Bee Campus USA - Tennessee Technological University

Report on 2022

Pollinator Habitat Creation & Enhancement

-Putnam Proud: The Office of Sustainability at Tennessee Tech coordinated campus groups, organizations, and groups of friends for annual Putnam Proud Countywide Cleanup events. These are events throughout the year, along with a week-long event September 17-24, in which teams remove litter throughout Putnam County. Seven groups from Tennessee Tech participated and cleaned a wide variety of locations including roadsides, sinkholes, wetlands, and local parks. During this county-wide cleanup, volunteers assisted in improving and preserving the health of natural areas such as wooded-regions, wetlands, gardens, meadows, and pollinator-friendly lawns. These events are hosted by the Keep Putnam County Beautiful Committee. -Native Plant Garden/Biology Greenhouse: Throughout the year of 2022, volunteers assisted in maintaining the student-designed and student-planted garden. The garden includes eight habitat types: prairie, cedar glade/bluff, high elevation acid woods/heath bald, wetlands, rocky outcrops, river/stream, roadside/pasture, mesic woodland, and edible/medicinal plants. All species are native to Tennessee. Furthermore, native plants are also grown and maintained in the TTU Greenhouse. Many plants are first maintained in the Greenhouse by students before being planted in the Native Plant Garden.

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

15000

How many volunteers helped with those projects?

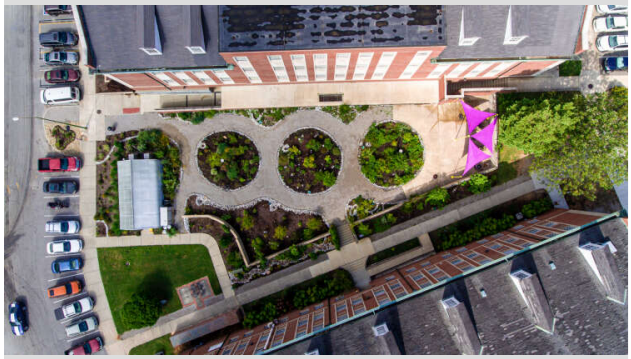
108

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

- Flower garden
- Vegetable garden
- Natural area with tree snags and stumps, and bare areas for ground nesting species
- Pollinator-friendly lawn (with flowering clover, dandelions...)
- Herb garden
- Native pollinator-friendly tree planting
- Roadside/rights of way planting

Improve pollinator habitat: This native bee structure, and others similar, were added this past year serving as habitat for native bee pollinators that inhabit the native plant garden.

County Cleanups: Here an image of the flyer advertising the community cleanups that our university participates in, helping to maintain green spaces that are free of pollution for our local pollinators.



Pollinator greenspace: A birds-eye drone photo of the native pollinator garden that houses a diverse community of plants and pollinator habitat.

Education & Outreach

-Earth Week, April 11-13, 2022 -Plants Rock!, April 13, 2022 -Bike Trail Cleanup, April 6, 2022 -Pollinator Packets, October 4, 2022 -Sustainability Day Celebration, October 13, 2022 -Earth Day Celebration, April 20, 2022

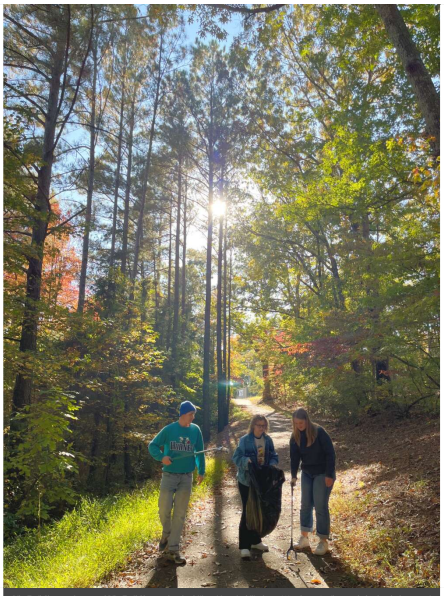
How many pollinator-related events did your affiliate host or help with last year (in total)?

6

How many people attended those events (in total)?

500

Sustainability Day Celebration: Our annual Sustainability Day Event on Centennial Plaza.



Bike Trail Cleanup: Our annual Bike Trail Cleanup that the Office of Sustainability hosts. We adopt a 1-mile stretch that heads the start of the trail and traces a route that we maintain for the enjoyment of the community and pollinators that utilize the greenway.

Pollinator Packets: Proud recipients of the Office of Sustainbility's pollinator packets, a fun activity bag promoting pollinator awareness on campus.

Courses & Continuing Education

The following courses were a part of for-credit curriculum. 1. AGHT 3030 Integrated Pest Management: Introduction to the aspects of integrated pest management. Identification of plant disease and insect pest problems. Fundamentals of control: biological, cultural, and chemical. Plant disease concepts including etiology, ecology, and physiology. 2. AGHT 3400 Landscape Horticulture: Basic theory and principles of design for landscaping modern homes and businesses. Use of ornamental plants and special features. Installation, maintenance, and discussion of the effect of management on plant growth and health. Topics include pruning, fertilizer application, pest control, etc. 3. AGHT 3410 Plant Propagation: Asexual and sexual propagation of plants by cuttings, layers, division, special structures, grafting, budding, seeds, and tissue culture. 4. AGHT 3440 Floral Arrangement: Fundamentals and theory of floral design with emphasis on arrangements for the home and special occasions. 5. AGHT 3450 Dendrology: The study of trees and the identification of native species commonly found in the mid-South. Adaptability of the species to various ecological conditions of forest ecosystems and importance to wildlife will be discussed. 6. AGHT 4420 Greenhouse Management and Crop Production: Principles of greenhouse management and environmental controls; production, timing, harvesting, and marketing of commercial floricultural crops; pest control strategies; and nutrient film technique. Development of commercial production schedule required. 7. AGHT 4940 Horticulture Topics: Special study in an approved area of horticulture under the supervision of a member of the School of Agriculture faculty. 8. AGRN 1100 Plant Science: Introduction to the fundamentals of plant science as related to the ecological principles of agronomic and horticultural crops. 9. AGRN 1110 Plant Science Laboratory: Further the discussion of plant science in the laboratory setting. 10. AGRN 2000 Soil and the Environment: An introduction to soil physical and biological properties and their relationship to plant growth, land use, and environmental quality. 11. AGRN 3000 Soils: An introduction to soil physical and biological properties and their relationship to plant

grown, land use, and environmental quality. 12. Soil and Water Conservation: Examination of soil health and water quality as impacted by natural and human influences. Emphasis on soil productivity conservation. 13. AGRN Weed Science: Plant and seed identification, and growth habits and dissemination of weeds. Biological, cultural, and chemical methods of control in the integrated pest management (IPM) concept. 14. AGRN 4210 Soil Fertility and Fertilizers: Properties of soils in relation to plant nutrition, and fertilizer materials and their relationship to soil fertility. 15. AGRN 4940 Agronomy Topics: Special study in an approved area of agronomy under the supervision of a member of the School of Agriculture faculty. 16. AGRN 4110 Forage Crops Production and Management: Botany and classification, soil and climatic requirements, species adaptation, establishment and management of grasses and legumes for silage, hay, and temporary, permanent, and rotational pastures for ruminants, swine, and horses. 17. ANS 4960 Animal Science Topics in Bee Production: Special study in an approved area of animal science under the supervision of a member of the School of Agriculture faculty 18. BIOL 2310 General Botany: Introduction to principles of botany. 19. BIOL 3240 Field Botany: Survey of regional flora (herbs, shrubs, & trees) focusing on gymnosperms and angiosperms. Emphasis on nomenclature, structural characteristics, identification of species using a dichotomous key, and characteristics of plant families. 20. BIOL 3330 Entomology: Common harmful and beneficial insects of this region and their control 21. BIOL 4330 Plant Ecology: Biotic and abiotic factors affecting the distribution and abundance of plant species and the role of plants in ecosystem structure and function.

How many of your for-credit courses included pollinator-related information last year?
21

How many students attended those for-credit courses?
1378


Students at Shipley Farm: Students from the School of Agriculture are pictured taking care of plants onTennessee Tech's horticultural research farm at Shipley Farm (10 minute drive from the main campus). Many agriculture and horticulture courses take place at this living lab space. .


Professor Demonstrating Air Layering: In Dr. Airhart's Plant Propagation course, he is demonstrating to students how to air layer a tree. Air layering is a method used to propagate new trees from stems that are still attached to the parent plant. This method is used as a way to protect the parent plant while quickly creating new growth.


Professor Demonstrating How to Harvest Honey: Agriculture professor, Dr. Greene, is demonstrating tohis class how to properly harvest honey without causing damage to the hive or to the comb.

Service-Learning

-Pollinator houses: Students built and participated in the installation of the new pollinator habitats that were placed in the native pollinator garden. -Pollinator Packets: The pollinator packets that are handed out during events are constructed

and prepared by a group of students dedicated to the cause of helping our pollinators. -Putnam Proud: The Office of Sustainability at Tennessee Tech covered the entry fee for campus groups, organizations, and groups of friends to participate in the Annual Putnam Proud Countywide Cleanup. This was a week-long event from September 19-26 in which teams remove litter throughout Putnam County. Ten groups from Tennessee Tech participated and cleaned a wide variety of locations including roadsides, sinkholes, wetlands, and local parks. During this county-wide cleanup, volunteers assisted in improving and preserving the health of natural areas such as wooded-regions, wetlands, gardens, meadows, and pollinator-friendly lawns.

How many service-learning projects did your campus host and/or support to enhance pollinator habitat on and off-campus?
3

How many students participated in service-learning projects last year to enhance pollinator habitat on or off-campus?
100

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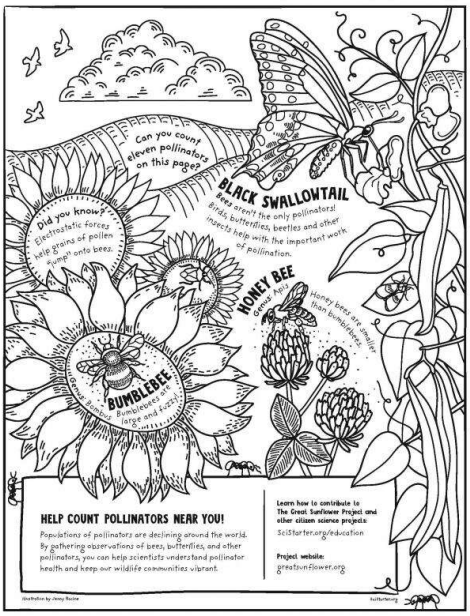
Putnam Proud: a flyer for the dates that the university sponsored student groups for cleanups in conjunction with the Putnam County Clean Commission.

Educational Signage

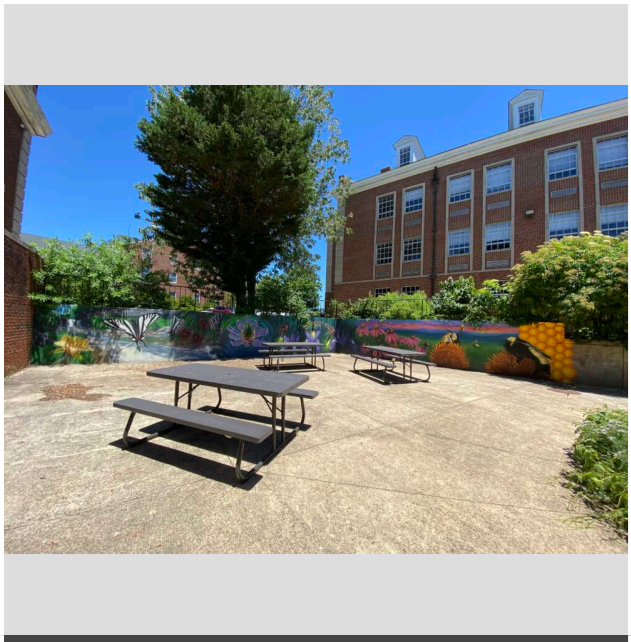
Permanent signage includes the Pollinator Poster, the Pollinator Mural, the Native Plant Garden Mural, and the Native Plant Garden Prairie Habitat sign. Temporary signage includes the virtual flyers that we posted on our social media, digital signage televisions around campus, and the campus news page. While not every sign is displayed year round, they all are used to inform students and staff about our native pollinators and what we can do to protect them. Monarch waystation signage was added for 2022 to bring awareness the site's value as a nectar source and shelter to these important pollinators.

Number of permanent interpretive/educational/Bee Campus USA signs installed to date?
5

Monarch Waystation: New signage was installed in the Native Pollinator Garden for awareness about the significance of the site to Monarch butterflies.



Informational Sheet included in Pollinator Packets: The informational coloring sheet was printed off and included in our pollinator packets.


Native Tennessee Pollinator Mural: This mural is located in the University Services building at TN Tech. It was painted by a student and features Tennessee's native pollinators including a hummingbird, bees, birds, bats, flowers, and butterflies

Policies & Practices

The Tennessee Tech Bee Campus USA Committee is a subcommittee comprised of members from the both the Sustainable Campus Committee and the Building and Grounds Committee. Members include Tennessee Tech's Landscaping & Grounds Manager, Sustainability Manager, faculty from the Departments of Biology and Agriculture, and

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students. By representing many areas of the university, members of this group are able to bring their own perspectives and knowledge to meetings. Collectively, they work together to discuss and plan campus outreach events and discuss pollinator habitat protection and conservation efforts.

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)
- Distributed educational materials to residents or students to encourage the reduction or elimination of pesticide use

In your city or campus, are any policy initiatives underway to further protect pollinators, people or waterways from pesticides?
On campus, our Grounds Committee is dedicated to reducing the amount of pesticides they use.

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?
https://www.tntech.edu/sustainability/pdf/Tennessee-Tech-IPM-Plan-2019.pdf

Integrated Pest Management Plan: Tennessee-Tech-IPM-Plan-2019.pdf
https://www.tntech.edu/sustainability/pdf/Tennessee-Tech-IPM-Plan-2019.pdf
Recommended Native Plant List:

Recommended Native Plant Supplier List:

Learn More

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A photo of our committee.