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Mariposas of the Milpa: Fostering Urban Biodiversity through Urban Agriculture Arizona-Sonora Desert Museum

Project Summary Part I. Description

Participating organizations

- Arizona-Sonora Desert Museum

Background or problem statement

Sustainable communities manage their resources to meet current social, economic, and environmental needs while ensuring the ability of the community to meet the needs of future generations. Biodiversity is a key component of sustainable urban communities. Biodiversity within cities contributes to improved air and water quality, moderation of climate extremes, the decomposition of waste, and human health and well-being. Urban agriculture has tremendous potential to increase biodiversity in our cities. Small-scale farms and backyard gardens create high quality habitat for a wide variety of species and connect people to nature, increasing community commitment to biodiversity conservation. Furthermore, many crops require the pollination services of bees and other animals, many of which are experiencing population declines. Urban areas can support healthy pollinator populations, but their capacity to do so is limited by the quality and quantity of favorable habitat. The goals of this project were to establish a partnership between the Arizona-Sonora Desert Museum (ASDM) and the Community Food Bank of Southern Arizona (CFBSA) and to use this partnership to promote biodiversity in Tucson, Arizona, with an initial focus on increasing the abundance and diversity of pollinators.

General description of the project

Our first objective was to increase the quantity of high quality habitat to support pollinator populations in Tucson. With funding from NAPECA we were able to increase ASDM's production of native pollinator plants, which were then used to establish eight new pollinator gardens. The largest of these gardens was planted at the CFBSA Las Milpitas Community Farm (figure 1). We also developed bilingual signage for the two CFBSA pollinator gardens (figure2), created a teaching insect collection for Las Milpitas Community Farm (figure3). Our second objective was to facilitate a deeper connection between city residents and the biodiversity in their own backyards as well as to expand their understanding of pollination and pollinators. We offered workshops on pollinator conservation and pollination gardens in both English and Spanish for CFBSA staff, volunteers, and residents in the targeted neighborhoods (figure 4), participated in numerous outreach events across the city (figure 5), lead a portion of the summer camp for the families in the neighborhood surrounding Las Milpitas Community Farm (figure 6), and created a short film about the project.

Description of outcomes and follow-up

- We created a pollinator garden in Las Milpitas Community Farm that occupies close to 150 m². The combination of this new resource with the existing resources on the farm provide nearly 6 hectares of high quality habitat that supports biodiversity in this low income neighborhood identified by the USDA Food Access Research Atlas as a food desert. We also created gardens in seven additional locations, including a second CFSBA property, five schools, and in the front yard of a private home belonging to an esteemed member of a neighborhood near Las Milpitas Community Farm, for a total of more than 500 m² of habitat in central Tucson. A new shade structure at ASDM built as part of this project made the production of pollinator plants for these gardens possible and has increased the capacity of ASDM to carry on this work into the future. We engaged hundreds of individuals in educational activities on pollinator conservation through a dozen outreach events, six more in-depth educational events, and four school programs. The majority of these events and programs targeted low income Mexican-American audiences of all ages. Many CFBSA staff and volunteers, as well as many Las Milpitas gardeners, are now able to identify pollinators like bees, butterflies, hummingbirds

and moths and to create high quality pollinator habitat that will benefit urban agriculture. These outcomes have set the stage for ongoing work promoting community sustainability and urban biodiversity in South Tucson.

Project products:

- Eight pollinator gardens, the most accessible of which are the two CFBSA gardens. These two gardens will serve as demonstration sites for additional education work that aims to promote urban biodiversity and agriculture. Access to these gardens is easily obtained through the CFBSA. <http://www.communityfoodbank.org/Locations/Las-Milpitas>; <http://legacy.communityfoodbank.com/Programs-and-Services/Community-Food-Resource-Center/Garden-Program/Nuestra-Tierra>
- Signage for the CFBSA gardens was created collaboratively. The content of these signs is available by contacting Kim Franklin (kfranklin@desertmuseum.org).
- This project was featured in a popular local publication edible Baja (<http://ediblebajaarizona.com/butterfly-restaurants>), and another article to be published in The Desert Leaf, another local publication, is forthcoming.
- A 3-minute video about this project is in the final stages of production. The video will be made available online.

Project Summary

Part II. Analysis

Successes

The most important outcome of this project is the partnership that has developed between the Arizona-Sonora Desert Museum (ASDM) and the Community Food Bank of Southern Arizona (CFBSA). ASDM strives to inspire people to live in harmony with the natural world by fostering love and understanding of the Sonoran Desert. The CFBSA is working to end hunger in southern Arizona by promoting urban agriculture. Although these goals might seem unrelated, connecting people to the biodiversity in their own backyards is critical to achieving both.

The tangible outcomes of this project include the creation of over 500 m² of high quality pollinator habitat, the increased capacity of ASDM to produce pollinator plants to continue in this line of work, and the palpable enthusiasm of the community for more education and experiences similar to those offered through this project. The success of this project presents a pathway forward through which ASDM can reach a critical audience that has long been underrepresented on the grounds on the Desert Museum. Without reaching this audience, ASDM falls far short of achieving its mission of inspiring people to live in harmony with the natural world. Partnering with CFBSA and similar organizations offers the ASDM an opportunity to connect with a rapidly growing segment of our community that lacks the resources and/or desire to come to the Desert Museum itself. Furthermore, the connection between biodiversity and food production presents an ideal avenue through which ASDM can leverage the expertise of its staff to contribute to the growing sustainability movement and remain relevant as we enter a period of increasing environmental challenges.

Challenges

Our first challenge was determining the best venues and means of educating our varied audiences about pollination biology and pollinator conservation. This challenge was exacerbated by our lack of familiarity with CFBSA and its programs. Fortunately, we found pollinators to be a very popular topic with a wide variety of audiences. The educational experiences we offered ranged from brief interactions across a table at a community event to a multi-day workshop designed for those with a desire for a deeper understanding of pollination biology and its significance to crop yields.

Perhaps the most significant challenge was figuring out a way to assess how successful we had been in increasing participant knowledge through this wide variety of educational experiences. We planned to use straightforward tests for assessment, and quickly came to realize that testing during informal educational experience is not only logistically difficult, but oftentimes disruptive to the educational experience itself.

Finally, the loss of the contract with our desired filmmaker towards the end of the project period has presented a significant challenge to the production of the project video. We are currently working with a different filmmaker and production of the video is near completion.

Lessons Learned

We were very fortunate to have the opportunity to work with six undergraduate biology students from the Universidad de Sonora, Sonora, Mexico. Their help was critical to obtaining the evaluations of the students and families that participated in educational activities at Las Milpitas and other outreach events. We also learned that an effective means to increase the reach of our educational efforts is to work with student interns who, in return, benefit from the opportunity to develop their scientific knowledge and communication skills. The six Sonoran students returned to Sonora with a greater capacity to carry out pollinator conservation and even more importantly, a better understanding of how to generate collective action to tackle environmental problems.

What Next? What will you do and what should others do?

We continue to look for new opportunities for collaboration to build upon the foundation we have laid through this project. We are particularly excited to learn more about how urban pollinator gardens are influencing urban bee and butterfly fauna as well as yield of popular vegetables such as tomatoes and squash. Pursuing the answers to these questions offers endless opportunities to engage youth in real world research that will provide them both with opportunities to gain valuable job skills and with a deeper appreciation for the biodiversity within their own community.

For more information about the project please contact:

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