

Bee Campus USA - The University of Texas Rio Grande Valley

Report on 2022



Pollinator Habitat Creation & Enhancement

A significant expansion to UTRGV pollinator efforts were coordinated in 2022. The efforts include a development of pollinator friendly gardens covering more than 7 beds, at over 1400 sq ft in a major 2 day event; leading way to high quality pollinator friendly habitat. The new beds contain over 200 plants, and over 70 different species of pollinator friendly plants. Among the expansion included the addition of a bee nesting site added to the pollinator garden on the Brownsville campus. The continuation of maintenance, weeding, the spreading of new seeds, and the expansion of biodiversity of the pollinator gardens ensued throughout the year. Additionally, 10 native shrubs and small trees were added between the campuses, adding an expansion to the recruitment efforts of local pollinators.

How many habitat projects did you help to create or enhance last year?

3

How many total square feet of habitat were created or enhanced?

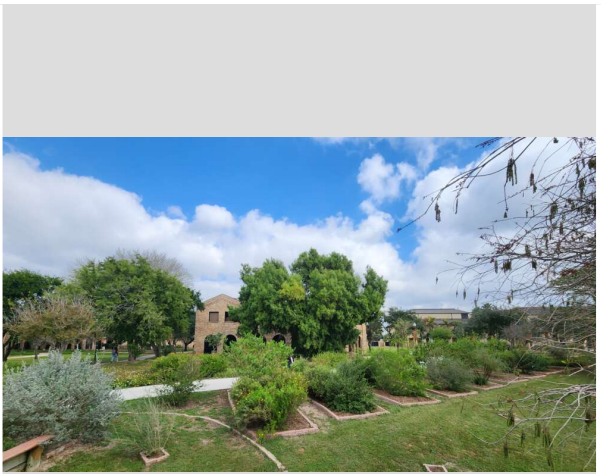
1530

How many volunteers helped with those projects?

162

Please check all that describe the habitats your affiliate helped to create or enhance last year with pollinator benefit in mind.

- Flower garden
- Herb garden
- Native milkweed planting for monarchs and bees (where appropriate)
- Invasive/exotic plant species removal for habitat improvement
- Native pollinator-friendly tree planting
- Native pollinator-friendly shrub border/hedgerow planting
- Rain garden/bioswale
- School garden



Expansion of the UTRGV Pollinator "Cantina" Garden at the Brownsville Campus. (photo by Jeremy San Miguel)



Getting ready for Harvest at the UTRGV Community Garden at the Edinburg Campus. (Photo by David Pike)



Growing tall, delicious and delightful are the pollinator and people friendly gardens at UTRGV. (Photo by David Pike)

Education & Outreach

A total of 2 Pollinator Day Planting Ceremonies were hosted during the UTRGV 2022 Earth Fest which served both UTRGV academic campuses. A collaborative / reforestation effort led by the UTRGV biology department planted over 1000 small trees in a local underseved community of San Carlos, to improve beautification efforts, enhance health and wellness, and increase the population of pollinators in the area. Throughout the year, several courses and projects ensued which impacted pollinator health and education between a myriad of UTRGV faculty, students, staff members. Campus Sustainability Day featured a collaboration with the department of Biology and the Bee Campus Committee to distribute small pollinator trees to the campus community, along with education behind plant-at-home instructions and support. The UTRGV Earth Fest featured a week long presentation list which included pertinent material towards the value of pollinators, the research into their survival, and conservation needs. Throughout the year there were several projects and events led by local UTRGV departments: these projects ranged from general pollinator education, pollinator garden enhancement efforts, and pollinator conservation research in a multidisciplinary effort between engineering, the school of earth, environmental, and marine sciences, and the school of business. An expansion of the UTRGV greenhouse and garden is ongoing, which has led to improvements in the food campus security initiative, impacting student health, and the vital role of pollinators in agroecology.

How many pollinator-related events did your affiliate host or help with last year (in total)?

7

How many people attended those events (in total)?



Courses & Continuing Education

(Restoration Ecology: This course explores the relevance of ecological principles applicable to the recovery of degraded ecosystems. With an emphasis on the reestablishment of ecosystem functioning to facilitate recovery, topics discussed relate to the implementation and monitoring or restoration projects across systems and disturbances.; General Biology: Plant Animal Interactions; Cell & Molecular Biology: A study of cell structure and function with emphasis on bio-energetics, membranes, genes, and genetic control, cell division and its regulation, and cellular differentiation. & study of the structure and function of biological macromolecules as they relate to the functioning of whole cells and organisms. Topics include the structure and function of nucleic acids and proteins, DNA replication and repair, transcription, translation, gene regulation, genetic engineering and gene regulation, genetic engineering, applications of molecular technologies and biotechnology, bacteriophages, and mobile genetic elements.; Advanced Ecology: concept of coevolution in plants and butterflies, based on the foundational work of Ehrlich and Raven (1964) Evolution and some studies that have built on it in recent years, such as Edger et al. (2015) "The butterfly plant arms-race escalated by gene and genome duplications" PNAS.; Entomology: This course seeks to help students: 1) understand basic ecological principles that explain how and why living organisms interact with their biotic and abiotic environment; 2) develop the ability to apply these principles to problems in basic and applied biology; and 3) recognize the intricate and pervasive linkages between the "natural" and "human" worlds. Plant-Microbe Interactions: advanced plant pathology topics and their interactions with pollinators. The graduate student will become familiar with the concepts underlying the interactions of microbes and plants across a continuum of symbioses. Modern ideas from very recent scientific literature concerning the molecular nature of plant pathogenicity and resistance will be emphasized.; Conservation Biology: This course provides a scientific foundation for resource management efforts aimed at conserving, restoring, and sustaining the biological diversity in habitats. Biological diversity includes genetic variation among individuals and populations; species richness and abundance; habitat heterogeneity and all of the interactions that determine the distribution and abundance of species. All courses listed were for-credit.

How many of your for-credit courses included pollinator-related information last year?

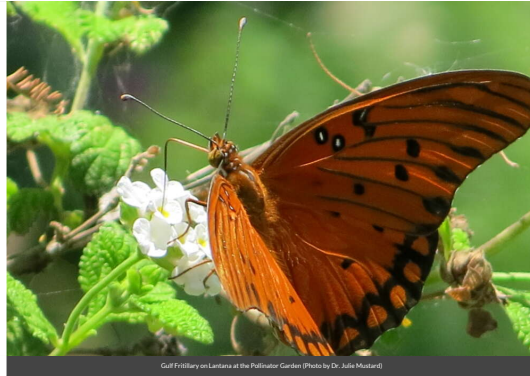
8

How many students attended those for-credit courses?

225



UTRGV Faculty Dr. Fierro Cabro providing outdoor education and outreach on Plant-Animal Interactions (Photo by David Pike)



Gulf Fritillary on Lantana at the Pollinator Garden (Photo by Dr. Julie Mustard)



Hummingbird visiting Turks Cap at the UTRGV Pollinator Garden (photo by Julie Mustard)

Service-Learning

BIOL 3409-01 AAS and 3409-01 BBS- Pollinator Garden Development Project – through a collaborative effort, 250 native species plants, over 70 different species were planted at UTRGV, with 3 new beds developed by the greenhouse on campus. The project was designed to inspire students to take initiative into diversifying pollinator friendly areas on campus and provide an experiential opportunity for students. Plant-Animal Interactions (BIOL 6310)- The function and structure of ecosystems are maintained largely by the interactions between plants and other organisms of which animals play a major role. This course explores a set of important, representative interactions (including pollination), ranging from mutualisms to antagonisms, including the co-evolutionary context. One important section of the course covers pollination in some depth. Includes group discussions of peer-reviewed papers on diverse aspects of the pollinator-plant interaction. Also, a term assignment involves the documentation of an ongoing local interaction. Pollination is the most popular interaction selected by students. The pollinator garden on campus provides an excellent scenario for the assignment. Entrepreneurship and Innovation New Venture Creation ENTR-3340 / Senior Design I and New Venture Creation – This course is designed for students interested in the entrepreneurial process, with a special emphasis on creating a new venture. Students will learn basic business model and team formation principles that are central to creating entrepreneurial opportunities and taking action on them. The objective of the course is to prepare students to test the viability of new business opportunities and conduct a feasibility study, either for their own idea or for others. This is a Service Learning course that integrates Sustainable Development Goals and relies on classroom discussion, participation, guest speakers, market research and analysis, the creation of a feasibility and sustainable business model, collaboration across disciplines, and building a basic Sustainable Business Report to develop a comprehensive strategy for launching and managing a business realizing that environmental sustainability and social responsibility are crucial variables in the

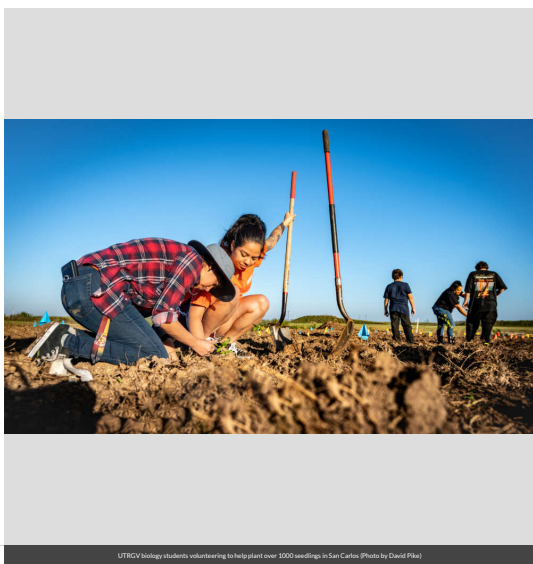
intangible assets of the startup/project. During the last year a device was developed that allows established and aspiring beekeepers to monitor the weight of their beehive. Important information can be gathered from the weight of a beehive such as when the honey produced in their hive is ready to be harvested. This project contributed to the conservation. Julie Mustard – Pollinator Workshops & Volunteer Service – A weekly opportunity, which expanded over 3 weeks, provided an opportunity for students to earn service-learning credit and volunteer hours in the pollinator garden, through maintaining, weeding, spreading seeds, and expanding the pollinator garden. Additionally, bee nesting sites that were added to the garden

How many service-learning projects did your campus host and/or support to enhance pollinator habitat on and off-campus?

4

How many students participated in service-learning projects last year to enhance pollinator habitat on or off-campus?

95



UTRGV biology students volunteering to help plant over 500 seedlings in San Carlos (Photo by David Pike)



UTRGV Biology students building one of several new Pollinator Gardens at the Edinburg Campus



UTRGV Entrepreneurship and Innovation New Venture Creation Senior Design: Beehive Monitoring and Weighing Device Prototype

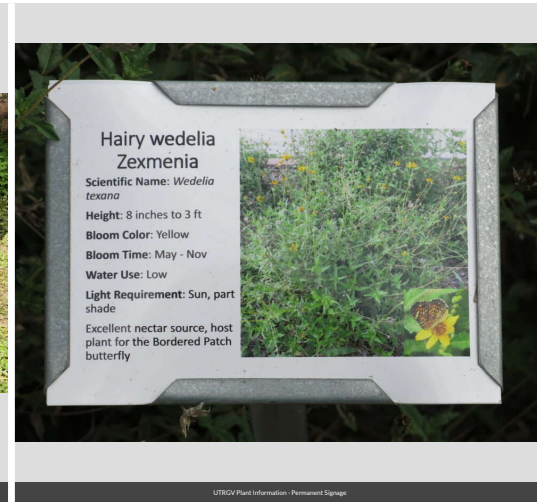
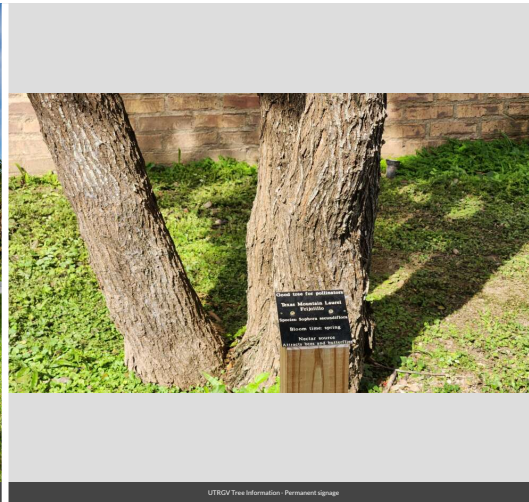
Educational Signage

Signage on the Brownsville campus include a large welcome sign with changing pollinator information, and 24 small permanent signs with specific information on a plant species and its most frequent pollinator or larval guest. We also have 15 Bee Campus USA Pollinator Friendly Garden signs between both the Edinburg and Brownsville campus gardens. We added 2 temporary signs at different construction sites where pollinator friendly landscaping is ongoing from the previous semester.

Number of permanent interpretive/educational/Bee Campus USA signs installed to date?

Number of temporary interpretive/educational/Bee Campus USA signs installed last year?

2



Policies & Practices

Implemented or maintained a written IPM plan, avoided use of pesticides in public sites containing designated pollinator habitat or other sensitive features (except when targeted use is deemed the best option for invasive or noxious weed, insect or disease management), reduced the number of sites where pesticides are used. Please see attached IPM plan.

What actions have you taken to make pest management practices more pollinator-friendly?

- Implemented or maintained a written IPM plan
- Avoided use of pesticides in public sites containing designated pollinator habitat or other sensitive features (except when targeted use is deemed the best option for invasive or noxious weed, insect or disease management)
- Reduced the total area of city or campus-managed lands to which pesticides are applied
- Restricted pesticides used to organic pesticides on city or campus grounds
- Distributed educational materials to residents or students to encourage the reduction or elimination of pesticide use
- Sourced plants for city or campus grounds using “Buying Bee-Safe Plants” methods recommended by

Xerces Society. (See <https://xerces.org/publications/fact-sheets/buying-bee-safe-plants>)

- Sourced plants for city or campus grounds that were not treated with neonicotinoids
- Encouraged developers and private landscapers to source plants using “Buying Bee-Safe Plants” methods recommended by Xerces Society. (See <https://xerces.org/publications/fact-sheets/buying-bee-safe-plants>)

In your city or campus, are any policy initiatives underway to further protect pollinators, people or waterways from pesticides?

We have new City Foresters at both the City of Edinburg and the City of Brownsville and have initiated conversations to discuss initiatives and advisory services from both to further our efforts (aside from our current IPM plan) to protect our pollinators, people and waterways from pesticides.

Please describe actions by your affiliate to attend training on ecologically-based Integrated Pest Management and/or to review IPM plans and programs considered of high quality by Bee City USA?

The UTRGV Facilities Grounds Crew Supervisor and Staff attended (2) webinar/trainings on IPM in 2022 and the Chief Sustainability Officer also provided additional resources after attending the 2022 Partners in Community Forestry Conference.

Integrated Pest Management Plan:

<https://reports.aashe.org/media/secure/1017/7/659/5033/UTRGV%20Integrated%20Pest%20Management.pdf>

Recommended Native Plant List:

https://www.utrgv.edu/pollinatorcantina/en-us/plants/index.htm%20https://www.wildflower.org/collections/collection.php?collection=TX_south%20

Recommended Native Plant Supplier List:

<https://www.valleynaturecenter.org%20-%20http://heepsplants.com%20-%20http://www.valleygardencenter.com>



UT Rio Grande Valley

Integrated Pest Management Plan



UTRGV Integrated Pest Management Plan

Learn More

<https://www.utrgv.edu/sustainability/programs/bee-campus-usa/index.htm>
sustainability@utrgv.edu

<https://www.facebook.com/UTRGVSustainability/>

The graphic features a central logo on the left with the text: "Making The World Safer For Pollinators", "Bee Campus USA", "One Campus At A Time", "Since 2018", "UTRGV", "Pollinator-Friendly Garden", and "Advisory Committee". To the right of the logo is a grid of 16 photographs of committee members, each with a caption below it.

 Dr. Alejandro Fierro Cabo Chair	 Dr. Julie Mustard – Co-Chair	 Dr. Lucia Carreon – Co-Chair	 Dr. Sara Black – Faculty	
 David Lecusay Graduate Student	 Douglas Mainhart Graduate Student	 Gaspar Najera Undergrad Student	 Abigail Pozulp Graduate Student	 Celia Mclean Graduate Student
 Abraham Hernandez Facilities	 Martin Cortez Facilities	 Carlos Chavez Facilities	 Marianella Franklin Sustainability	

UTRGV Bee Campus USA - Advisory Committee