conjunction with Ohio State University. The study focuses on pollinator plots along ROWs and is focusing on Monarchs. Research is set to being in Spring 2019.

Florida Museum of Natural History

The Florida Museum of Natural History at the University of Florida is currently involved with several monarch conservation initiatives focused on public outreach, native milkweed population conservation, and scientific research. In support of public outreach, they have partnered with the U.S. Forest Service, the Xerces Society for Invertebrate Conservation, and the Butterfly Conservation Initiative to produce and disseminate a series of information brochures for each Forest Service region. Additionally, they teamed up with the Florida Fish and Wildlife Conservation Commission and the Disney Conservation Fund to launch a wildlife viewing certificate program called Wings Over Florida – Butterflies (<http://floridabirdingtrail.com/wings-over-florida-butterflies/>) and develop a series of augmented reality 3D education cards highlighting common and at-risk butterflies in Florida, including the monarch. Links to all brochures, the Wings Over Florida program, and the 3D Butterfly Cards can be found at: <https://www.floridamuseum.ufl.edu/discover-butterflies/brochures/>. In support of native milkweed population conservation, they worked with the Florida Department of Transportation to map high density native milkweed populations (*Asclepias humistrata* and *A. tuberosa*) along Florida roadways and are augmenting habitat in roadway retention basins. In support of scientific research, they have partnered with the University of Florida's Institute of Food and Agricultural Sciences and the Coleman Federal Correctional Complex to help develop best commercial nursery production and pest control methods for various Florida native milkweed species. Lastly, they are evaluating on the impacts of several systemic insecticides typically used in commercial production of tropical milkweed (*Asclepias curassavica*) on monarch larval mortality.

Fort Hood Adaptive and Integrative Management Program

As one of the largest military training installations in the U.S. Army, Fort Hood has maintained a commitment to the environment. One of the ways they fulfill this commitment is through their Adaptive and Integrative Management (AIM) Program. The AIM program provides long-term sustainability of training lands to support the military mission, protect mission-sensitive species, and promote environmental stewardship and conservation. This fall the Fort Hood AIM program collected OE samples, fitness data, and placed Monarch Watch tags on a total of 2,729 monarchs.

Fort Worth Botanic Garden

Fort Worth began 2018 with a "train the trainer" workshop for 60 participants, who presented 18 talks to 875 people. "Native Neighborhoods," a collaboration of the Nature Center, Forestry, and Water departments, distributed a native tree, five native plants, and a water conservation kit to 50 residents at two informative events around the city. The Mayors Monarch Summit at Tarrant County College showcased the conservation successes of cities in our county and promoted the Mayors Monarch Pledge. The City proclaimed Oct 6 as Monarch Butterfly Day, and eight organizations came together at the Botanic Garden for a Monarch Migration Festival. Together with the Mariposa Market, 2500 people attended. Chisholm Trail Park, an 84-acre prairie remnant, was certified as a monarch waystation. Middle schoolers from Trinity Valley School created a Mayor's Monarch Waystation at a neighborhood center. We worked with Code Compliance to create guidelines for native plant gardens to meet city ordinances.

Friends of the Monarch Trail on the Milwaukee County Grounds

The Friends of the Monarch Trail was created to preserve and protect the rare phenomenon of an annual monarch migratory roost site in the middle of the largest and most dense urban area of Wisconsin. We fought successfully to save the roost groves from development and are now engaged in habitat restoration in surrounding areas.

Great Parks of Hamilton County

GPHC's on-site native seed nursery has implemented a number of initiatives to help monarchs. They have created an 8-species pollinator seed mix to distribute to tours, classes, and other guests. In addition to seed, the nursery grew over a 1000 host plants of *A. syriaca*, *A. tuerosa*, *A. sullivantii* for give-a-ways and replanting efforts. Two plantings were new pollinator plots in two urban area locations. Monitoring efforts for monarchs often works in conjunction with educational programs. They offer monarch programs that allow participants to tag monarchs in order to help scientists with their research efforts. In addition to citizen science tagging efforts, they collaborate with urban schools for monarch planting and monarch education. One notable school in Cincinnati's urban core has a rooftop garden, on which the group helped plant swamp milkweed and provided educational program on monarchs.

Green Schools Alliance

Created by schools for schools in 2007, the Green Schools Alliance (GSA) is a coalition that has grown to nearly ten thousand public and private schools in 53 countries representing over seven million students and a billion square feet of school facilities. GSA launched its Pollinator Project, a campaign of the Student Climate & Conservation Corps, to encourage action on the issue and raise awareness through its global, peer-to-peer community. Outreach efforts include: a dedicated campaign page on the website with links and resources; a featured Pollinator Project block in the monthly newsletter; frequent posts to social media; sharing of best-practices by connecting schools with gardens to those who would like one; highlighting exemplary efforts; and partnering to amplify efforts. In addition, participants in the GSA's and USFWS' annual Student Climate & Conservation Congress are encouraged to make pollinator gardens part of their Action Plans for projects that they complete when they return to their schools.

Houston Wilderness

Houston Wilderness (HW) works with environmental, governmental and business groups to protect, preserve and promote the unique biodiversity of southwest Texas' 10 ecoregions. The Texas Gulf Coast is the migratory flyway link between the U.S. and Mexico – a large area that is critical to the preservation of the Monarch migration, population growth, and habitat. Houston Wilderness and its many partners created the Texas Monarch Flyway Strategy (Texas MFS) that covers four regions of Texas: 1) North Texas - Dallas and Fort Worth areas, 2) Hill Country - Austin & San Antonio areas, 3) Gulf-Houston and 4) South Texas - Corpus Christi and South Padre Island areas (www.houstonwilderness.org/mfs/). The Texas MFS focuses on habitat conservation, education & outreach, research, monitoring and collaboration among its many partners across the state. Under the Texas MFS, over 50 partners have created 75+ pollinator habitats, planted over 250,000 native milkweed and wildflower seedlings.

Illinois Department of Agriculture

The Illinois Department of Agriculture is an advocate for Illinois' agricultural industry and provides the necessary regulatory functions to benefit consumers, the agricultural industry, and our natural resources. The IDOA distributes funds through the Partners for Conservation Program to Illinois' 97 Soil and Water Conservation Districts for programs aimed at reducing soil and nutrient losses, thereby protecting water quality. The Partners for Conservation Program (PFC) is a long-term, state-supported initiative to protect natural resources and enhance outdoor recreational opportunities in Illinois. IDOA has included the USDA Natural Resources Conservation Service's Pollinator Practice Standard 327 in the IDOA's FY19 PFC Program to aid in the establishment of pollinator habitat while also addressing erosion and water quality. The Project will also be of benefit to other pollinators, such as honeybees.

Illinois Monarch Project

The Illinois Monarch Project is Illinois' collaborative for helping monarch butterflies thrive throughout Illinois by collaborating on conservation activities and encouraging engagement by public and private landowners across diverse urban and rural landscapes. Leaders from natural lands, rights-of-way, urban, and agriculture sectors meet monthly to combat the stressors on monarch butterfly habitat, enhance existing habitat on the ground, and plan additional

conservation actions for monarch butterfly. An Illinois Monarch Project Action Plan, to be released Spring 2019, will document the strategies and actions to be undertaken by stakeholders across Illinois to support monarch butterfly conservation and achieve established targets.

Indiana DNR Division of Wildlife

The Indiana Monarch Conservation Summit, which was held September 19-20, 2017. Approximately 60 individuals attended from over 40 different agencies, NGO's, utility companies, and agriculture groups. Next steps established included an initial governance structure and strategy to achieve a written IN Monarch Conservation Plan. Over \$12,000 was raised to hire a contractor to assist with the plan drafting and coordination. Work Groups were formed (Public and Protected Lands, Rural and Agricultural Land, Utilities and Right of Ways, Urban/Municipal) to draft sector specific plan content. The Indiana Monarch Conservation Plan is expected to be complete in early 2019. Indiana hopes to contribute more substance (stem goals, objectives, strategies, etc.) for late inclusion in the Mid-America Monarch Conservation Strategy, likely in coordination with the Indiana Monarch Plan draft release. Once a plan is finalized, options for a monarch plan coordinator position will be pursued.

Iowa Corn Growers Association

Iowa Corn Growers Association is a member of the Iowa Monarch Conservation Consortium, and encourages the adoption of best management practices by Iowa corn farmers.

Iowa Farm Bureau Federation

- The IFBF hosted a webinar July 26 featuring Pheasants Forever Iowa Biologists Joshua Divan and Kelsey Fleming outlining the steps to consider when planning pollinator plantings. The webinar has been viewed by 186 farmers and others so far and is archived on the IFBF website for future use.
- There have been at least 16 articles related to monarchs, pollinators and the Iowa Monarch Conservation Consortium and the Iowa Monarch Conservation Strategy in *The Farm Bureau Spokesman*, *Family Living* and on the IFBF website, and in other communication platforms, so far during 2018. The weekly circulation of *The Farm Bureau Spokesman* is 90,000 and the monthly *Family Living* associate member publication has a circulation of 45,000.

Iowa Department of Agriculture and Land Stewardship

The Iowa Department of Agriculture and Land Stewardship (IDALS) is a partner agency on the Iowa Monarch Conservation Consortium and has been involved with drafting the Iowa conservation strategy. IDALS encourages monarch habitat establishment in association with soil conservation and water quality practices, when it makes sense on the landscape and for landowner uses. These conservation projects include CREP wetlands, Edge of Field practices, buffer strips, urban conservation projects, and reclamation on abandoned coal mines. IDALS became a member of the Plant.Grow.Fly program in 2018 and created a small pollinator garden at the Wallace State Office Building to demonstrate habitat in an urban setting.

Iowa Department of Natural Resources

The Iowa Department of Natural Resources supports Monarch conservation through:

Habitat Creation: The DNR's public land management staff and the Prairie Resource Center, produced seed for around 2,000 acres to diverse prairie habitat on state-owned lands in 2018. Our Private Lands program continues to help private landowners establish pollinator habitat. **Planning:** The DNR is a primary partner in the Iowa Monarch Conservation Consortium so that conservation efforts for the Monarch can be coordinated. The second version of a State Conservation Strategy for Monarchs was released in March, 2018. **Outreach:** The DNR is a partner in the Blank Park Zoo's Plant.Grow.Fly. program and participated in the 2018 Monarch Festival. Our staff gave numerous programs across the state on Monarch habitat creation. **Research and Monitoring:** The Iowa DNR continues to finalize its Iowa occupancy habitat model for Monarchs based on data collected under the Multiple Species Inventory and Monitoring project.

Journey North

Journey North is an international citizen science project that tracks monarch migration each fall and spring as the butterflies travel to and from Mexico. Participants are based at over 60,000 sites across North America, including formal

and informal educational settings. People report sightings from the field, track migration on real-time maps, and help scientists learn more about the critical migratory stage of the monarch's annual cycle. Monarch migration news is published weekly and incorporates sightings and images from the field. Journey North provides an easy entry point to citizen science, with relatively simple protocols, strong online support, and immediate results. Beyond its value to science, the project unites people across North America to celebrate monarchs and their migration.

Kansas City Native Plant Initiative

Kansas City Native Plant Initiative (KCNPI) is a collective impact organization of nearly 70 partners. We see a future of beautiful, native landscapes connecting heartland communities where nature and people thrive together. KCNPI is teaching people that what you plant matters: for monarchs and other insects, for birds and mammals, for air and water quality, and for human health. Workshops for small and large scale native plant professionals are offered throughout the year, as well as educational programs to help residents catch the native plant "bug"! Efforts for monarch conservation include ongoing maintenance and promotion of three large native plant demonstration gardens in Kansas City's Loose Park, a yearly Monarch Migration Celebration, and public education in the form of workshops, newsletters, social media and more. We look forward to hosting a regional conference in September 2019 for native landscape professionals. Learn more at kcnp.org.

Kansas Dept. of Wildlife, Parks and Tourism

KS Dept of Wildlife, Parks, and Tourism has partnered with 68 organizations—including agencies, industry, farming/ranching entities, and NGOs—to complete the Kansas Monarch Conservation Plan by June 2019. The plan will define a set of goals/actions to create, enhance, and conserve monarch habitat. In addition to the goals in the Plan KDWPT is actively engaged in projects to create and enhance habitat. This includes working to establish pollinator plots and/or larger habitat areas at all state parks and implementing over 100,000 acres of grassland restoration practices on public and private lands, providing assistance to landowners to create at least 4,115 acres of native grasslands formerly used for crops and numerous outreach/education events. KDWPT has prioritized monarch conservation efforts in our Chickadee Checkoff Grant program, including a partnership with KDOT to establish an additional 125 acres of pollinator plots at rest areas and highway interchanges.

Kansas Soybean Commission

The Kansas Soybean Commission primary focus in monarch conservation in 2018 has been in outreach to soybean farmers on awareness and funded workshops with NRCS around the state to facilitate discussions focused on pollinators.

Kentucky Department of Fish and Wildlife Resources

The Kentucky Department of Fish and Wildlife Resources published the KY Monarch Conservation Plan in January 2018, which was written in collaboration with partners from other state and federal agencies, non-government organizations and private stakeholders. We assisted in creation of the Mid-America Monarch Conservation Strategy and facilitated data collection for the Monarch Conservation Database within our state. Our goal is to serve as a resource and point of connection for working groups associated with the plan, as well as independent educators, garden clubs and organizers involved in this cause. We teamed up with the KY Pollinator Stakeholders Group to host annual meetings on pollinator conservation in the state as we work toward these shared goals. Along with our partners, we intend to increase the quantity and quality of monarch habitat statewide, improve public awareness of the plight of the monarch and inform individuals on what they can do to help.

Kentucky Transportation Cabinet

To date, KYTC has established approximately 137 acres of pollinator habitat areas statewide along highway right-of-ways, at our rest areas, and even as landscapes at some of our office buildings. We are working on getting some supplemental seeding/planting done at some of these areas which currently do not contain milkweed plants. We also have had one successful year so far of partnering with the inmate horticultural program to grow various plant plugs, including milkweed, for use in our pollinator areas. We are also currently working on processes to initiate pollinator area establishment during our construction activities as well, since our current efforts have been achieved primarily through maintenance staff efforts.

Keystone Policy Center

The Monarch Collaborative is a project of the Keystone Policy Center, an organization dedicated to fostering collaborative and sustainable outcomes in agriculture, the environment, health, and education. The Monarch Collaborative consists of organizations representing farmers, ranchers, and land owners; businesses along the agricultural supply chain; academic institutions; federal and state entities; and conservation organizations. We support productive agriculture and livestock operations alongside monarch conservation. Because farmers and ranchers are stewards of the land across much of monarch habitat, they are in a unique position to support sustainable monarch populations. Farmers and ranchers are already engaged in conservation initiatives focused on water quality, erosion control, wildlife, and pollinator habitat, demonstrating that continuing innovation in agricultural practices can reduce environmental impacts, increase productivity, and support with monarch conservation.

Kansas Farm Bureau

Kansas Farm Bureau has been an active participant in the Kansas Monarch Conservation Task Force, with staff members serving on four different sub work groups. We have communicated and provided resources to our 105 County Farm Bureaus, informing them of the threat to Monarchs, efforts of the Monarch Conservation Task Force, ways that each county Farm Bureau can promote Monarch conservation, including leading efforts to create community-based Monarch Waystations. We are in the process of creating a Monarch Waystation (a demonstration plot with milkweed and nectaring plants) at our KFB Headquarters, as a tool of community and member, education and outreach. We have created links on our website to many Monarch Conservation resources.

La Cruz Habitat Protection Project

This year we are planting approximately 350,000 trees in and around the Monarch roost biosphere in Michoacan, Mexico. We've planted about 9 million trees since 2000. See our website at forestsformonarchs.org I am also involved in the KY Monarch Conservation Project and am on the Board of Trustees of the KY Nature Conservancy (emeritus). I am personally developing two pollinator sites in Kentucky.

Lady Bird Johnson Wildflower Center

The Lady Bird Johnson Wildflower Center is engaged in several monarch conservation efforts. Its 284-acre botanic garden and campus provides critical habitat for monarchs and serves as a centerpiece for its monarch education programs, including garden displays, an insectary, and pollinator- and habitat-focused programs and classes. The gardens are designated both an official Monarch Way Station and NWF Wildlife Habitat. The Wildflower Center has increased native milkweed seed availability from several ecotypes in the central flyway and banked seeds for future use. In 2017-18, horticulturists distributed 1,500 milkweed plants to area partners. The Wildflower Center also received funding to collect and distribute seeds of nectar species important for the fall monarch migration. The project is entitled the HJ Hewitt Habitat Enhancement Project for Southbound Monarchs.

Loudoun Wildlife Conservancy

In this fifth year of the Loudoun county (VA) monarch program, LWC focused on working with the Loudoun County Public School administration to integrate the study of monarchs into the curriculum and use of Monarch Waystations as outdoor classrooms. Administrators successfully developed standards of learning using teachings associated with the monarch life cycle and continued to support teachers in establishing and expanding Monarch Waystation gardens. Loudoun Wildlife continued to make donations of milkweed to schools to support their efforts. They also hold an annual milkweed sale and in 2017 once again sold over 2000 plants in just a few hours. VDOT continues to support the reduced mowing in medians in northern virginia and is going to be changing its contract requirements int he next year as it recompetes its contract and employs a new contractor to do the roadside mowing. This should result in adherence to the mowing guidance Loudoun Wildlife recommended.

Make Way for Monarchs

Make Way for Monarchs is a milkweed-butterfly recovery alliance of farmers, nurserymen, non-profits, universities, corporate partners, and faith-based communities and is co-facilitated by Dr. Gary Nabhan and Ina Warren. Their primary goals include: (a) promoting respectful dialogues and engagement with government agency officials, industry and farmer organization leaders including not only scientists and farmers, but ethicists, educators, faith-based leaders and

sustainable agriculture leaders; (b) providing training workshops in northern Mexico and US for nurserymen, farmers, ranchers, highway landscape designers and seed collectors on how to minimize harm to milkweeds/monarchs; and (c) engaging the general public through social media with imaginative messaging and networking. Their Board of Advisors is an impressive group of scientists, restorationists, writers, environmental educators, and farmers from three countries. Dr. Nabhan wrote a new (Fall, 2018) 24-page booklet entitled “Considerations for Planning and Maintaining a POLLINATOR & MONARCH GARDEN for Citizen Science, Education, and Conservation in Western National Parks.” It is available for free download here: <https://makewayformonarchs.org/i/archives/2908>

Malibu Monarch Project

- The Mayor pledged that we would fulfill the NWF Mayors for Monarchs program. We have already completed 12 items, so we are in the Leadership Circle. At our initiation, the Mayor has declared July 23, 2018 to July 24, 2019, the Year of the Butterfly.
- We installed an approximately 3,000 square foot pollinator garden at Las Flores Park. We will complete the garden this year - fire, personal and city obligations permitting. We will install a pollinator garden at Trancas Park. NPS will supply locally sourced native plants for the gardens, depending on conditions after the wildfire. A member has gathered local native seeds for a meadow. The Las Flores Park pollinator garden is a NWF Certified Wildlife Habitat with their signage. Educational signage by our artist member will be included at each park. QR plant identification tags will be used.
- We have established a cooperative relationship with the City to outreach to seniors and children's groups on monarch preservation and native plant gardens via presentations and art classes at City facilities. Outreach has been initiated with the County Library for funds for a native plant garden adjacent to the Library. The Library will offer a Monarch story time for young children in December and will have a monarch exhibit at the library. We are establishing relationships with schools to teach about monarchs, native plant gardens and pollinators in general. Our master gardener is building a curriculum for grade school. We will outreach to churches and shopping centers to establish native plant pollinator gardens. We will continue to work with USFWS for instructions on native plant gardens and in the future, programs for children in schools. We had booths at 4 events in Topanga, Calabasas and Malibu.
- Participation in western monarch thanksgiving count.

Metro Blooms

Creating pollinator habitat can be expensive; it is essential that new habitat is situated in locations yielding the greatest cost to benefit ratio. Deciding where to place habitat depends on knowing the current location and amount of different types of land use, but there is a lack of high-quality mapping information to inform the process. In 2018, Metro Blooms continued working to promote pollinator habitat mapping, involving a wide range of conservation partners and researchers who have been developing a method to effectively map pollinator habitat. Part of this initial effort included creating maps for Washington County and Minneapolis that identified both pollinator refuge areas in need of protection, and high-priority areas for habitat creation or enhancement.

MFA Incorporated

MFA Incorporated has worked to educate employees at all of our 147 locations across Missouri, Kansas, Iowa, and Arkansas about conservation activities, cost share programs, and plants that benefit monarchs and other pollinators. A particular focus has been explaining the importance of milkweed plants and demonstrating that milkweed isn't as harmful to crops and pastures as most producers believe. This effort will hopefully result in less milkweed being targeted in herbicide applications. MFA has also worked with native seed suppliers to ensure we have access to seed mixes that are beneficial to monarchs, meet cost share specifications, and are affordable. Employees across our territory have also been given information about proper site preparation and planting methods for monarch habitat. MFA Incorporated has also partnered with two high schools to plan, prepare the site, and plant monarch habitat that will be used as a educational tool for all ages.

Michigan Department of Natural Resources

The Michigan Department of Natural Resources (MIDNR) and many of our conservation partners have been working on monarch-specific conservation activities since 2015. Our monarch conservation efforts in 2018 include: 1) MIDNR and USFWS partnered with USDA NRCS to establish an annual fund pool of \$100,000 for monarch habitat in the Environmental Quality Incentives Program (EQIP), 2) the USFWS's Partners for Fish and Wildlife Program and Monarch Initiative has restored over 708 acres of pollinator habitat between 2015-2018, 3) USDA, in partnership with MIDNR and Pheasants Forever, began enrollment for CRP Monarch and Pheasant SAFE on June 4, 2018 to target 40,000 acres of new diverse native grassland habitat in southern Michigan, and 4) continued building and strengthening our partnerships.

Midwest Association of Fish & Wildlife Agencies

The Midwest Association of Fish and Wildlife Agencies (MAFWA) completed version 1.0 of the Mid-America Monarch Conservation Strategy in June 2018. The goal of this strategy is to coordinate state and partner efforts to achieve habitat restoration and enhancement to support an average overwintering eastern monarch population occupying six hectares

in Mexico, consistent with international goals. The Strategy provides a framework for regional coordination while also supporting state-level monarch conservation processes. To develop and implement this Regional Strategy, MAFWA formed a governance structure consisting of a Board of Directors from state fish & wildlife agencies, with national-level partner agencies and organizations serving as Ex-Officio Advisory Members to the Board. The structure also includes an Executive Committee; Technical Steering Committee; and multiple Technical Work Groups appointed on an as-needed basis. Now that the Strategy document is complete, MAFWA is mobilizing its monarch conservation team to provide support and coordination for implementation of the strategies and goals contained both in the Regional Strategy as well as state-level monarch and native pollinator plans. Since 2015, nine states in the Mid-America region have completed state monarch and/or native pollinator plans, while another eight states are either updating or completing new plans within the next calendar year.

Minnesota Board of Water & Soil Resources

The Minnesota Board of Water and Soil Resources (BWSR) is the state soil and water conservation agency. BWSR has a Pollinator Initiative focused on increasing awareness, incorporating pollinator habitat into programs and providing technical resources for partners. Through partnerships the agency has restored around 300,000 acres of habitat. BWSR is working with federal and local partners on a new Conservation Reserve Enhancement Program to restore around 60,000 acres of conservation land. These projects have an emphasis on planting milkweeds and a diversity of native species. BWSR is also working with conservation partners and researchers to map existing and potential pollinator habitat in Minnesota. A Pollinator Toolbox, and 40 new seed mixes have been developed for projects, as well as a “What’s Working” webpage to document successful restoration practices. BWSR is also focused on the establishment of pollinator habitat on solar projects through a Habitat Friendly Solar program.

Minnesota Department of Natural Resources

Minnesota DNR views monarch and pollinator conservation as important to the agency’s goal to conserve and enhance Minnesota’s natural resources. DNR manages 5.5 million acres of land, and achieves benefits to monarchs and pollinators through habitat protection, enhancement, and restoration efforts, including extensive work on native prairies. Staff have conducted and contracted surveys to improve our understanding of Minnesota native pollinators. DNR is active in two groups established by a pollinator executive order: 1) the stakeholder committee recently released a set of policy recommendations, and 2) the interagency team will publish its second annual report in December 2018. Supported by a new full-time State Pollinator Coordinator position, DNR staff members are active participants in regional and national monarch butterfly conservation planning efforts and are currently developing a Native Pollinator Action Plan. The Division of Parks and Trails is participating in the national “Parks for Monarchs” campaign, conducts interpretive programming, and is installing ¼-1+ acre educational pollinator plantings with exhibits at 10 state parks.

Minnesota Department of Transportation

The Department of Transportation created, protected, and enhanced pollinator habitat on state-managed transportation lands; supported pollinator research on rights-of-way; participated in the development of a national monarch butterfly conservation agreement; developed a stakeholder committee to discuss changes to MnDOT’s mowing and haying permitting process, which published recommendations in February 2018; and developed an ArcCollector app to map native remnants and plantings.

Minnesota Native Landscapes

In 2018, MNL continued our efforts to increase high quality pollinator habitat across the Midwest. This year, we have added hundreds of acres of pollinator habitat on residential properties, corporate campuses, roadsides, state and federal lands, green energy projects, and more. We have expanded our native seed and plant production acreage and offerings, priding ourselves on growing the highest quality native plants and seed. Lastly, we continued our Milkweed for Monarchs collection this year with all of the collected seed being donated back to the community.

Mississippi Valley Conservancy

We are enthused to be a part of the MJV network; thank you for all you do for monarch recovery across the nation. In 2018, Mississippi Valley Conservancy has supported the partnership as follows:

- Social media promotion of monarch conservation and the MJV both within our organization through Facebook and e-news blasts.

- Monarch habitat conservation and improvement through planting, prescribed burning, and invasive vegetation removal: (1) Planted 12 acres of milkweed both on our owned nature preserves and on private conservation easement sites this year, (2) managed and improved 17 acres of land containing pollinator species including common and poke milkweed through brush clearing, and (3) conducted over 350 acres of prescribed burning to help maintain those monarch producing sites.
- Protection of monarch habitat and flyway support, by preventing unwanted development on 8 properties, totaling nearly 800 acres. We are on track to nearly double this acreage in 2019.

Missouri Prairie Foundation

The mission of the 52-year-old Missouri Prairie Foundation (MPF) is to protect and restore prairie and other native grasslands through land acquisition, management, education, and research, and to operate the Grow Native! program, the goals of which are to increase the demand for and supply of natives, including milkweeds and other native nectar sources. Work that MPF completed in 2018, as of November 17, to benefit monarch butterflies includes the following:

- Stewardship of MPF's 3,300 acres of mostly original prairie in 21 tracts, including invasive species control and prescribed burning, as well as management services to other prairie landowners
- Seed collection from MPF prairies and reconstruction over 168 acres on four prairies in west/southwest Missouri
- Sale of 275,000 native plant tags, including thousands of milkweed tags, to promote natives in the marketplace
- Distribution of 3,770 free native milkweed and nectar plants to more than 40 groups/events

Missourians for Monarchs

Actions and Goals of the Missouri Pollinator Plan in 2018:

- Hired New Statewide Coordinator- Donnamarie Duffin
- 212,000 acres already established or managed and entered into the Monarch Conservation Database (Goal: 385,000)
- Developed Website/Outreach through social media
- Identify and Engage New Partners will be priority in 2019
- Outreach and Education Efforts Completed
- Many demonstration plots and plantings established
- Literature and website information: Backyard Habitat for Monarchs, Habitat Information Sheet, Milkweed and Monarchs, MU Botanical garden publication.
- Pollinator Folders- developed and distributed, shared with multiple states and online. Contained Cost share trifolds for each agency.
- BMP documents for Row Crops, Pasture and Management Activities for non-crop areas.
- Monarch Monitoring Efforts: 2018 adopted MJV monitoring protocol to align with all other states and hosted a training for 23 new citizen science volunteers to monitor milkweed.

Missouri Department of Conservation

Our organization has helped foster a statewide summit and participated in helping develop the MO monarch plan along with 34 other organizations. Our organization (MDC) has implemented several demonstration plots with partners including the MomCattlemens association, Association of MO electrical cooperatives and partnered with several youth pollinator projects with Quail Forever and 4H. On state land we have improved or developed several thousand acres of public state land since 2014. In addition we have provided technical assistance and or cost share on several thousand acres of private land projects as well. As a collaborative the state of MO has improved about 214,000 acres since 2014 according to accomplishments entered in the MCD already.

Monarch Alert

We completed a species distribution model that predicts the location of western monarch butterfly overwintering sites in California, including a climate change projection for the year 2050. This has been submitted. We are initiating a micro climate study across multiple overwintering sites in California. This study will assess microclimate at Custer locations, and at random sites within about 20 groves.

Monarch Butterfly Fund

MBF's mission is to foster the conservation of North American monarch butterflies and their migration through habitat restoration, research, monitoring, education, and support for sustainable community development in and near monarch habitats in Mexico. In 2018, MBF supported several local non-profits in Mexico in projects ranging from promoting citizen science and outreach to scientific research and forest conservation. Highlights include the successful reforestation of 28 hectares in the buffer zone of the Monarch Butterfly Biosphere Reserve with 30,000 trees grown in collective nurseries, support for the "Mayor's Monarch Pledge" which involves recruiting municipalities in the fall migratory route to create pollinator gardens, biodiversity monitoring, assisted migration experiments to determine the best conditions for planting oyamel trees under predicted climatic change, and community workshops to promote sustainable practices such as organic gardening and fuel-efficient stoves.

Monarch Flyway

Monarch Flyway is the largest, wild sourced milkweed seed producer in the world. Due to the interest in local eco-type seed, we expanded our Sustainability Programs into 2 additional states. We've also helped other milkweed seed producers get their pods processed which significantly reduces the labor involved in seed production. Monarch Flyway focuses on market based conservation. Research is underway to expand product lines including an all milkweed fiber pillow which was well received at a national trade show in October. Monarch Flyway also attended a Sustainable Ag conference helping milkweed move from undesirable to a possible profit making, value added "crop" that thrives in biodiversity. Using milkweed helps create more habitat and protects current milkweed fields from being "sod busted".

Monarch Gateway

Monarch Gateway Advocates to Government to Create Pollinator Habitat by studying the degree of willingness to create habitat following top-down commitment from local government, we are able to project the approximate percentage of habitat a community will create at the end of three or five years. We roll national pollinator policy and plans and roll it down to the county, city and private landowners. MG awarded \$185,000 in habitat grants to cities to create 90 acres of native prairie restorations for pollinators in 11 cities. Monarch Gateway Grows Local Ecotype Native Milkweed for Texas Ecosystems by traveling across Texas to collect milkweed seed then grow out milkweed at partner greenhouse locations. MG's "How to Propagate Native Milkweed" workshops generate approximately 669 plants for every 65 participants. Texas A&M tested the propagation method using nationwide milkweed species and found the propagation method worked for all species.

Monarch Joint Venture

In 2018, MJV has grown to 80 organizations working together to protect monarchs. Our coordination and facilitation enacts and supports effective monarch conservation. We support our partners in their on-the-ground habitat management and restoration, working with landowners, studying monarchs and public engagement work. MJV was the United States lead in organizing the 2nd annual International Monarch Monitoring Blitz, with partners from the US, Canada and Mexico. Citizen scientists monitored 53,588 milkweeds in this 1-week blitz, to collect a monarch breeding population snapshot. We maintain the 'information clearinghouse' of monarch resources online. We launched the Monarch Conservation Efforts Map where people can record and share monarch conservation efforts internationally to amplify their work. The map aims to visualize conservation efforts and connect people locally. We are a leader of the Integrated Monarch Monitoring Project (IMMP). IMMP finished its third year of collecting data. It continues to provide information about monarchs, habitats and threats with citizen scientists and biologists across landscapes. We are leading a project through the National Cooperative Highway Research Program with roadside land managers to create evaluation and prioritization tools for potential habitat and resources.

Monarch Health

The onset of the 2018 migratory season marks 12 years of Monarch Health citizen science monitoring. In 2017, 226 participants submitted samples to Monarch Health, generating 6,542 new lines of data and representing our 2nd highest year to date. In 2018, Monarch Health implemented a full database update and released a new data sheet and instructions packet. We also launched an outreach project providing virtual tours of the Monarch Health lab to educators at nature centers and schools. Monarch Health data are currently being utilized in two large-scale analyses

investigating how sedentary behavior in the southern US and shifts in breeding season length in northern climates are altering monarch-Oe transmission dynamics. These analyses will allow us to explore how monarch-parasite interactions are responding to climate change and other human-induced environmental impacts.

Monarch Lab

The Monarch Lab is devoted to education, outreach, and research. In 2018 the Monarch Lab held 3 monarch citizen science trainings in collaboration with Wisconsin Master Naturalists, as well as hosted three workshops for K-12 teachers and informal educators (reaching over 150 teachers) on monarch biology, ecology, conservation, schoolyard science, and citizen science. Each December the Monarch Lab hosts the Ecology Fair, a platform for teachers and their students to bring their own research projects to showcase. The students are interviewed by university scientists, have a chance to learn from their peers, and the opportunity to attend interactive breakout sessions with an ecology theme. The Monarch Lab also coordinates the Monarch Larva Monitoring Project, a citizen science project that engages hundreds of adults and children in monarch monitoring and has 27 peer reviewed publications.

Monarch Watch

We distributed >148,300 milkweeds plugs in 2018. Over 4,700 were distributed to 139 schools and non-profits with support from NRDC. The remaining were distributed through the Milkweed Market (>25,800) and our Free Milkweeds for Restoration Program (>117,000). The latter is supported by industry, NGOs and private individuals. We are continuing to work with 7 tribal nations to restore 350 acres of milkweed/pollinator habitat on tribal lands in eastern Oklahoma (supported by MJV and NFWF). We are expanding the Tribal Action for Pollinators (TAP) program through training, conferences and webinars to facilitate tribal engagement in practices that support monarchs and pollinators. As of 18 September 2018, there had been 21946 Monarch Waystation habitats registered with Monarch Watch. 3,289 Waystations were registered in 2018. Over 400000 monarch tags were issued to recipients this fall.

Monarchs Across Georgia

Established in 2000, Monarchs Across Georgia (MAG) is a volunteer-based committee of the non-profit 501(c)(3) The Environmental Education Alliance of Georgia (EEA) that is dedicated to monarch education, habitat restoration, and citizen science. This year we have partnered with Journey North in the Symbolic Migration project, taking over the logistics and fund raising. In September 2018, MAG brought Journey North's Mexico Reporter, Estela Romero, to Georgia, coordinating her visits to schools and public presentations. MAG is coordinating the Integrated Monarch Monitoring Program (IMMP) in Georgia. In partnership GA Department of Natural Resources, we hosted a training on the Georgia coast and then facilitated a training in the Piedmont region of the state, reaching over thirty volunteers. Twenty sites were assigned and are currently being monitored for one or more of the established protocols. MAG partnered with Monarch Lab to create a "Monarch Festivals Guide" that will be available November 2018 on the Monarch Joint Venture website as a free resource. This was the result of a discussion in the Education break-out session at last year's MJV Partner Meeting.

National Park Service

In 2017 the National Park Service (NPS) expanded its pollinator/monarch efforts of the past years and partnered with The National Park Service (NPS) is active in all aspects of monarch conservation. Across the country, park staff are surveying and tagging monarchs, monitoring larvae, planting pollinator gardens, and providing educational programs to the public. A few highlights include: Dinosaur National Monument biologists partnered with the Southwest Monarch Study to tag adult monarchs to learn more about the migration of the western population. Cuyahoga Valley National Park (NP) is part of the Monarch Butterfly Sister Protected Area Network and has joint projects with Point Pelee NP in Ontario Canada. Friendship Hill National Historic Site's dedicated Monarch Mafia are planting pollinator gardens, surveying for milkweed, and participating in the Monarch Larvae Monitoring Project. Operation Butterfly Wings is a effort to engage NPS units and National Heritage Areas to develop their Pollinator Resolutions to restore/enhance pollinator habitat, a model we hope to expand in 2019.

National Recreation & Park Association

NRPA is a national NGO of more than 60,000 professional and citizen members from public parks across the nation. NRPA works to create an interconnected network of public parks for pollinators through articles in its national publication; education sessions at its national conference; webinars; social media; blog posts, and other social and print media, NRPA's "Parks for Pollinators" campaign, launched in 2018, an extension of our Parks for Monarchs campaign, is

a national campaign focused on raising public awareness of the current pollinator crisis, encouraging local action, and positioning parks as a national leader in advancing pollinator health. Notable in the past year, a national photo contest and a national survey was disseminated to determine the public's knowledge about pollinators and how their actions can impact pollinators and their habitat. Our membership was also surveyed to help the Million Pollinator Garden Challenge.

National Wildlife Federation

The National Wildlife Federation has secured commitments from over 400 Mayors pledged to help monarchs across communities in recovery efforts and empowering people to grow native plants like milkweed in the places where they live, work, learn, play, and worship. NWF is a steering committee member of the Monarch Joint Venture, and launched the Save the Monarch campaign in coordination with the U.S. Fish and Wildlife Service and NFWF. Our state affiliates in Illinois, Indiana, Kansas, Oklahoma, Michigan, Arkansas, Missouri, Texas, Kentucky, Ohio, Nebraska, and South Dakota have led or supported fish and wildlife agencies in developing monarch state plans. NWF serves on the Board of Directors for the Mid-America Monarch Conservation Strategy, a strategy that will steer monarch conservation efforts in the Central Flyway for 20 years and beyond. We have developed Monarch Heroes and Monarch Mission school curriculum shared with a network of 11,000 schools. <https://www.nwf.org/Our-Work/Wildlife-Conservation/Monarch-Butterfly> - Mary Phillips -national overview, Rebeca Quinoz Perez- South Central, Naomi Edelson -State plans

Native Plant Society of Texas

The Native Plant Society of Texas (NPSOT) completed the planting of Monarch Waystations in four Texas Department of Transportation (TxDOT) rest areas on Interstate 35 between Austin and Dallas in partnership with the U.S. Fish and Wildlife Service. Phase II of the Hill County Safety Rest Area Monarch Waystations was implemented by volunteers in March 2017, installing an additional 1,200 sq. feet of gardens featuring nectar-producing plants and milkweeds. Volunteers also established new Waystations in March in existing landscape beds at the Bell County Safety Rest Areas. The I-35 project manager also designed interpretive panels about monarch ecology and the importance of conserving habitat throughout the corridor to support recovery and migration of the eastern monarchs. These panels will be installed at the waystations once the new national migration map has been approved by participating partners. In addition a webpage for the I-35 Waystations has been added to their website: <http://npsot.org/wp/education/interstate-35-monarch-waystations/>. The Bring Back the Monarchs to Texas (BBMT) grant program continued to support the establishment and enhancement of Monarch habitat across the state. \$4,200.00 was distributed to applicants in amounts of \$100 - \$400 to purchase native milkweeds and native nectar plants to create or supplement monarch demonstration gardens or Monarch Waystations.

Natural Resources Conservation Service

The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) funded a targeted conservation effort in two regions, a total of 10 states that invested \$8 million in fiscal years 2016-2018 to help combat the monarch butterfly's decline. NRCS provided technical and financial assistance to help producers and conservation partners plant milkweed and nectar-rich plants along field borders, in buffers along waterways or around wetlands, in pastures and other suitable locations. NRCS also helped producers manage their pastures in ways that increase critical populations of milkweed and nectar plants, all while improving the health of their rangelands. The Environmental Quality Incentives Program and remaining funds from the former Wetlands Reserve Program provided funding for this work. NRCS will be offering enhancements through the Conservation Stewardship Program to establish monarch habitat nationwide. Projects are underway to evaluate the effectiveness of these NRCS efforts, including collaborations with Monarch Joint Venture (MJV) partners in the Midwest. Working with agency and other biologists, NRCS Central National Technology Support Center biologists developed and are refining Wildlife Habitat Evaluation Guides, Decision Support Tools, and on-the-ground training courses to support implementation of monarch conservation activities in the Midwest and Southern Great Plains. The NRCS Plant Materials Centers in Florida, New Mexico, and Nevada completed native milkweed seed increase projects in cooperation with MJV partners. Plant Materials Centers, working with other NRCS staff and partners, have produced regional milkweed guides. In addition, NRCS staff working with partners have developed regional plant lists, including milkweed and important nectar producing species to support NRCS monarch habitat efforts. These documents may be found at: <http://www.nrcs.usda.gov/monarchs>.

Natural Resources Foundation of Wisconsin

The Natural Resources Foundation of Wisconsin provides sustainable funding for Wisconsin's most imperiled species and public lands, while connecting generations to the wonders of Wisconsin's lands, waters, and wildlife through

conservation, education, engagement and giving. In 2018, we helped fund and support projects including Monarch Larva Monitoring Project citizen science trainings, schoolyard butterfly gardens, and the launch of the new Wisconsin Monarch Collaborative, a statewide consortium of organizations committed to recovering the monarch butterfly. We also funded habitat restoration efforts on hundreds of acres that will benefit monarchs on state-managed properties, and we hosted multiple monarch trips through our Field Trip Program. As a partner in the Wisconsin Monarch Collaborative, NRF is helping draft the state strategy for monarch conservation and secure funding for statewide and grassroots monarch conservation efforts in Wisconsin.

Naturedigger

Naturedigger's Monarch SOS iOS app is a citizen science data collection and identification tool that was released in 2014 in cooperation with the Monarch Joint Venture. Initially, it was used as a monarch life cycle, and milkweed field guide to assist the general public with identification and citizen scientists with collecting monarch population, migration and conservation data as well as milkweed habitat data. It has evolved to include a Twitter feed for MJV partners as well as citizen science reporting in the western United States. Southwest Monarch Study, Xerces Society for Invertebrate Conservation and US Fish and Wildlife Service collect data using the Monarch SOS app. Reports currently being used include tagging and reporting a tag, Western Monarch and Milkweed Mapping and the Western Monarch Thanksgiving Count. Future updates will include additional life cycle information and images as well as numerous milkweed species and photos.

Nebraska Game and Parks Commission

The NGPC has been working on monarch conservation through research, conservation partnerships, and community outreach. As part of our effort to establish 125 million milkweed stems in our state, we surveyed 278 properties consisting of eight different management types for *Asclepias* richness and abundance. The results will help us to determine best management practices for establishing milkweed on our public and private lands as well as roadsides. In addition to milkweed research, we also conducted monarch butterfly transect surveys on 70 properties during the months of June and July. Our commission also helps to coordinate and document conservation efforts for monarch butterfly habitat and policy. We work with seven non-profits as well as other state agencies such as the Nebraska Department of Transportation and the NRCS. Currently, we are planning a series of workshops to discuss monarch butterfly and pollinator habitat establishment in the eastern breeding grounds.

Nebraska Wildlife Federation

The NEWF established community and schoolyard pollinator gardens in urban environments with emphasis on the needs of the monarch butterfly. Three schoolyard and five community gardens were completed. Training focused on planning, planting and maintaining the gardens. Educators received resources on incorporating the garden into the curriculum. Maintenance was problematic as caretakers could not identify desired plants versus weeds. A weeding guide is being written for the 4th grade level to help students, teachers, and community members successfully tend their gardens. It will be completed by year's end. Partnerships with Nebraska Statewide Arboretum, Community Crops, Monarch Gardens LLC, Lincoln Public Schools and many nonprofit businesses contributed to the success. The Outdoor Family Initiative was established to inspire diverse families to enjoy the great outdoors with the aim of fostering environmental stewardship across generations through interactive family-friendly events.

North American Butterfly Association

NABA is currently implementing the Southernmost Monarch Waystation project funded by NFWF at the National Butterfly Center. They continue to look for new partnerships and collaborative opportunities to address monarch decline. The Garden/Habitat Program (and coinciding certification program) provides information and technical assistance to members and others about which plant species to use in plantings, and how to deal with pest issues using earth-friendly alternatives to pesticides. NABA's National Butterfly Center educated thousands of people annually about monarch life history, habitat requirements and population threats. They are looking to scale up on-the-ground conservation practices particularly for prairie butterflies and forging new relationships with other professionals in the US, Canada and Mexico and are about to launch a major, and innovative, project to save federally endangered Bartram's Scrub-Hairstreaks. NABA is a founding member/Steering Committee for Monarch Joint Venture, Pollinator Protection Campaign, Million Pollinator Challenge, National Pollinator Garden Network and more.

North Dakota Game and Fish Department

In 2018, the NDGFD implemented more than 1200 acres of new grass/forb plantings on private lands and WMAs, conducted prescribed burns on 400 acres and enrolled 1500 acres of grazing systems to improve habitat for monarchs and other pollinators. NDGFD staff are working with schools on an Urban Pollinator Program. NRCS will grow pollinator plugs and schools will teach kids about pollinators, then establish a garden with the plugs. NDGFD is partnering with ND Parks and Recreation Dept to assemble more than 10,000 seed packets to be given with the 2019 state park pass which will feature a monarch. NDGFD is providing funding and/or technical assistance to numerous partners that will implement pollinator conservation efforts, e.g. pollinator plots, restoring grassland and woodland areas within major urban cities, prairie reconstruction on WPAs, and precision agriculture. Also, various pollinator habitat and outreach efforts were conducted throughout the state by NDGFD and partners.

Northeastern Association of Fish & Wildlife Agencies

The Northeastern Association of Fish and Wildlife Agencies (NEAFWA) represents 13 northeastern states and Washington DC. Monarch activities are listed in state Wildlife Action Plans, which were all revised in 2015. Eleven Wildlife Action Plans list monarch butterflies as Species of Greatest Conservation Need, including Connecticut, Delaware, Washington DC, Maine, Maryland, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Vermont and Virginia. States continue to implement actions for monarch and pollinators collaborating with transportation agencies and utilities to manage habitat along right-of-ways, increasing milkweed on state owned properties through planting, seeding and alternative mowing, and increasing participation in citizen science by training volunteers. The Northeast Monarch Conservation Strategy was completed in February 2018 and included as an appendix to the MAFWA Mid-America Conservation Strategy. This document provided a summary of actions states in the region can take to help conserve the monarch in the future.

Office of Kentucky Nature Preserves

In 2018 KNP continued efforts to maintain and improve natural grassland, barrens, and glade communities found on our natural areas through prescribed fire, woody removal, invasive control, and we added over 1500 acres of new land to existing natural areas. Renewed funding sources and increased manpower, as well as new partnerships allowed us to increase the burn capacity and implement prescribed burns on over 200 acres, more than in any recent year. Staff collaborated with other state agencies to help implement new monarch friendly mowing regimes and pollinator seed mixes along state and local highways and right of ways. Funding sources were secured for 2019 that will allow us to increase prescribed fire activities and mitigate woody encroachment on grassland and barrens habitat into the future.

Ohio DNR – Division of Wildlife

Ohio's goal is to add 95M milkweed stems, along with nectar sources by 2035, on ~1.85M acres of land.

- The Ohio Pollinator Habitat Initiative (OPHI) was created by the U.S. Fish and Wildlife Service and the ODNR – Division of Wildlife. The mission is to “create and improve pollinator habitat across the State of Ohio and increase and improve pollinator conservation for all Ohioans.” The motto is “All you can, where you can.” Activities include: 60+ outreach events; social media presence through Facebook and Twitter; web site information; and a biennial symposium with + 400 attendees participating.
- OPHI organizes an annual milkweed pod collection with ~19M milkweed seeds/year collected.
- ODNR public land management has increased milkweed stems by ~18M through ~58k acres of habitat improvement on Wildlife Areas.
- ODNR private lands biologists monitor USDA programs for milkweed and contact landowners willing to have it planted, or will allow harvest of existing milkweed pods.

Ohio Pollinator Habitat Initiative

In 2018 OPHI directly impacted 58,818 acres of habitat for monarch and pollinator conservation. This accomplishment was achieved through coordination, implementation, and outreach efforts. This directly reflects the efforts and commitments of all of OPHI's many partners.

Oklahoma Department of Transportation

The Oklahoma Department of Transportation (ODOT) is working to support the native vegetative habitats for the Monarch butterfly and other pollinator species, which grow naturally within our right of ways. ODOT's efforts include decreased mowing practices during critical Monarch migration seasons, partnering with other pollinator habitat conservation organizations and planting Monarch specific, pollinator friendly gardens. More information can be found by contacting Amanda Alexander, Vonceil Harmon, or Kait Taylor in the ODOT Environmental Programs Division, 405-521-3050.

Oklahoma Department of Wildlife Conservation

The Oklahoma Department of Wildlife Conservation is a partner in the Oklahoma Monarch and Pollinator Collaborative (OMPC), a statewide group of over 40 organizations and citizens working together to ensure thriving Monarch migrations for generations to come. The mission of the OMPC is "to educate, engage, and support Oklahomans in the protection and enhancement of suitable habitat and nectar sources for monarchs and pollinators throughout Oklahoma". In 2017, the OMPC finalized and launched the "Statewide Monarch Conservation Plan" to address Monarch Butterfly conservation for the state of Oklahoma. The plan identifies various strategies for recovering Monarch populations through outreach and habitat restoration.

Oklahoma Monarch & Pollinator Collaborative

Oklahoma Monarch & Pollinators Collaborative (OMPC) launched a state-wide Monarch and pollinators habitat restoration campaign in the spring of 2018. In 9 months, we've created a website (www.okiesformonarchs.org) to share events, news and resources with the public, as well as a Facebook page (OkiesforMonarchs). To date, the outreach has focused on the goals of engaging, educating, inspiring and empowering communities of all sizes. The consortium created two traveling "tabling kits" which are taken by OMPC members to festivals, plant sales, conferences, expositions, affinity club meetings and more. OMPC hosted 13 "Monarch Meet Ups," partnering with community hosts. This fall the public libraries of 5 towns along the I-35 corridor hosted our expert presenters. Meet Ups provide a forum for neighbors and civic leaders to network and create inertia to expand pollinator habitat in their hometown. Media relations and increasing Mayor's Monarch Pledges are key objectives this year's work.

Pacific Grove Museum of Natural History

The PG Museum is supporting monarch conservation by 1) providing monarch school education programs at the Museum and the Pacific Grove Monarch Sanctuary. Programs are provided for ~ 1,500 students per year. 2) providing docents for public Monarch Sanctuary interpretation and spotting scope viewing 3) Coordinating Xerces Society Western Monarch Thanksgiving Counts and New Years Counts for Monterey County 4) Science Saturday- Magnificent Monarchs on 11/24 (free family science event highlighting the western monarch) 5) Engaging local middle and high school students in a monarch monitoring program, in which they are trained to count monarchs at overwintering sites and analyze data. 6) Giving monarch talks/lectures at local retirement homes, colleges, and other organizations

Pheasants Forever and Quail Forever

Pheasants Forever, including its quail conservation division, Quail Forever, is the nation's largest nonprofit organization dedicated to upland habitat conservation. Pheasants Forever and Quail Forever have more than 145,000 members, 725 local chapters across the United States and Canada. Since its creation in 1982, Pheasants Forever has completed 530,000 habitat projects impacting 17 million acres. In the last six years, we have developed seed mixes that have included milkweed for 12,417 projects across the Midwest. Of those projects, we have impacted 155,974 acres and have planted 643.4 million milkweed seeds. Since 2014, 31,471 individuals have helped us establish 355 youth pollinator habitat projects on 798 acres. In partnership with state and federal agencies, Pheasants Forever and Quail Forever employ 130 field biologists throughout the country. Our field biologist program is designed to deliver habitat programs that benefit pollinators and other wildlife on private and public lands. Our field biologists impact over 1 million acres per year, many of which, that benefit monarch butterflies.

Pollinate MN

Pollinate Minnesota is an education and advocacy organization. We focus mostly on bees, but through our classes, connect teachers and students to resources for monarch conservation. We also serve on Governor Dayton's Committee for Pollinator Protection, which is set to release our final report of recommendations to advise MN State Agencies in pollinator protection in December 2018.

Pollinator Partnership

In 2018 Pollinator Partnership (P2) launched Monarch Wings Across California (MWAC) & continued its work with Monarch Wings Across the Eastern Broadleaf Forest (MWAEBF). Through MWAC, P2 is establishing long-term habitat & research plots to benefit Western monarch populations. This project, funded by MJV, will improve understanding of migration patterns & forage requirements of California monarch butterflies, and inform restoration efforts indicating potential seed sources for future projects. So far 2 sites have been secured in Sonoma & San Joaquin counties. Monitoring will begin in 2019. Through the NFWF funded MWAEBF program, P2 continued training volunteers in plant ID & seed collection protocols, providing locally adapted native plant materials (seed & plugs) to be redistributed to restoration efforts within the ecoregion. P2 also conducted 5 habitat management workshops providing public land managers & private land stewards with educational & technical support. Additionally, ~90 site visits were completed throughout the ecoregion to offer consultation & secure over 23,000 acres of long-term monarch habitat.

Pollinators Prospering People

Pollinators Prospering People (PX3) is a new MJV partner. They are a non-profit dedicated to providing services that increase sustainable pollinator habitat by designing and implementing spaces that focus on the relationship between edibles and pollinators with education and community involvement. Monarchs are one of PX3's focal species and were the initial motivation for starting the organization. Their charisma and significance in monitoring ecosystem health are only a few of the reasons PX3 is so dedicated to their conservation. PX3 offers a variety of services including landscape assessment, design and management, grant consultation, plan development, and education and outreach.

Prairie Plains Resource Institute

During 2018 Prairie Plains Resource Institute restoration ecologists completed plantings of high diversity local ecotype seed mixes on several Nebraska Game and Parks Commission (NGCP) State Park lands, and along the Cowboy Trail in northern Nebraska. These 2018 NGPC plantings totaled about 221 acres. Our prairie and wetland seed mixes since 1980 have created resilient and diverse native prairie and wetland plant communities - typically very forby prairies which provide excellent habitats for pollinators, including monarch butterflies. Under watchful management they maintain good populations of common, showy, Sullivant's, sand and whorled milkweeds on upland, mesic and wet lowland and sandy sites. Ecological diversity, complexity and dynamism have been best in areas which are managed with prescribed fire and carefully monitored grazing. Milkweed seed collections for Prairie Plains mixes have increased significantly in recent years, which may prove interesting as areas develop.

Prairie Restorations, Inc.

Prairie Restorations, Inc. (PRI), has been working to restore native plant communities since 1977. They're pleased that along with their more typical residential, corporate and governmental habitat restoration business, they've planted almost 2,000 additional acres of native pollinator friendly habitat in the Midwest at many new solar arrays from 2016 to present. Their support of MJV is just another logical synergy. PRI and MJV missions are closely aligned, with species preservation being the strongest common bond. PRI will continue to introduce supporting plant species whenever they can. They are confident that these sites and thousands of other restoration sites can and will make a difference in the fight to save the monarch. PRI's commitment to plant community restoration and to MJV will remain in place for as long as there is work to do.

Public Service Commission of WI

The Public Service Commission of Wisconsin (PSCW) is the state agency that regulates utilities in Wisconsin. The PSCW is actively involved in the Rights-of-Way as Habitat Working group and the Wisconsin Monarch Collaborative. When

utilities require PSCW authorization, the PSCW analyzes the environmental impacts of utility construction projects and investigates mitigation options for these impacts.

San Antonio Zoo

The San Antonio Zoo is a leader in butterfly conservation with a seasonal butterfly house exhibit where they educate over a million visitors about monarchs and pollinators each year. All of the proceeds from the butterfly pupa purchased for the butterfly house help conservation of butterflies worldwide. They also spend over 30,000 dollars each year on the conservation of exotic butterfly species. The San Antonio Zoo's monarch and milkweed butterfly conservation program provides the Zoo with the beauty of returning monarchs, provides an educational opportunity for guests to see a native species that they can help directly, connects them to the world of butterflies - thereby fostering an appreciation for invertebrates and the plants they depend on – and also provides Zoo guests, volunteers and butterfly interpreters an opportunity to participate in citizen science programs onsite and offsite. The Zoo is a leader in the newly formed group the Alamo Area Monarch Collaborative. This group also helps bolster the relationship with their citizen science conservation partners at Cibolo Nature Center and Farm, Texas Parks and Wildlife, Master Naturalist, San Antonio River Authority, National Wildlife Federation, state, national and local universities and the San Antonio community. They have dedicated themselves to a yearly monarch conservation education festival (Monarch Fest) and to help highlight the monarch conservation efforts in the city.

Sand County Foundation

In 2018 we provided grants to fourteen high school agriculture programs in Wisconsin and Minnesota to propagate milkweed and other native forbs in school greenhouses and to transplant them onto rural lands. We published a brand new Pollinator Habitat Curriculum Guide with 28 hands-on habitat restoration activities that meet state and national education standards, and we trained ten Minnesota teachers in using the guide during a 3-day summer institute. We guided three rural electric cooperatives in Wisconsin and Iowa to establish monarch habitat around rural headquarters and electric substations. We also seeded prairie filter strips (an on-farm water quality practice with habitat co-benefits) on three commercial farms in Wisconsin, and introduced this new practice in presentations to conservation agency staff, university researchers, and private-sector service providers.

South Dakota Game, Fish and Parks

Our agency led a team of 20 partners representing government agencies, conservation entities and agricultural interests to draft a state monarch strategic plan. The plan's emphasis was to reinforce the MAFWA effort to restore monarchs in the Midwest but also accommodate state-specific concerns. The plan includes a 20-year increase of 68 million milkweed stems in eastern South Dakota, a goal that may be modified if future state-specific data provide a more informed estimate. SDGFP invited public review and comments on the draft plan through its Commission process. The plan was approved by the Commission on November 1, 2018. The plan and 360 SDGFP past, current and future habitat efforts were entered into the Monarch Conservation Database. We are currently investigating options for a state native pollinator coordinator, which we anticipate will be funded or shared with partners to reinforce that this is a cooperative effort for native pollinators and not solely a SDGFP priority.

South Dakota State University

SDSU Extension does not have a specific monarch conservation program, but we do programming on managed pollinator protection with our pesticide applicator audiences, cover pollinator habitat and conservation with Master Gardeners and 4-H groups, and participate in insect outreach events (Little Wings on the Prairie - July, Fort Pierre SD, ~300 attendees, and Insect Fest - Sept., Brookings SD, ~500 attendees).

Sentera

Sentera, a Minneapolis-based agricultural tech company, produces remote sensors, data analytics, computer vision products and machine learning tools for in-season crop production decisions. Sentera's technical achievements are typically applied to crops and are complementary to many precision agricultural practices and software tools.

A standard use case of Sentera technology includes the use of Sentera designed sensors integrated onto Unmanned Aerial Vehicles (UAVs), sometimes called drones. A mobile software application pushes a flight plan to the drone, enabling the UAV to fly autonomously. The pre-configured flight planning software optimizes the route and automatically triggers the sensor. The precision of the sensors and autonomous flight operation produce better data for precision analysis in Sentera's software management/analytics tool.

During the 2018 upper-mid-west growing season, Sentera applied their remote technologies designed for precision agriculture to identifying Common Milkweed in a prairie habitat setting using machine learning. Early results have produced high-levels of identification accuracy of Common Milkweed. Combining the identification capabilities of Sentera's machine learning tools along with GPS location-data will eventually yield highly-accurate maps capable of displaying location and density of milkweed present on broad acres. Sentera will be increasing the accuracy and fortifying the robustness of the identification algorithm in the 2019 growing season.

Southeastern Association of Fish & Wildlife Agencies

The Southeastern Association of Fish and Wildlife Agencies (SEAFWA) is an organization representing 15 state fish and wildlife agencies from Florida to Texas. SEAFWA brings knowledge and insight into the implementation of the North American Monarch Conservation Plan. The agencies have wildlife management expertise, connections in key regions for monarch conservation and will increase the presence of state agencies in the MJV. The states in the region include Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. This region provides essential migrating habitat during the migrations, and is critical for its role in providing breeding habitat for monarchs each spring. SEAFWA works with their partners to achieve goals benefiting fish and wildlife resources, including pollinators. They maintain committees consisting of professionals who explore and analyze a wide range of issues and factors affecting fish and wildlife resources and make recommendations to help mitigate those issues. Additionally, they sponsor cooperative fish and wildlife programs among member states and other entities to address issues of mutual interest. Most monarch conservation activity is aimed at community outreach to grow public support for monarch and pollinator conservation.

Southwest Monarch Study

The Southwest Monarch Study is a Citizen Science research project dedicated to monarch conservation in the Southwest United States including Arizona, New Mexico, Utah, Nevada, western Colorado and the deserts of southern California. By tagging and monitoring we are identifying key monarch migration flyways and breeding habitats in the region. Education is a key cornerstone of our Citizen Science effort. We offer education programs including monarch biology and tagging/monitoring training. With MJV funding we provided workshops in northeast Utah this summer culminating in a joint public land manager regional tagging and monitoring field experience. In addition to participating in numerous planning meetings with NGOs and government agencies, with NFWF funding we are adding milkweed to create Monarch Waystations in Arizona State Parks, Tonto National Forest and Bureau of Reclamation properties.

Tallgrass Prairie Center

The Plant Materials program promotes affordable, genetically diverse and regionally adapted seed for prairie and wetland restoration in the tallgrass region. We produce certified, source-identified foundation seed, and share technical expertise in seed production methods. The Integrated Roadside Vegetation Management (IRVM) program applies annually for federal funding to purchase 1,300 acres of native seed for Iowa counties. Seed mixes include grasses, nectar species, and generous helpings of milkweeds. We encourage county governments to hire a roadside manager. Doing so will ultimately reduce mowing and herbicide use, further benefitting monarchs. The Prairie on Farms program has installed sixty acres of high quality prairie strips (25 total strips) on nine farms in the Middle Cedar Watershed. Workshops, field days, and how-to information reach over 200 people annually. We conduct experiments on seed mixes and management to minimize weeds and reduce costs.

Texan by Nature

Texan by Nature's certification program provides employers, organizations, and individuals with a results-oriented and meaningful way to get involved in monarch conservation through projects that create essential habitats of native milkweed and nectaring plant project. The completion of our monarch symposium project resulted in numerous collaborative efforts between agencies, served as the foundation for the Texas Monarch Summit, and developed an

online community to foster communication between researchers and conservationists. Monarch efforts continue with our Rights-of-way as Habitat project funded by the National Fish and Wildlife Foundation. This project is underway and will create 350 acres of native pollinator habitat on pad sites throughout the Eagle Ford shale. Industry partners will come together to discuss native seed supply and demand, best management practices, the role ROWs play in habitat restoration, and feasible solutions for year-round native restoration operations.

Texas Department of Transportation

The State of Texas has planted over 5000 acres of wildflowers and established and continues to maintain pollinator waystations at Safety Rest Areas in the state. We have partnered with local agencies and non-profits to provide outreach and seeds to interested parties throughout the state. We trained personnel to manage our 800,000 acres of right-of-way in a manner that promotes wildflower conservation and establishment to provide beauty and habitat without compromising safety.

Texas Parks & Wildlife Department

Texas Master Naturalists (TMN) attended their annual meeting and received a Monarch conservation bulletin that promoted the Monarch Watch milkweed market and the Integrated Monarch Monitoring Program (IMMP) workshop that the MJV will hold in Texas in 2019. Monarch conservation talks' attendees signed up at the TMN meeting to request the IMMP workshop announcement. Others are expressing interest via Email. A new TPWD Urban Biologist with experience in the MLMP has offered assist with the IMMP workshop. TPWD identified state parks and wildlife management areas that overlap or are near the priority IMMP blocks to encourage monitoring at those sites. The Texas Monarch Consortium continues to work on the quantitative Monarch conservation plan, and the Consortium's working groups include Rights of Way, Urban/Suburban, Protected Lands, Rural Working Lands, and Native Plants and Seed Production. TPWD continues to represent SEAFWA on the MJV steering committee and submitted reports for SEAFWA state agency directors.

The Field Museum

The recent increase in urbanization provides unprecedented opportunities in cities to connect people with nature through monarch and pollinator conservation. Due to greater availability of high-resolution geospatial data, it's now possible to study areas of dense population at the scales needed to identify urban landscapes that are, or could be, plantable space for monarch habitat. U.S. Fish and Wildlife Service partnered with the Field Museum to develop a conservation strategy for monarchs in urban landscapes. This work resulted in the creation of tools and resources aimed at identifying the best places and strategies to put monarch habitat on the ground at the local scale. Building on the first phase of research, piloted in large metropolitan areas, the focus is now on small and mid-sized cities as well as testing out best practices for engaging different stakeholder groups. Additional project information and conservation planning tools can be found at www.fieldmuseum.org/monarchs

The Monarch Alliance

We have several key areas that we work on. First is education on the monarch's life cycle, migration and nutritional needs. Second, we hold native plant sales and on line fund raisers to support a Monarch Waystation grant program. This year, we gave out 8 grants to public, educationally oriented organizations in two Maryland counties and one in West Virginia. Our online fund raiser was to landscape a new City of Hagerstown Park celebrating the life of an individual who supported religious justice in the State of Maryland. Third, we dedicate the month of September to celebrate the fall monarch migration. This year, we held nine tagging demonstrations. In addition to these major focal areas, we held a butterfly count at the Antietam National Battlefield; a monarch and native plant workshop at our city's flagship Monarch Waystation at Kiwanis Park, Hagerstown, MD; participated in elementary school Science Olympiads; and held other events in support of monarch conservation.

The Nature Conservancy

In addition to the continued protection and restoration of critical habitat along their migratory path, The Nature Conservancy (TNC) completed several science and outreach projects to help save the monarchs including:

- Overseeded 150 acres of degraded prairie along the Platte River in Nebraska;
- Collected data on the response of flowering plants and milkweed populations in Nebraska to various fire and grazing management strategies;

- Planted 38 acres in Iowa of row crop to a diverse mix of native species, including several milkweed species;
- Overseeded an additional 10 acres in Iowa of diverse native species into a restored pasture complex;
- Co-launched "Okies for Monarchs" a public education campaign in conjunction with the Oklahoma Monarch and Pollinator Collaborative, a statewide group of 40+ organizations and citizens;
- Established an agreement with an Oklahoma producer-based organization to launch a pollinator strip cost-share program in 2019.

The Prairie Enthusiasts

In 2018 TPE has protected more habitat for monarchs by acquiring 4 new sites totaling 75 acres and 5 donated easements on 278 acres of remnant prairie & savanna. TPE also conducted active management of brush removal, weeding, and prescribed burning at most of the 35 sites on 2,000 acres we own with our 1,200 volunteer members organized into our 11 chapters. We also assisted landowners, agencies, municipalities, and other conservation organizations on managing hundreds of additional acreage. Our chapters also collected and planted 75-100 acres of local genotype seed of 80-100 species per acre, including milkweed. Our members and chapters also collected 5-10 pounds of milkweed seed to be used for monarch plantings. We have members that are collecting data for the monarch conservation database, and TPE is co-leading the protected lands working group in the Wisconsin Monarch Collaborative.

The Xerces Society for Invertebrate Conservation

- Published Managing for Monarchs in the West BMPs for western breeding habitat
- Published Protecting California's Butterfly Groves BMPs for overwintering sites
- Participated in development of state monarch protection plans as well as MAFWA and WAFWA plans
- In partnership with NRCS, worked with hundreds of farmers to increase habitat for pollinators and monarchs
- Helped NRCS create regional monarch habitat evaluation tools and monarch plant lists
- Completed western monarch habitat suitability models
- Continued to monitor the status of the CA overwintering population
- Hosted dozens of workshops and talks about monarch conservation nationwide
- Launched a CA initiative to restore monarch breeding habitat and develop site management plans at key overwintering sites
- DOD western monarch phenology field project across the West with WSU partners
- Participated in the SSA expert elicitation process for the East & West
- Milkweed establishment and nectar seed mix trials in CA

Three Rivers Park District

Three Rivers Park District has been actively managing native habitats, especially their 2000 acres of prairies for a wide variety of wildlife, including invertebrates for over 40 years. They regularly seed their prairies and woodlands with up to 6 species of milkweed and numerous nectar plants. In 2018, they overseeded 250 pounds of forb seed on existing prairie. TRPD is modifying their prescribed burn plans to be more insect friendly by adjusting burn locations, intervals between burns, and unit size. They have also been working with other butterflies and have recently successfully reintroduced Regal Fritillaries and just started with Leonard Skippers. The District has also been involved in using monarchs in environmental education programs for over 30 years. All of the Nature Centers in the district are still involved with monarch tagging through Monarch Watch. They are also participating in the Monarch Larva Monitoring Project.

U.S. Fish & Wildlife Service

During 2018, USFWS accomplished many efforts in support of monarch butterfly conservation. We continue to focus on delivering habitat on the ground. This year we restored and enhanced over 330,000 acres putting us at 1.3+ million acres of habitat for monarch and pollinators since 2015 across our National Wildlife Refuges, Wetland Management Districts and working with private landowners through our Partners for Fish and Wildlife Program. Additionally, we've created and enhanced 300 gardens. The species status assessment (SSA) for monarch butterfly was a focus of our staff time. The SSA report will be completed this year as the analytical approach to deliver foundational science for informing the Endangered Species Act (ESA) listing decision set for next June (2019). A database was created and opened this year to capture the efforts of monarch conservation across the nation, often working with MJV partners, to aid in the ESA listing

decision. USFWS continues to work internationally and serves as the U.S. lead for the Trilateral Monarch Conservation Science Partnership, which is currently supported by the Commission for the Environmental Cooperation (CEC).

U.S. Fish & Wildlife Service Partner for Fish and Wildlife Program

The U.S. Fish and Wildlife Service (USFWS) Partners for Fish and Wildlife (PFW) Program collaborated, while working through the Ohio Pollinator Habitat Initiative (OPHI), with over 30 PFW habitat conservation partners to complete 14 monarch/pollinator projects (178.9 acres) during 2018. The USFWS PFW 10-acre pollinator solar array project at Denison University in Granville, Ohio, led to the development of the Ohio Solar Site Pollinator Habitat Planning and Assessment Form formulated by the OPHI Solar Pollinator Program Advisory Team. USFWS PFW is working with high schools, career campuses and colleges located around the state who have greenhouses, to assist with growing common milkweed seed that's been collected during the OPHI Annual Milkweed Pod Collection into milkweed plug plants, to then be planted on the Ohio landscape with other conservation partners. The OH PFW Team has participated in over 50 monarch/pollinator outreach/educational events throughout Ohio.

U.S. Forest Service

The USDA Forest Service continued its commitment to restore or enhance 250,000 acres of monarch butterfly habitat in the fiscal year 2018 by collaborating with multiple partners. The projects consisted of inventorying and monitoring monarch habitat, planting milkweed, treating invasive species, seeding with native forb mixtures and using prescribed burns. Forest Service scientists worked on multiple projects to restore habitat and provide Monarch Way Stations for the monarch butterfly, focusing on the technical transfer of materials concerning milkweed propagation and field trials to determine the feasibility of outplanting milkweed rhizomes. Forest Service staff reported leading and partnering with other organizations to celebrate over 110 Pollinator Week celebrations and other education events focused on creating pollinator habitat, reaching over 18,000 individuals of all demographics on National Forests and Grasslands, in school settings, and on private property.

U.S. Geological Survey

Through the Monarch Conservation Science Partnership and in collaboration with USFWS, academic, and NGO collaborators, USGS published research papers that (1) describe putative densities of monarch butterflies occupying winter habitat in Mexico, (2) consider scenarios for milkweed restoration in the north-central U.S., and (3) analyze threats facing the eastern migratory population. On-going work examines recoveries of tagged individuals in Mexico to learn more about the origins of the wintering population, statistical power analyses to determine the magnitude of sampling needed in the breeding region, and an assessment of milkweed occurrence and density in the southern breeding region. USGS continues to work on sample design considerations for a tri-national effort to monitor monarchs and the resources that sustain them.

Thogmartin et al. 2017. Density estimates of monarch butterflies overwintering in central Mexico. PeerJ 5:e3221; DOI 10.7717/peerj.3221. <https://peerj.com/articles/3221/>

Thogmartin et al. 2017. Restoring monarch butterfly habitat in the Midwestern U.S.: "All Hands on Deck". Environmental Research Letters 12:074005; DOI: 10.1088/1748-9326/aa7637. <http://iopscience.iop.org/article/10.1088/1748-9326/aa7637>

Thogmartin et al. 2017. Monarch butterfly population decline in North America: identifying the threatening processes. Royal Society Open Science 4:170760. <http://dx.doi.org/10.1098/rsos.170760>

United Prairie Foundation

The United Prairie Foundation (UPF) is a new MJV partner. UPF in 2018 launched a program titled Prairie to the People (P2P) which has a goal of creating functional educational pollinator plots in the northern Prairie Pothole Region. UPF with a mission of aiding breeding waterfowl habitat has found a need to educate the public that native based habitats not only raise migratory waterfowl but also provide critical habitat for bees and butterflies. P2P plantings utilize locally collected seed sourced from area remnant prairies, grown in a UPF greenhouse and installed in high traffic areas. Collaboration with the Soil Conservation District, Municipalities, local clubs and the Chahinkapa Zoo located in Wahpeton North Dakota has provided the platform to launch the P2P program. UPF keeps ramping up native prairie harvest and collected over 6000 pounds of highly diverse prairie seed from over 35 remnant and planted prairies in 2018, including over 100 pounds of Swamp Milkweed seed. The establishment of the Railroad Prairie is collaboration with the Red River Valley Western Railroad, North Dakota Natural Resource and Trust, Bayer Crop Science Feed a Bee program and United Prairie Foundation. The goal is to create positive eco-system functions in a recently dug drainage

ditch located in Sheldon, ND showing agricultural producers a best management plan for maintaining waterways in North Dakota. Broke ground on UPF's Community Garden and Prairie Center in the fall 2018! The location is being leveled to erect a greenhouse to grow native prairie plants and provide space for FFA students to grow stuff!

University of Arkansas Center for Advanced Spatial Technologies

1. Analyze the current land available for Monarch habitat in the U.S. - Using existing research as a starting point developed standard methods for evaluating three model scenarios for uncertainty generated through analysis; identifying a proportion of each land category that is potentially error; Research has resulted in optimized model identifying extent of land categories for central migratory flyway for each year 2008 – 2017.
2. Evaluate change in Monarch butterfly habitat over the past 25 years - begins 2019.
3. Analyze the potential for restoring and expanding Monarch butterfly habitat - Building on existing research methods (Thogmartin et al. 2017) we are working with MAFWA to accomplish the same tasks for the south-central core utilizing existing land categorization data from objective 1.
4. Other - Beginning in February 2017 we began working with the Arkansas Monarch Conservation Partnership (AMCP) to develop the Arkansas Monarch and Pollinator Conservation Plan.

U of Texas at San Antonio Biodiversity & Ecological Sustainability Laboratory

The following research has been completed. Roadside surveys showed more milkweed in Central Texas than other regions of the state, however the distribution was species and year dependent. Nectar availability was greater in the spring than the fall and varied by year. Seed viability of six native milkweeds indicated that viability > 80%; however, two species (viridis and incarnata) had low (< 10%) germination. Six native Texas milkweeds had photosynthetic characteristics of heliophytes, one species had characteristics similar to sciophytes. Reproductive success in dense stands of nectaring plants significantly increased monarch success. Cattle grazing and burning increased the number of new milkweeds. Red-imported fire ants did not prey on monarch eggs, but did prey on instars and chrysalis. We have conducted 20 outreach activities and two one-week monarch camps serving 60 elementary students.

UW- Madison Arboretum

The UW-Madison Arb has 1200 acres of protected land in Madison, and 500 acres in outlying properties. We are managing much of this land as restored prairie, and have a large native plant garden around our visitor center that serves as both a teaching garden and a habitat for monarchs and other pollinators. We're monitoring bees, monarchs, birds, bats, invasive worms, plant diversity and management impacts, and dragonflies. We have increased our and MJV monarch-research capacity by hiring two citizen science coordinators to oversee these activities, and are providing office space and support for a Madison-based MJV staff member. Our staff have participated in several outreach events at which we taught people about insect (bee and monarch) conservation and biology, conducted many events to promote prairie habitat gardening, and had an ongoing monarch display in our lobby that included MJV handouts.

Western Association of Fish & Wildlife Agencies

Currently, there are 2 simultaneous conservation efforts underway with WAFWA member states. Numerous member states are participating in the Mid-America Monarch Conservation Plan effort. However, in 2018 the newly convened Western Monarch Working Group initiated the development of a conservation plan focusing on the western monarch population found in the states in WA, OR, ID, NV, UT, CA, and AZ. In April, a coordination meeting between work group members and scientist was held in Reno, NV. The information shared at this meeting was used to develop a draft conservation plan, which is currently out for public review until Dec 6, 2018.

<https://www.wafwa.org/Documents%20and%20Settings/37/Site%20Documents/Working%20Groups/Monarch/2018Westmonarchpubliccommndft.201811051.pdf>.

West Virginia Division of Highways

We are currently working with our Maintenance Division, and USFWS WV Field Office to come up with designated no mow Pollinator Areas along our Interstates and US Routes. We are also partnering with USFWS WV Field office to come up with informational signs to be placed at our rest areas along with a pollinator garden. We are making sure to add in Swamp, Butterfly and Common milkweed in all our pollinator areas as well as adding native pollinators into our standard

seed mixes for all our highway projects. We are hoping to get our first plantings done Fall of 2019. Once we get these areas established among the interstates and us routes we hope to expand it to other small routes as well.

West Virginia Division of Natural Resources

West Virginia DNR hosted a Monarch Summit attended by 78 representatives of WV stakeholders. From the Summit results we are drafting a monarch and pollinator conservation strategy and have published a website for WV citizens and entities to aid in monarch and pollinator conservation (www.wvmonarch.org). WVDNR hosted a pollinator habitat workshop for agencies, industry, and landowners attended by 100 people and is planning another workshop for homeowners and municipalities. WVDNR staff and partner biologists continue with public outreach and meetings with stakeholders regarding monarch declines and habitat implementation. WVDNR has developed partnerships with several stakeholders including WVU Extension, NRCS, state agencies, USFWS, oil, gas, and coal companies, environmental consultants, and NGOs. WVDNR staff participated on the Mid-America Monarch Conservation Strategy and the USFWS monarch SSA.

Westar Energy and KCP&L Evergy Companies

In early 2018, baseline acreage and goals to increase acreage of Monarch habitat were reported to the Kansas Monarch Task Force. The rights of way portion, consisting of the easements below transmission and distribution lines and property adjacent to substations were reported at zero, with a 20-year goal to create or enhance 1,320 acres on company owned lands. We have developed flexible pollinator/Monarch specific seed mix worksheets for use in short grass and tallgrass areas, using species specific to Kansas. Site restoration has begun on a total of 5 sites with 21 acres re-seeded to Monarch habitat. Another 105 acres is ready for seeding in spring of 2019, with seed already being purchased. We have influenced many local partners and have enjoyed learning from them as well. We have assisted with the Topeka Zoo's Monarch Tagging Event at the Kansas History Museum and their Docent Training Event. We also hosted a Westar Energy and KCP&L (Evergy Companies) Green Team volunteer event to tag additional Monarchs, and clear agriculture ground for native grass seeding at the newly acquired Johnson County Park, Bull Creek Park. We intend to engage our Evergy Green Team employee and retiree volunteers with future projects. Westar as also began actively participating in the Rights of Way Monarch Candidate Conservation Agreement with Assurances (CCAA).

Wild Ones

All 54 Wild Ones Chapters take part in monarch-related activities. In NY, there was a chapter discussion group focused on creating habitat. Monarch monitoring programs in WI and OH contributed to the MJV Integrated Monarch Monitoring Program. Several newsletter articles were published by our chapters and distributed to 1300 people. All chapters include milkweed and nectar plants in their plant sales. There were several presentations related to Monarchs and Habitat Gardening provide as part of our chapter activities. In WI, one chapter raised over 160 monarchs from eggs laid on milkweed that would have been mown. A WI chapter hosted a monarch tagging and presentation on monarch migration, stressing the importance of wayside gardens; 50 monarchs were tagged with over 59 participants. As part of our continued outreach and advocacy for the use of native plants; one chapter provided a presentation on the life cycle, migration, and milkweed to a local school.

Wisconsin Department of Natural Resources

In 2018 the Wisconsin Monarch Collaborative officially launched. The primary goal of the Collaborative is to create and implement a statewide monarch conservation strategy which encompasses habitat restoration and enhancement, education and outreach, and research and monitoring. It is comprised of an overarching Coordination Team and six Working Groups, each with two or three co-leads: Agriculture, Urban & Greenspace, Protected Lands, Rights-of-Way, Education & Outreach, and Research & Monitoring. There are currently over forty organizations who are participating in the creation of the state strategy. Other Collaborative activities in 2018 include WDNR hiring of a collaborative coordinator, the creation of a website, as well as an e-newsletter which provides member organizations with updates about monarch related activities in Wisconsin.

WWF U.S.

World Wildlife Fund U.S.'s monarch strategy has four main elements. Though our Monarch Squad, now at 220,000 members and growing they are building awareness and action by expanding the base of support among WWF grassroots

constituents and digital activists for monarch conservation, especially in the flyway states. They'll use the Monarch Squad plus other communication assets like our Wildlife Magazine to engage and inform the public about the importance of the monarch, its migration, impacts of climate change, and threats to its migration, and offer concrete things that can help. They are also working to broaden corporate awareness and support for monarch conservation through our work with the private sector, especially agribusiness companies. They are identifying agricultural policy reforms that would create positive (or remove negative) incentives for adoption of conservation practices and exploring opportunities to engage with farmers and ranchers adopting these practices. And, they are developing a coordinated effort with WWF Mexico and WWF Canada to enhance and support the refinement and implementation of an integrated tri-national strategy across the monarch's migratory flyway. Beginning with a focus on the flyway in Texas and Northern Mexico and will be integrating milkweed and nectar sources into our restoration efforts, deploying our monarch squad to support citizen science and other habitat restoration activities, and working to identify and address knowledge gaps about the monarch's migratory route to inform the design of effective conservation measures.