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Pittsburg State University Goes Native: A Study on the Resources and Wildlife Attraction of a Native Pollinator Garden on a College Campus

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Introduction

Urbanization and Biodiversity

Rapid urbanization worldwide has created an increasing need for ecologically diverse urban green spaces. Urban green spaces benefit urban communities by:

- Capturing air pollution and water runoff, and reducing urban heat island effect.
- Promoting pollination and providing support for native biodiversity conservation.
- Encouraging physical and social activity, promoting education, and positively influencing overall public health.

Studies conducted on urban design plans for increasing green space, pollinator gardens, the reintroduction of native species, etc. can lead to:

- Furthering public understanding of the benefits and challenges of urban green space.
- Better conservation and sustainability practices.
- Enhancement of areas in order for wildlife to flourish.
- Native biodiversity of animals being increased by reintroducing native plant species.

Study Objectives

I evaluated what kind of resources (i.e. cost, plants, area) are required to design and create a native pollinator garden on a college campus, and what kind of wildlife a garden would attract.

Methods

- Chose a place on Pittsburg State University's campus: a meeting place of three important parts of campus—Gorilla Village, University Lake, and a hike/bike trail.
- Obtained data on what makes a pollinator garden the most useful in regards to design, plant quality, and wildlife attraction.
- Obtained data on seed pricing per one ounce and number of seeds per one ounce
- Obtained data on landscaping gravel, bench, and custom sign pricing.
- Created spreadsheet with species information (Table 1).
- Proposed garden sketched by hand and created as a graphic based on a 10 x 15 meter plot (Figure 1 & Figure 2).

Table 1. Plant species native to Kansas to be used in pollinator garden.

Scientific Name	Common Name	Physical Description	Wildlife Species Attraction	Bloom Season	Seeds/1oz	Cost/1oz
<i>Asclepias syriaca</i>	Common milkweed	Fragrant pink/lavender flowers in round cluster on stem	Butterflies, bees, beetles, wasps, hummingbirds (host plant monarch)	Mid	4,000	\$39.50
<i>Baptisia australis</i>	Blue false indigo	Blue/purple flowers dense on woody base	Butterflies, bees, beetles, hummingbirds	Early to mid	1,600	\$20.00
<i>Boltonia asteroides</i>	False aster	Clustered small white flowers with yellow center	Butterflies, insects	Late	82,000	\$40.00
<i>Ceanothus americanus</i>	New Jersey tea	Low shrub with small white flowers in clusters	Butterflies, bees, beetles, skippers, quail, rabbit (host plant spring and summer azure, mottled duskywing)	Mid	7,000	\$60.00
<i>Dalea purpurea</i>	Purple prairie clover	Purple flower, cone-like flower head	Butterflies, bees, birds (host plant)	Mid	20,000	\$15.00
<i>Phlox pilosa</i>	Prairie phlox	Fragrant pale pink to lavender flower, flowers grow in clusters	Butterflies, bees, skippers	Early to mid	N/A	N/A
<i>Rudbeckia hirta</i>	Black-eyed susan	Daisy-like bright yellow flower with dark center	Butterflies, bees, birds, insects (host plant gorgone checkerspot, bordered patch butterfly)	Mid to late	100,000	\$8.00
<i>Symphyotrichum laeve</i>	Smooth blue aster	Dark-green foliage, pale lavender flower with yellow center	Butterflies, bees, birds (host plant pearl crescent)	Late	48,000	\$40.00
<i>Zizia aurea</i>	Golden alexander	Clustered small yellow flowers gathered together	Butterflies, bees (host plant black swallowtail)	Early to mid	12,000	\$20.00
<i>Sorghastum nutans</i>	Indiangrass	Broad green blades with large, soft, golden seed head	Butterflies, birds, small mammals (host plant pepper-and-salt skipper)	Mid	8,300	\$4.00
					Total:	\$246.50

Future Plans

Flower Selection

- 10 native species (Figure 3 & 4)—three early flowering wildflowers, three mid flowering wildflowers, three late flowering wildflowers, and one native grass.
- Each species clumped together with 6 to 7 specimens.
- 60 to 70 plants would be needed to fill the space.
- 2 feet, approximately 0.7 meters, on either side of each plant for growth—4 square feet, or 0.37 square meters per plant.
- 68 plant specimens needed.

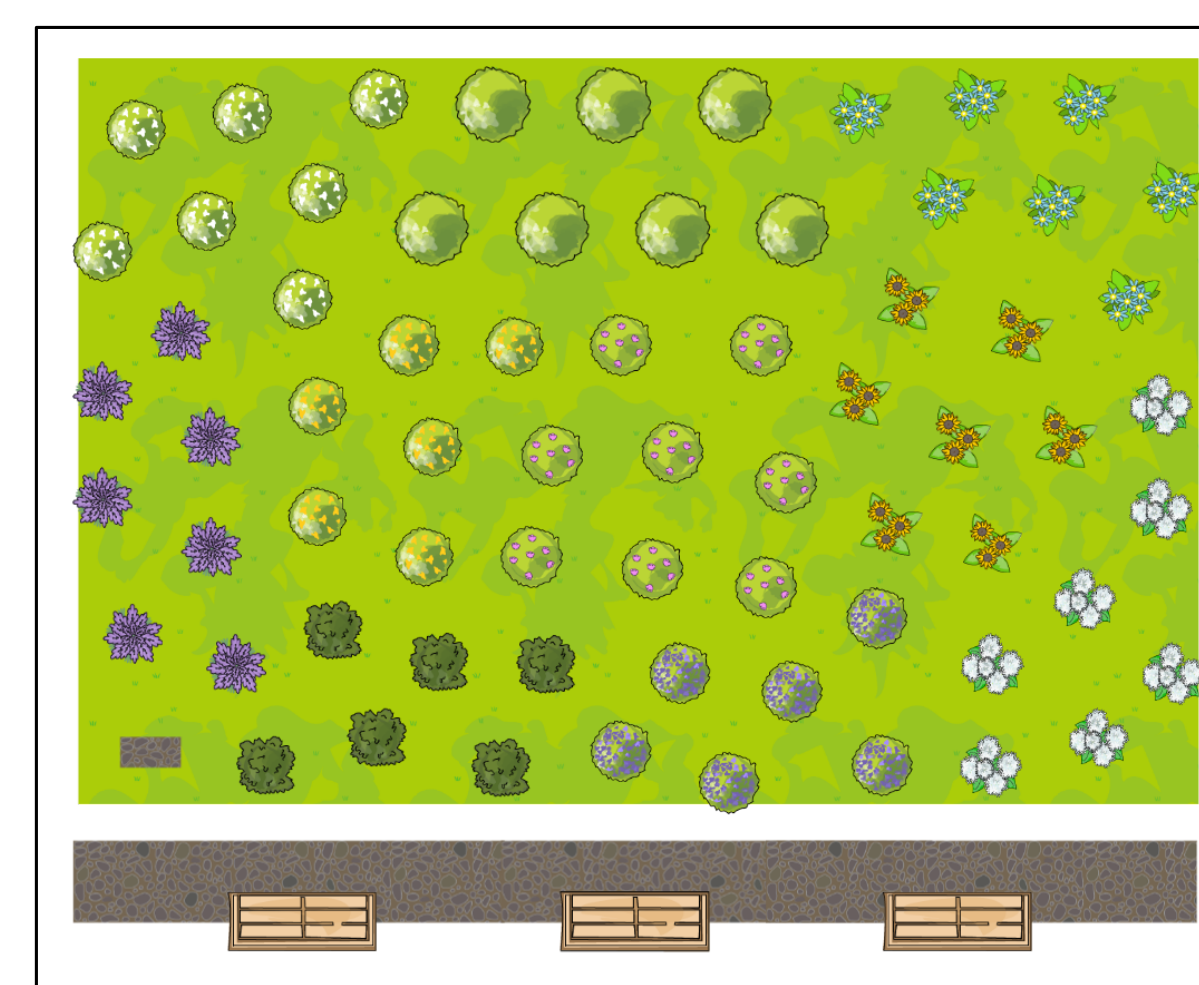


Figure 2. Graphic design image of proposed native garden on campus.



Figure 3. Ten species chosen for native pollinator garden. Top row left to right: *Asclepias syriaca* (common milkweed), *Symphyotrichum laeve* (smooth blue aster), *Sorghastum nutans* (indiangrass). Middle row left to right: *Dalea purpurea* (purple prairie clover), *Ceanothus americanus* (New Jersey tea), *Rudbeckia hirta* (black-eyed susan), *Baptisia australis* (blue false indigo). Bottom row left to right: *Zizia aurea* (golden alexander), *Phlox pilosa* (prairie phlox), *Boltonia asteroides* (false aster). All photographs retrieved from www.wildflowers.org/gallery/ and <https://blazingstargardens.com/plants/indian-grass-sorghastrum-nutans/>.

May	June	July	August	September	October
12-24"		<i>Phlox pilosa</i>			
36-72"	<i>Baptisia australis</i>				
12-36"	<i>Zizia aurea</i>				
36"	<i>Ceanothus americanus</i>				
	12-36"	<i>Asclepias syriaca</i>			
	12-36"	<i>Dalea purpurea</i>			
12-36"		<i>Rudbeckia hirta</i>			
		36-84"	<i>Sorghastum nutans</i>		
				12-36"	<i>Symphyotrichum laeve</i>
				12-60"	<i>Boltonia asteroides</i>

Figure 4. Ten species of native pollinator garden plants by blooming season.

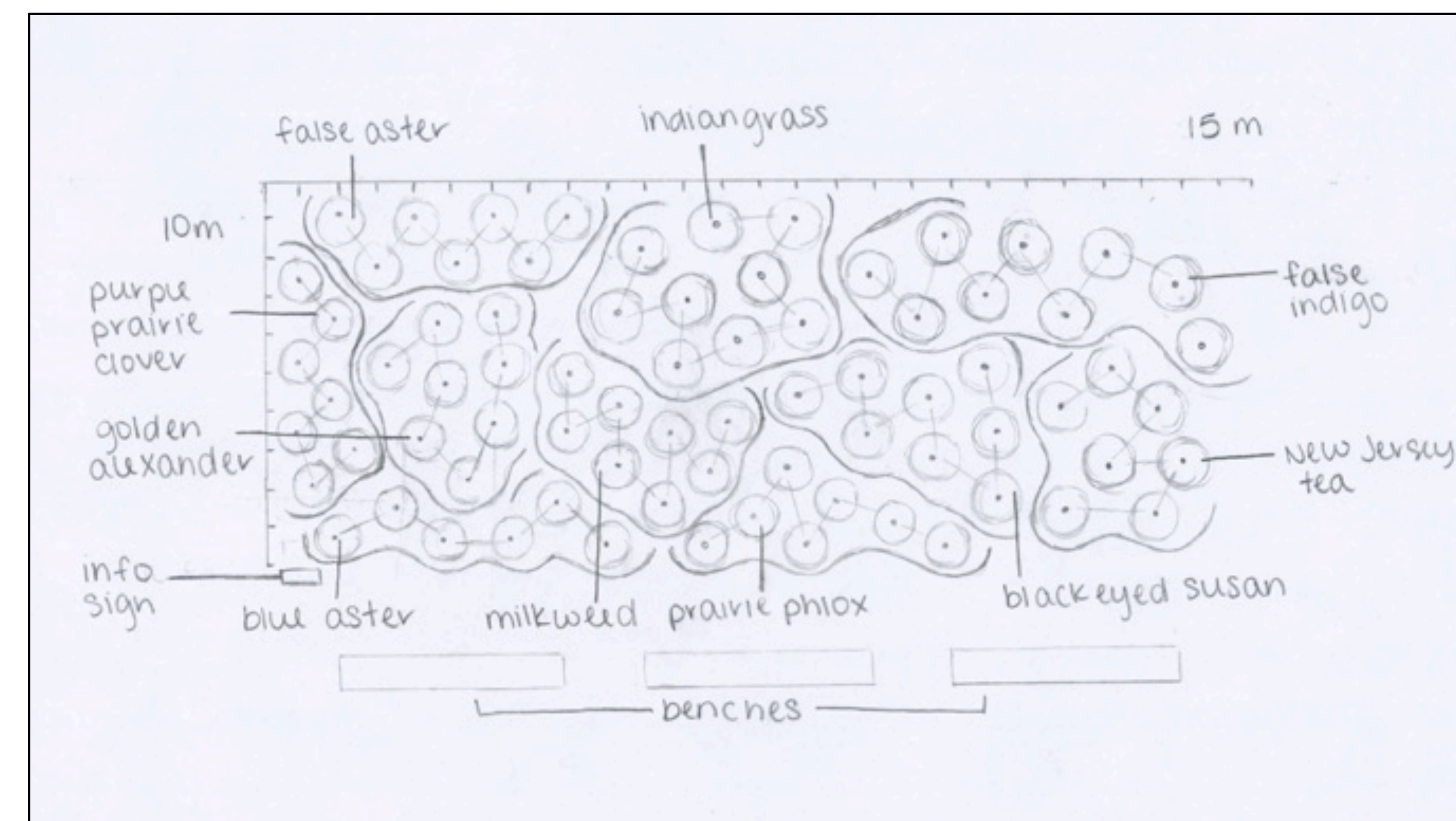


Figure 1. Native pollinator garden design plan sketched by hand with each plant species group labelled with common name.

Conclusions

I evaluated what kind of resources are required to design and create a native pollinator garden on a college campus and what kind of wildlife the garden would attract. I found:

- The garden would require at least nine species of wildflowers and one species of native grass, this would be about 60-70 plants.
- The cost of seeds for the plants ranged from \$4.00-\$60.00.
- Each plant needs approximately 0.37 square meters for growth.
- The area needed for a garden this size would be approximately 22-26 square meters.
- The landscaping gravel cost ranged from \$235.80-\$242.28.
- The price of benches ranged from \$65.00-\$500.00.
- The cost of a custom information sign ranged from \$11.75-\$300.00.
- Total cost for the garden \$>700.00
- The native patch would attract a variety of species including: butterflies, bees, wasps, beetles, skippers, hummingbirds, other birds, rabbits, and other small mammals.
- The designer must use cues to care to indicate the active use of the site for biodiversity conservation—signs, benches, large bright flowers.

The implementation of green spaces, including ones that reintroduce native species and promote pollination, is important for biodiversity conservation efforts and must continue to lead to better conservation and sustainability practices.

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