



Pollination Habitat and Flower Planting for City Beautification

ENVI 460 | SP 2021

Conservation and Sustainability of Natural Resources

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College or Department

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Mayor Clint Lamb, *City of Sullivan*

Erin Wagner, *City Slicker Farms*

ABOUT SC

The Sustainable Cities (SC) Program is an experiential learning partnership focusing on sustainability and cities in Indiana. Disciplines across the institution are tasked with addressing sustainability issues in a specific community by integrating these into experiential projects for ISU students. These problems range from strategic planning recommendations to community needs assessment, and understanding the impacts of waste strategies to mapping trail systems, and many other issues.

This is a year-long partnership, in which students and faculty in courses collaborate with one specific community partner on these projects. Communities throughout Indiana have leaders who want to make real change. These leaders are passionate about moving their cities forward into the future, but are often limited by lack of resources, staff, and budget.

The SC Program utilizes the innovation and energy of students and faculty to provide ideas that will address these issues. This relationship reinforces and strengthens our Indiana communities.

Each ISU course and community partner will produce tangible and relevant outcomes for the community partner while providing ISU students with real world project completion. This report serves as this outcome.

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ABOUT SULLIVAN

Sullivan, IN is the county seat of Sullivan County and serves as a hub for the towns of Carlisle, Dugger, Farmersburg, Hymera, Merom, and Shelburn. Sullivan, IN was founded in 1853 and became the county seat. The total city limits is 1.88 square miles, but there are more residents living outside of this area that contribute to the community of Sullivan. Today, Sullivan has the largest estimated population as an incorporated town in Sullivan County.

Sullivan faces many similar social, environmental, and economic challenges to other rural Hoosier towns and others that are unique to the city itself. There are approximately 8,500 people available for the labor force in Sullivan County. Since 2009, the unemployment rate has steadily decreased in the county. There's approximately 2,500 people that live in Sullivan but work in other counties. Some of the major employers in Sullivan are Raybestos Powertrain LLC, Hoosier Energy Emergency, Peabody Energy Corp., Sullivan County Community Hospital, and Raybestos Products Co.

A common thought among Sullivan community members is that students that go to college graduate and don't return to Sullivan. The highest degree attainment of folks 25 and older in Sullivan County is a high school diploma. Trade programs and certifications are a community concern from folks.

Sullivan has a vast history and many points of interest in the community. The Sullivan County Public Library is one of 1,679 libraries designated as a Carnegie library. The Sullivan Civic Center was recently renovated to provide a central location for community member sin Sullivan. The Heart of Sullivan is a civic organization that hosts many large events throughout the year. One of the largest events hosted in Sullivan is the Sullivan Annual Rotary Corn Festival.

This community is full of potential and is being led through a strategic plan intended to bolster its standing for Hoosiers. The ISU Sustainable Cities program intends to help reach that potential.

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EXECUTIVE SUMMARY

The City of Sullivan identified needs to improve sustainable infrastructure and green space in Sullivan, IN through their Quality of Life plan. Students in ENVI460 were tasked with providing recommendations for their daily operations and site plans that could improve habitats and attractiveness for the community and tourists. Students provided recommendations for native habitat planting and community involvement/education. They also provided site recommendations for community garden and green space updates.

INTRODUCTION

The City of Sullivan has a master Quality of Life plan intended to improve areas of need in Sullivan. Part of the plan included more sustainable infrastructure and creating more green spaces. City officials wanted to increase the use of public areas by solutions like walkable sidewalks. One solution is to introduce more pollinator habitats to the current city operations. This will address multiple needs identified in the Quality of Life plan.

When considering the pollinators in the City of Sullivan we must pay attention to biodiversity and soil composition. Biodiversity is the global distribution of organisms that interact with one another to support their ecosystem. This is important in sustaining pollinators like bees, butterflies, and bats, because higher diversity increases organism resilience and the number of organisms in the soil.

The soil composition is impacted by the biodiversity and is especially important to pollinators. Soil needs to have an appropriate composition and nutrient

content to introduce plants and have them flourish. Soil health is increased the more carbon that remains in the soil, because microorganisms use that carbon to survive and create nutrients for the plants. More information about biodiversity and soil health can be found in Appendix A.

Sullivan, IN will mostly have light gray silt loam soil with clay pan (Galloway, 1961).

With this information in mind, students in ENVI460 provide recommendations to increase pollinator habitats around native species planting, community education, bees, and community gardens.

NATIVE PLANTING

Native plants are recommended for planting in all city controlled areas as they are better for the health of pollinators and soil. Native planting should be the norm for all Parks and Recreation upkeep, and should rotate out all annuals. Native, perennial plants should be prioritized over non-native and annual plant species.

Native plants are plants that have evolved in the region and increase biodiversity by attracting native wildlife and native pollinators. They maintain the ecosystem and help build better soil.

Native plants adapt to the soil and continue to come back, bloom, and thrive whereas a non-native species will need constant attention and care to keep them healthy. Native plants are also resistant to local weather patterns and use less water than non-native species since they are accustomed to the local soils. There is less maintenance and water costs associated.

Sullivan, IN is in the **USDA hardiness zone 6A**, so here are some plants and flowers best for this region:

- Eastern Redbud bushes (small trees)
- Flowering dogwood (flowering tree)
- Milkweed or butterfly weed**
- Purple Coneflower
- Aster
- Blue Wild Indigo
- Wild Columbine
- Showy Goldenrod

- Wild Bergamot
- Blazing Star
- Common Spiderwort
- Blue Wild Indigo



***Butterflies are primary pollinators, alongside bees. Incorporating milkweed flowers in landscapes and gardens will encourage Monarch butterflies. Monarchs cannot survive without milkweed as it is the only plant they lay their eggs on and the larvae eats it.*

COMMUNITY EDUCATION

Providing passive and active education and outreach to community around pollinators can help increase pollinator habitats in the community. The City of Sullivan can implement proactive solutions to promoting pollinator-friendly behaviors and actions among the community.

Creating pollinator-friendly habitats and native garden practices is an excellent start for promoting pollinator health. Coupling this with community education efforts will greatly benefit pollinator efforts if the community integrates these actions.

The City of Sullivan should implement two education sign campaigns.

1. Signs in publicly managed areas that can inform the community about the various types of pollinators and pollinator-friendly behaviors.



2. Signs demonstrating pesticide-free lawns and pollinator-friendly lawns to be distributed at Farmer's markets.



Utilizing these two efforts can help promote community knowledge around pollinators and encourage individual action towards promoting pollinator health. Signs are relatively inexpensive and easy to distribute or set up.

BEES & COMMUNITY GARDENS

The City of Sullivan can also take other proactive efforts to encourage pollinators by implementing bee habitats and community garden development. These are not primary steps recommended, but ideal to encourage further pollinator health in Sullivan, IN.

Implementing beehives into the parks is a way to initiate increasing flowering plants and food crops, while providing a more interactive environment for the community. Sullivan could incorporate local artists and projects into the construction of the hives and make them unique to the town.

Signage can be placed beside the hives with educational information for the purpose of explaining the importance of bees and pollinators.



Fairland, IN.



It's recommended to look into creating community garden spaces, as they can increase environmental sustainability and create community. This could impact businesses by providing plants grown in the garden to local restaurants and local residents. A farmer's market could directly partner with the community garden.

CONCLUSION

Keeping in mind the Quality of Life goals and needs for increasing pollinator habitats, students in ENVI460 provided recommendations around changing current operational practices and implementing new initiatives. The City of Sullivan has many plans for improving the city and its community, so the items in this proposal are meant to add value to sustainability and quality of life for the population and environment.

These are the primary recommendations:

1. Integrate native planting into the current city spaces
2. Increase pollinator habitat planting at current city parks spaces and implement community education signage

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