Pollinator Pockets

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"BUILDING A HEALTHY COMMUNITY THROUGH PEOPLE, PLACES, & PROGRAMS"

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A booklet created by Alfonso Leyva, Jenna Goldsmith, and Megaera Brennan.

FLINT HILLS DISCOVERY CENTER

SUNSET ZOO MANHATTAN, KS

KANSAS STATE UNIVERSITY

NATIONAL WILDLIFE FEDERATION SINCE 1936

U.S. FISH & WILDLIFE SERVICE DEPARTMENT OF THE INTERIOR

KANSAS WILDLIFE & PARKS

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KANSAS WILDLIFE FEDERATION
The voice of outdoor Kansas

Kansas Native Plant Society

Audubon of Kansas

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In early 2020, the Parks Division of the Manhattan Parks and Recreation Department (MPRD) began an alternate maintenance initiative to restore some parkland and open space to native prairie habitat. The initiative, called Pollinator Pockets, was introduced to the Manhattan community in June 2020 during National Pollinator Week. Pollinator Pockets has three goals: decrease invasive species, increase plant pollinator species, and increase ecological awareness through proactive learning and engagement.

WHAT ARE POLLINATORS ?

Pollinators are animals that transfer pollen between plants, helping them grow and reproduce. Common pollinators include birds, bats, butterflies, moths, flies, beetles, small mammals, and bees. These animals sustain ecosystems and produce natural resources (About Pollinators). A flourishing natural environment needs a healthy pollinator population.

Figure 1: Who are the Pollinators.

HOW DOES POLLINATION WORK?

Pollen moves from the anther to the stigma (the flower's reproductive parts). The flower produces seeds or fruits, allowing more plants to grow later. Pollinators carry pollen on their bodies as they collect nectar from the flower, helping the pollen travel farther and reach more plants. Pollinators in the Flint Hills have primarily adapted to collect pollen and nectar from plants found on native prairie.

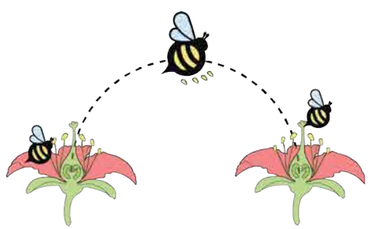


Figure 2: Goldsmith, *The Process of Pollination.*

WHAT IS NATIVE PRAIRIE ?

Native tallgrass prairie is a type of grassland in Midwest America characterized by a group of tall grasses that can grow to heights of over six feet on well-drained soils. The core grasses consist of big bluestem, Indian grass, switchgrass, little bluestem, and prairie dropseed. Along with these grasses are a variety of flowering plants, which create the environment needed for native pollinators. However, due to development, only 4% of the original tallgrass prairie exists today (A Complex Prairie Ecosystem).

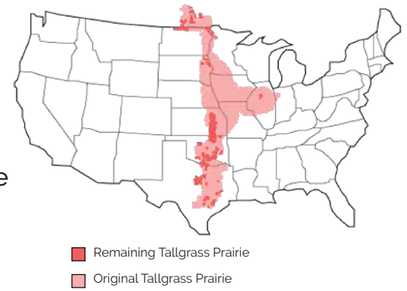


Figure 3: Goldsmith, Tallgrass Prairie Then vs. Now.

Figure 4: Tommy Brison, Sunset Overlooking the Flint Hills of Kansas.

WHAT IS PRAIRIE RESTORATION?

Prairie restoration is a way to restore native prairie land that was lost due to industrial, agricultural, commercial, or residential development. Prairie restoration can occur at any scale on public or private land, creating a series of pockets for pollinators to move between to collect their food. Along with a much-needed food source, these pockets also allow for a nesting place in the winter. The size of these pockets may range from a few square feet to acres.

"In addition to the food that we eat, pollinators support healthy ecosystems that clean the air, stabilize soils, protect from severe weather, and support other wildlife"

Pollinator Partnership, 2023

BENEFITS OF POLLINATORS:

ECOLOGICAL BENEFITS:

Approximately 75% to 95% of all flowering plants need help with pollination (About Pollinators). Pollinators help with the growth of fruits, vegetables, and nuts. Pollinator Pockets contribute to valuable ecosystem services that both humans and wildlife need to exist. They also significantly contribute to maintaining proper environmental biodiversity levels. Prairie vegetation slows stormwater runoff, which helps prevent soil erosion and flooding. These plants also filter drinking water and recharge aquifers. Tallgrass vegetation filters the air and stores carbon, creating a healthier environment (Native Prairie Hay Meadows).

"Without the actions of pollinators, agricultural economies, our food supply, and surrounding landscapes would collapse."

Pollinator Partnership, 2023

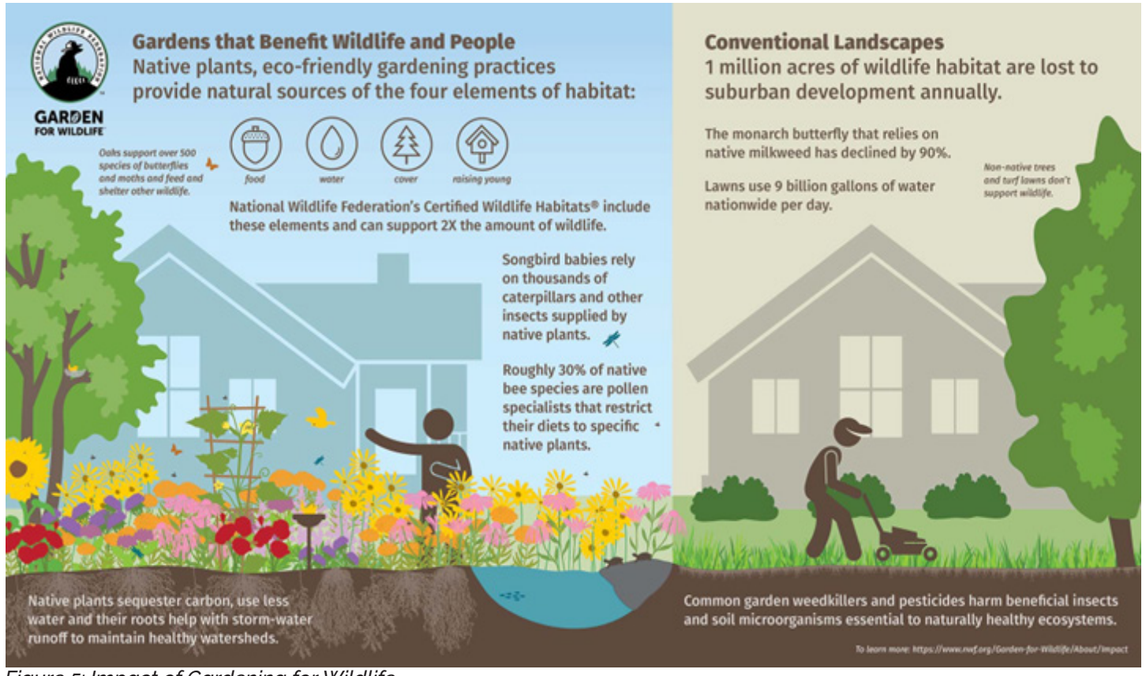


Figure 5: Impact of Gardening for Wildlife.

POLLINATOR ECOSYSTEM SERVICES:

- *Prevent Soil Erosion*
- *Increase Carbon Sequestration*
- *Provide Fruit, Vegetables, and Nuts*
- *Provide Pollination Services to Over 180,000 Plant Species*
- *Help Provide 1/2 of the Worlds' Oils, Fibers, & Raw Materials*
- *Provide Pollination Services to More Than 1,200 Crops*

Pollinator Partnership, 2023

Figure 6: MERCURY Studio, Flying Honey Bee Collecting Pollen.

ECONOMIC BENEFITS:

Along with these ecological benefits, there are economic benefits to restoration of native prairie. Pollinator Pockets do not require regular mowing or fertilizing. Once established, Pollinator Pockets are self-sustaining and require one or two mowings every couple of years to deter woody vegetation from establishing.

"Pollinators add $217 billion dollars annually to the global economy."

Pollinator Partnership,2023

HISTORY OF MPRD POLLINATOR POCKETS:

The Manhattan Parks and Recreation Department enjoys working with the community and local organizations whenever possible. During the planning stages of the Pollinator Pockets initiative, City staff engaged the U.S. Fish and Wildlife Service (USFWS), Kansas Department of Wildlife & Parks (KDWP), Kansas State University, Northern Flint Hills Audubon of Kansas, and members of the Kansas Native Plant Society.

USFWS and KDWP provided a report recommending how to proceed with implementing prairie habitat in Girl Scout Park, Pioneer Park, and Northeast Community Park. Part of this process involved letting the existing vegetation grow to identify the current seed bank. The report suggested a native wildflower, forbs, and grass mix to introduce at these locations to support local pollinators. MPRD will continue to work with USFWS and KDWP as they expand the program to other parks.

Allowing the vegetation at Girls Scout Park and Pioneer Park to grow during the 2020 summer season caused mixed reactions from nearby residents. Most of the feedback supported the Pollinator Pockets project; however, some were concerned about the aesthetic and loss of usable open space for drop-in use. Because of this feedback, MPRD engaged the community through a marketing campaign on social media, using #pollinatorpockets as the key phrase.

During the same time, the Flint Hills Association of Realtors reached out to MPRD and asked how they could partner with the Pollinator Pockets project. They volunteered to help at Girl Scout Park and donated toward seeding and signage at the park. MPRD is open to partnerships like this and will strive to work with the community similarly.

The Parks Division is working with more than local organizations. Staff also engaged other MPRD facilities such as the Flint Hills Discovery Center and the Sunset Zoo, which strive to create pollinator habitats on their respective sites. They are excited to partner with the Parks division as Pollinator Pockets takes flight.

This project also provides educational opportunities for the citizens of Manhattan. At each site, there will be signage detailing the benefits of pollinators and the vegetation they use while also providing areas where children can be shown and taught about native plants and animals. And, of course, these pockets are an excellent beautification opportunity for the City while reducing overall maintenance and mowing. They are providing a beautiful space without as much cost to the City.

Figure 7: Map of Current Locations for Pollinator Pockets. By Author.

POLLINATOR POCKETS GOALS:

EXISTING POLLINATOR POCKETS:

The Manhattan Parks and Recreation Department maintains a variety of public open spaces ranging from urban parks such as City Park to wide-open rolling hills found at Warner Memorial Park. In total, MPRD maintains over 600 acres of parkland. Currently in Manhattan, there are approximately a dozen pollinator pockets on public land (see figure 7). With the first phase of the Pollinator Pockets initiative, MPRD identified nine more pockets, and expanding the existing one at Warner Memorial Park, totaling approximately 18 acres of additional prairie restoration.

Figure 8: Leyva, Truth Butterfly Garden

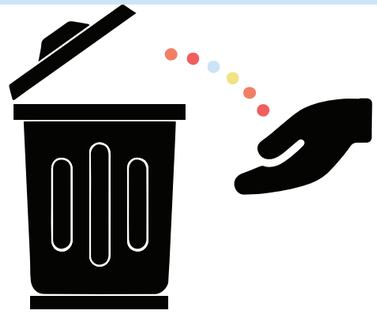
Figure 9: Voran, Kansas Flint Hills

FUTURE POLLINATOR POCKETS:

Figure 10: Leyva, Girl Scout Park.

In addition to creating more native pollinator habitat throughout Manhattan, these Pollinator Pockets will decrease landscape maintenance time and cost. Replacing mown lawn with native Kansas flowers and grasses reduces the need for regular mowing and drastically minimizes fertilizer and pesticide usage. These pockets may also absorb stormwater runoff and provide erosion control.

DECREASE INVASIVE SPECIES



INCREASE POLLINATOR SPECIES

INCREASE ECOLOGICAL AWARENESS

POLLINATOR POCKETS IMPLEMENTATION:

Regional and national organizations have developed guides and programs to aid in the support of pollinators and the restoration of tallgrass prairies. The Manhattan Parks and Recreation Department plans to utilize these guides while implementing Pollinator Pockets.

In 2019, a collaborative effort of the Kansas Monarch Taskforce Working Group, consisting of 105 individuals representing 68 organizations from various sectors impacting monarch conservation, resulted in the preparation of the Kansas Monarch Conservation Plan (Kansas Monarch Taskforce). This guiding document supports both ongoing and new conservation actions, acknowledging the need for a multi-sector approach to achieve the monarch conservation goals outlined within it. The plan primarily focuses on voluntary goals, practices, and actions specific to the state of Kansas. It is considered a living document that will be periodically updated to incorporate additional resources, research, and relevant information.

It's important to note that the habitat, actions, and outreach goals stated in the plan are voluntary and not intended to be mandatory, and the resources provided are not comprehensive at this time.

The Pollinator Partnership, another organization, oversaw the development of a guide for plant selection to benefit pollinators within the ecological region known as the Prairie Parkland Temperate Province (Pollinator Partnership). This specific guide was created in support of the North American Pollinator Protection Campaign. It is part of a series of plant selection tools designed to educate individuals on how their choices in farming, managing public land, or gardening can positively impact pollinator populations. By providing essential habitat requirements such as food, water, shelter, and sufficient space for pollinators to raise their young, individuals can contribute to the well-being of pollinators. The Prairie Parkland guide covers the region where Manhattan, Kansas is located.

Pollinators traverse the landscape without regard to property ownership or state boundaries. To emphasize the connection between climate and vegetation types that influence pollinator diversity, the guide utilizes R.G. Bailey's classification system. This system, known as Bailey's Ecoregions of the United States and developed by the United States Forest Service, serves as a management tool to predict responses to land management practices across large areas. The guide specifically addresses land management practices that promote a pollinator-friendly environment within the Prairie Parkland, Temperate Province.

These sources, along with continued partnerships within the community and staff expertise, will be important in the success of Pollinator Pockets.

Figure 11: Leyva, Anneberg Park.

Figure 12: Tommy Brison, Sunset in the Flint Hills.

SITE LOCATIONS:

The sites around the City of Manhattan that are being added to the program, or having their existing pockets expanded, are Bethany Drive Property, Fairman Drive Property, Frank Anneberg Park, Girl Scout Park, Goodnow Park, Ledgestone Park, Northeast Community Park, Pioneer Park, Stagg Hill Park, and Warner Memorial Park. Attached in pages 13-22 are images of each pollinator pocket site.

NEW POCKET LOCATIONS:

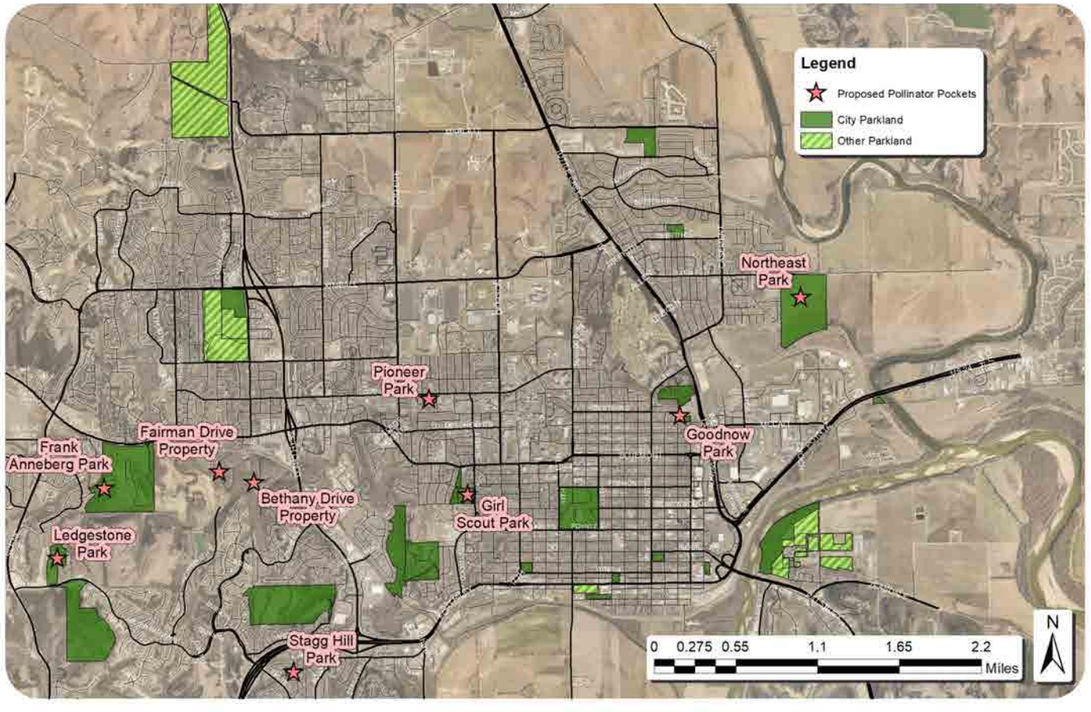
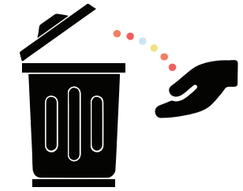


Figure 13: Leyva, Map of Proposed Pollinator Pocket Locations

CONCLUSION:

In the promotion of pollinators and a healthy ecosystem, native plants play a crucial role. They offer benefits to both wildlife and humans through the performance of essential ecosystem services. These native plants aid in promoting crop growth, enhancing biodiversity, and serve as a fundamental component of the ecosystem. As the City of Manhattan endeavors to establish Pollinator Pockets for the purpose of augmenting native pollinators and fostering positive ecosystem services, homeowners in the area can also contribute. Local homeowners and landowners who desire to participate in this citywide initiative can create pollinator gardens on their own property with the resources provided in this booklet.

Figure 14: Leyva, Northeast Park.



Goal 1: Decrease Invasive Species

Goal 2: Increase Pollinator Species

Goal 3: Increase Ecological Awareness

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Figure 16: Leyva, Bethany Drive Pocket

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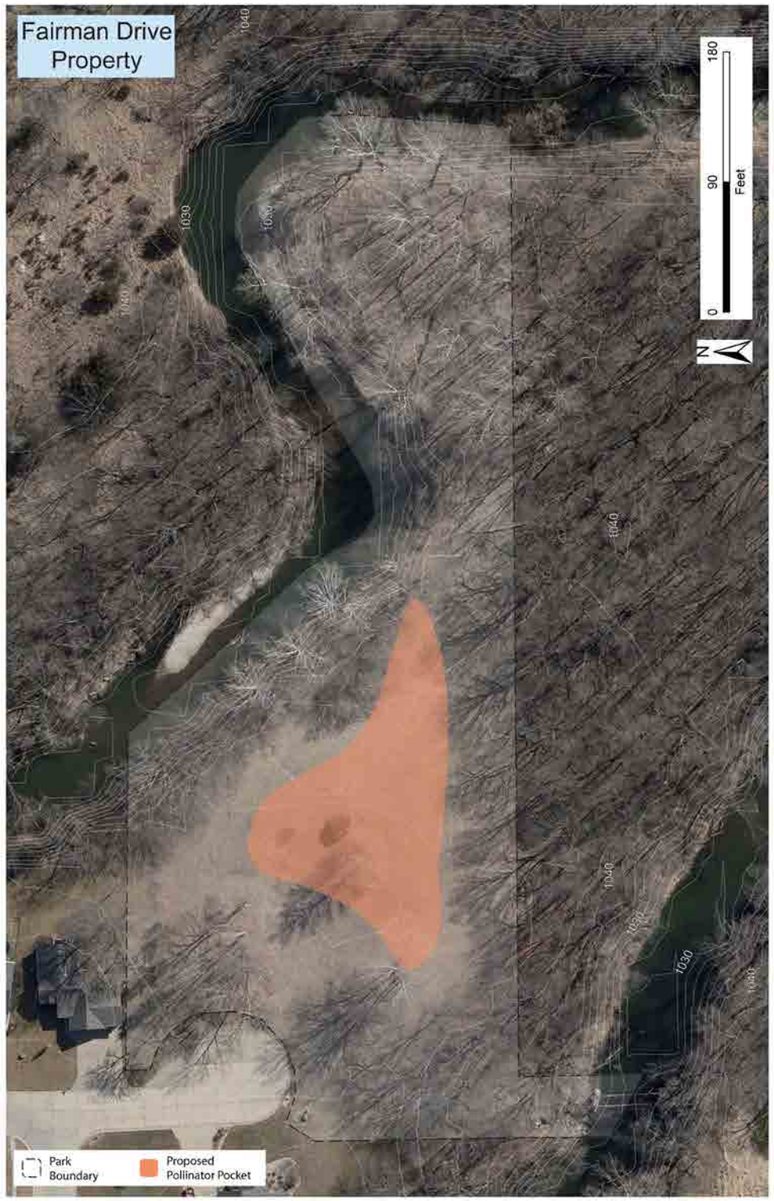

Figure 17: Leyva, Fairman Drive Pocket

Figure 18: Leyva, Girl Scout Park Pocket

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Figure 24: Leyva, Warner Park Pocket

SOURCES:

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Figure 2: Goldsmith, Jenna. The Process of Pollination. Image. July 20, 2023.

Figure 3: Goldsmith, Jenna. Tallgrass Prairie Then vs. Now. Image. July 28, 2023.

Figure 4: TommyBrison. Sunset Overlooking the Flint Hills of Kansas. Image. Shutterstock. Accessed July 18, 2023. https://www.shutterstock.com/image-photo/sunset-overlooking-flint-hills-kansas-178695215

Figure 5: Impact of Gardening for Wildlife. Image. National Wildlife Federation. Accessed July 12, 2023. https://www.nwf.org/Garden-for-Wildlife/About/Impact

Figure 6: MERCURY studio. Flying Honeybee Collecting Pollen at Yellow Flower. Image. Shutterstock. Accessed July 28, 2023. https://www.shutterstock.com/image-photo/flying-honey-bee-collecting-pollen-yellow-1319683043

Figure 7 Leyva, Alfonso. Map of Current Locations for Pollinator Pockets. Map. June 24, 2020.

Figure 8: Leyva, Alfonso. Photograph of Truth Butterfly Garden. Image. June 27,2020.

Figure 9: Voran, Max. Kansas Flint Hills. Image. Accessed July 18, 2023. https://www.shutterstock.com/image-photo/kansas-flint-hills-206121475

Figure 10: Leyva, Alfonso. Photograph of Girl Scout Park. Image. June 23, 2020.

Figure 11: Leyva, Alfonso. Photograph of Anneberg Park. Image. June 24, 2020.

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