

Fort Worth Monarch Conservation Plan

**A Collaborative Strategy to
Benefit Monarch Butterflies**

Prepared by the members of the Fort Worth Pollinator Ambassadors

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EXECUTIVE SUMMARY

The migration of monarch butterflies is one of the natural world's most epic journeys. Weighing as little as a paper clip, the eastern population of monarchs fly up to 3,000 miles from their summer homes in America's backyards and grasslands to wintering grounds in Mexico's mountain forests.

But in recent years, the monarch butterfly populations have plummeted at an alarming rate. This decline threatens to deprive future generations of the wonder and beauty of the monarch—and is an ominous sign of the worsening health of ecosystems.

The Fort Worth Monarch Conservation Plan acknowledges the importance of North Texas in the monarch butterfly's central flyway and outlines how the various organizations involved with the Fort Worth Pollinator Ambassadors will act to the benefit of monarch butterflies. The plan highlights four categories of monarch conservation efforts: habitat creation and preservation, outreach and communications, educational programs, and system changes. Included is a plan to build capacity in order to expand the reach and effectiveness of monarch conservation in Fort Worth.

INTRODUCTION

Monarch butterfly populations have plummeted at an alarming rate. This decline threatens to deprive future generations of the wonder and beauty of the monarch and is an ominous sign of the worsening health of ecosystems. As recently as 1996, the monarch population wintering in Mexico was more than 1 billion, turning forests into seas of orange and black. In 2013, only 56 million monarch butterflies were estimated at the overwintering habitats in Mexico. Thanks to coordinated conservation efforts across Canada, the United States in Mexico, the population of monarch butterflies at the overwintering grounds in Mexico increased to approximately 200 million (4.01 hectares). However, the population has not reached the level recommended by the National Strategy to Promote the Health of Honey Bees and Other Pollinators of 6 hectares (the average population between 2014 and 2015.) Six hectares, or a population of 225 million butterflies, would indicate species health and ensure species survival if another winter storm threatens the monarchs overwintering habitat.

Monarch butterflies, as well as other butterfly species, bees, birds and bats, help move pollen from one plant to another, fertilizing flowers and making it possible for plants to produce food needed to feed people and wildlife. More than a third of the food that we eat requires pollinators to grow; yet, many of these pollinators are declining, with habitat loss, pesticides and climate change all contributing. We need to know more about why monarchs are disappearing, but we do not need to wait to take the actions that scientists tell us are necessary. Monarchs need all of us to make our homes, businesses, schools and community spaces more wildlife-friendly.

The need for immediate action cannot be overstated. Currently, states have considerable leeway in determining action for improving habitat, limited mostly by available resources and the willingness of land owners and managers. If the monarch butterfly is listed as an endangered species under the Endangered Species Act (ESA), the environment for collaboration becomes more difficult. It is in everyone's best interest to work together in an effort to avoid listing the monarch as endangered.

SPECIES INFORMATION

Monarchs, like all butterflies, change their diet as they develop. During the caterpillar stage, they live exclusively on milkweed plants. Milkweeds are wildflowers in the genus *Asclepias*. Milkweeds contain glycoside toxins that are harmless to the monarch but poisonous to its predators. Monarch caterpillars feed on all the different parts of milkweed plants and store up the toxins in their body. The toxins remain in their system even after metamorphosis, thereby making adult monarchs poisonous as well. Adult monarchs feed on nectar from a wide range of flowers, including milkweeds.

Most monarch butterflies do not live more than a few weeks. There are about three to five generations born each spring and summer and most of the offspring do not live beyond five weeks. The lone exception is the last generation born at the end of the summer. The last generation of each year is the over-wintering generation that must make the journey back to Mexico. Rather than breeding immediately, the over-wintering monarchs fly back to Mexico and stay there until the following spring. In the early spring, they fly north to the southern United States and breed. Over-wintering monarch butterflies can live upwards of eight months.

Monarch butterflies utilize different habitat in the warm months versus the cold months. In the spring, summer and early fall, they can be found wherever there are milkweeds. Monarchs lay their eggs on milkweeds and they're always searching for them in fields, meadows and parks. Many people plant milkweeds in their gardens. Monarchs cannot survive freezing temperatures, so they over-winter in the cool, high Oyamel forests in the Mexican state of Michoacan and woodlands in central and southern California.

Over-wintering monarch butterflies in Mexico begin to make the journey north to the United States in early spring. Soon after they leave Mexico, pairs of monarchs mate. As they reach the southern United States, females will look for available milkweed plants to lay eggs.

The eggs hatch after approximately four days. The caterpillars are small and they grow many times their initial size over a two-week period. The caterpillars feed on the available milkweed plant. When they get big enough, each caterpillar forms a chrysalis and goes through metamorphosis.

The chrysalis protects the monarch as it is going through the major developmental change of turning from a caterpillar to a butterfly. The chrysalis is green with golden spots. After another 2-week period, an adult butterfly will emerge from the chrysalis.

The adult monarchs continue the journey north that was left unfinished by their parents. Each year, three to five generations will be born to continue migrating north. It is only the last generation, born in late summer that will live eight months and migrate back to Mexico to start the cycle over again.

THREATS TO THE MONARCH

Monarch scientists attribute the decline to degradation and loss of summer breeding habitat in the U.S., and loss of winter habitat in Mexico.

Monarch Butterfly population decline is an indicator that there is something wrong in our shared environment and a warning that we could be affected as well. Consider the following:

- One third of the monarch's summer breeding habitat has been destroyed, largely in the Midwest. Expansion of row crop agriculture and, to a lesser extent, development, has destroyed 90 percent of our nation's native grassland ecosystems, including the milkweed on which monarchs depend.
- Monarch overwintering sites are under threat, especially in Mexico where the forests used by monarchs are under logging pressure.
- Monarchs are being directly killed by insecticides both as adult butterflies and as caterpillars, in both agricultural and suburban and urban landscapes.
- Climate change has intensified weather events which may impact monarch butterfly populations.

WHY SHOULD WE PRIORITIZE MONARCH CONSERVATION?

The monarch butterfly is an iconic North American species whose multigenerational migration and metamorphosis from caterpillar to butterfly has captured the imagination of millions. In February 2014, President Obama agreed to partner with Canadian Prime Minister Stephen Harper and Mexican President Enrique Peña Nieto to protect the monarch butterfly and ensure their continued survival for future generations.

WHY IS FORT WORTH CRITICAL TO THE SUCCESS OF MONARCHS?

Fort Worth lies within the migratory flyway. Each fall, millions of monarch butterflies pass through Fort Worth on their journey to the oyamel fir forests in central Mexico where they overwinter. In the spring, usually March, monarchs fly through Fort Worth as they return north to their breeding areas.

FORT WORTH MONARCH SUMMIT

On Friday, January 8, 2016, twenty-two Fort Worth area residents came together at the Fort Worth Botanical Gardens to discuss the development of a Monarch Conservation Plan for the area. The following organizations and businesses attended:

- All Texas Natives
- Botanical Research Institute of Texas
- Fort Worth Botanic Garden
- Fort Worth Mayor's Office
- Fort Worth Native Prairies Association
- Fort Worth Nature Center
- Fort Worth Zoo
- Friends of Tandy Hills Natural Area
- Habitat Landscapes
- National Garden Clubs
- National Recreation and Parks Association
- Real School Gardens
- Tarrant County College
- Texas Wesleyan
- U.S. Army Corp. of Engineers
- U.S. Fish & Wildlife Service

The attendees spent the day fostering opportunities to collaborate to share and leverage resources. After the meeting in January, the group met periodically to continue expanding on the plan.

FORT WORTH POLLINATOR AMBASSADORS

MISSION STATEMENT: Connecting local resources to promote native pollinator habitat.

VISION STATEMENT: Fort Worth stands as an example for pollinator conservation efforts.

DETAILS OF THE MONARCH CONSERVATION PLAN

GOAL 1: INCREASING THE NUMBER OF MONARCH HABITATS AND WAYSTATIONS.

Strategy 1: Establish demonstration gardens at key locations across the city.

- By May 2017, Fort Worth Pollinator Ambassadors (FWPA) agree to develop a comprehensive list of habitat restoration projects (ongoing, planned and completed). This list will be updated quarterly.
- Before the end of June 2017, FWPA members will meet with the Parks Department to discuss potential locations where new habitats would be feasible. The following FWPA members agree to complete this action:
 - ◊ Missy Singleton (U.S. Fish & Wildlife Service)
 - ◊ Gail Manning (Fort Worth Botanic Garden)
 - ◊ Amy Coslik & Rebecca Gonzales (Fort Worth Zoo)
 - ◊ Laura Veloz (Fort Worth Nature Center & Refuge)
 - ◊ Kim Conrow (North Central Chapter of the Native Plant Society of Texas)
- Before the end of June 2017, FWPA members will meet with the Watershed Department to discuss potential locations where new habitats would be feasible. The following FWPA members agree to complete this action:
 - ◊ JoAnn Collins (Native Prairies Association)
 - ◊ Keri Barfield (Botanical Research Institute of Texas)
 - ◊ Amy Coslik & Rebecca Gonzales (Fort Worth Zoo)
- Develop a list of representatives for other sites that can be contacted to discuss garden projects.
- FWPA members will create and update a Google Document identifying seed and plant sources for public projects, so that all members can access and edit the list at any point. The list will designate what locations may be willing to donate plants or seeds to projects. The following members agree to complete this action:
 - ◊ Missy Singleton (U.S. Fish & Wildlife Service)
 - ◊ Crissa Nugen (Tarleton State University)
 - ◊ Brooke Best (Botanical Research Institute of Texas)
- Based on meetings with Parks and Watershed staff, and the availability of plants, FWPA will meet before August 2017 to create a priority list of new habitat locations.

Strategy 2: Add milkweed and/or nectar plants to current gardens to make them ideal monarch habitat.

- FWPA members will identify current school gardens, community gardens, private properties and public properties where we could encourage additional pollinator plants.
- Identify contacts for each of the local gardens.
- Identify seed and plant sources for additional pollinator plants for the public gardens.
- FWPA will spend the next year building capacity so that they can approach the identified gardens and get them to agree to plant milkweed and or nectar plants in the Fall of 2018.

GOAL 2: INCREASING AWARENESS OF THE MONARCH PLIGHT AND THE NEED FOR MONARCH CONSERVATION.

Strategy 1: Develop a webpage and data repository with local information on monarch conservation.

- Create a one page handout with a shortened list of plants recommended for monarch butterflies in Fort Worth. Keri Barfield with the Botanical Research Institute of Texas agrees to complete this action with Grace Barnett's assistance.
- Provide tools to explain gardening best practices.
- Collect a list of resources for the region to link on the public webpage.
- The FWPA will meet with the Mayors' office in May 2017 to discuss potential hosts for a Fort Worth Monarch webpage, along with other requests for support. The following FWPA members will complete this action:
 - ◊ Floreen Henry (Tarrant County College)
 - ◊ Barbara Baker (National Garden Clubs)
 - ◊ Jo Ann Collins (Fort Worth Native Prairie Association of Texas)
- Create a calendar with local events, and information about when to plant and when the migration will be coming through the Fort Worth area.
- Create an online forum to submit questions.
- By May 1st, the FWPA will compile a list of questions members are regularly asked regarding monarchs, and a list of responses we can all utilize in the future.
- Create a handout/slide advertising the web presence and promote this slide on the city channel and in member presentations.

Strategy 2: Utilize social media to educate the public.

- FWPA will continue to host an internal Facebook page that will allow members to share events, resources, and links that can then be disseminated to all of the member's individual networks.
- Utilize the shared Google Calendar to schedule when members will agree to provide content related to monarchs or pollinators on the Facebook page.
- The FWPA will spend the next year building capacity for a monarch caterpillar foster care system or network to identify milkweed sources if you run out while raising monarchs at your home or business.

Strategy 3: Offer workshops and trainings for HOAs, CTMNs, MGs, Junior Master Gardeners, contractors, realtors, trail developers, or other relevant groups.

- Identify opportunities where the various Neighborhood Associations in the area come together so that a workshop can be offered that will reach many associations. Consider Parks Department projects and community gardens when targeting additional neighborhood associations for presentations.
 - ◊ Jo Ann Collins (Fort Worth Native Prairie Association of Texas)
 - ◊ Gail Manning (Fort Worth Botanic Garden)

- Host a workshop in the winter for contractors that specialize in mowing and trash pick up. Make sure the training is offered in both English and Spanish. The following FWPA members will accomplish this action:
 - ◊ Pansy Sheffield (Tarrant County College)
 - ◊ Laura Veloz (Fort Worth Nature Center & Refuge)
 - ◊ Kim Conrow (North Central Chapter of the Native Plant Society of Texas)
- FWPA will host 4 workshops a year for Master Naturalists, Master Gardeners, and Junior Master Gardeners. Laura Veloz with the Fort Worth Nature Center & Refuge will help complete this action.
- Video tape workshops so that they can then be replayed on the city channel.

Strategy 4: Floreen Henry with Tarrant County College will work with statewide leaders to implement a Texas Monarch Day.

GOAL 3: INCREASING THE AVAILABILITY OF EDUCATIONAL PROGRAMS IN SCHOOLS AND THE NUMBER OF SCHOOL GARDENS.

Strategy 1: Encouraging school engagement in monarch conservation.

- Identify and promote FWPA partners that are willing to give school presentations or host school field trips.
- Work with FWISD staff to promote monarch education initiatives. The following FWPA members will complete this action:
 - ◊ Gail Manning (Fort Worth Botanic Garden)
 - ◊ Keri Barfield (Botanical Research Institute of Texas)
 - ◊ Jo Ann Collins (Fort Worth Native Prairie Association of Texas)
- Billy Martin with the Fort Worth Zoo will work with FWISD to collect success stories and photos of monarch education at FWISD schools to promote further school involvement.
- Identify contacts on college campuses that might be willing to engage in monarch conservation.
- Ask the mayor to encourage school gardens and outdoor classrooms at the school administration level.
- Crissa Nugen with Tarleton State University will evaluate success by collecting data on the following:
 - Behavioral changes in students (based on surveys)
 - Square footage committed to monarch gardens
 - How much is saved by converting to native landscaping
 - Number of new teachers committed to educating students in monarch curriculum
 - Number of schools that participate in Monarch Day activities

Strategy 2: Floreen Henry with Tarrant County College will encourage Fort Worth Independent School District to designate a Monarch Day during the school year. Activities for Monarch Day include:

- Decorating their classrooms
- Encouraging Journey North or iNaturalist citizen science initiatives
- Making seed balls
- Hosting an art or poetry contest for students
- Hosting a speaker to discuss monarch biology

Strategy 3: Encourage after school programs to engage in monarch education.

- Identify contacts for after school programs.
- Contact organizations and offer monarch curriculum or assistance.
- Laura Veloz with the Fort Worth Nature Center & Refuge will help accomplish this action.

GOAL 4: BRING ABOUT POLICY CHANGES IN THE CITY OF FORT WORTH THAT ENCOURAGE NATIVE PLANTING AND DISCOURAGE THE USE OF PESTICIDES OR UNREASONABLE MOWING IN HABITAT AREAS.

Strategy 1: FWPA will meet with city staff to discuss landscaping policies and opportunities for policy changes that could benefit monarchs and other pollinators.

- The following FWPA members will complete this action:
 - ◇ Gail Manning (Fort Worth Botanic Garden)
 - ◇ Keri Barfield (Botanical Research Institute of Texas)
 - ◇ Laura Veloz (Fort Worth Nature Center & Refuge)
 - ◇ Kim Conrow (North Central Chapter of the Native Plant Society of Texas)
 - ◇ Jo Ann Collins (Fort Worth Native Prairie Association of Texas)
- The meetings will discuss potential changes such as:
 - ◇ Auditing current policies regarding landscaping and property management and consider removing those policies that are not environmentally friendly.
 - ◇ Creating exemptions from landscaping ordinances for native ecosystems and landscapes.
 - ◇ Mandating training of those that are expected to enforce policies before those policies are implemented.
 - ◇ Mandating classes and/or certification for all city landscapers as part of their Native Ecosystem Handling Permit.
 - ◇ Establishing policy incentives for signage at new habitat locations.
 - ◇ Promoting sustainable native landscaping through the building permit process.

ACKNOWLEDGEMENTS



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