Bee Campus USA - North Carolina State University

Report on 2022

Pollinator Habitat Creation & Enhancement

NCSU Grounds Services created and enhanced pollinator beds around campus. We created about 8 new pollinator beds- some of these were previously annual beds that we flipped over into perennial beds for more sustainable maintenance as well as additions of pollinator plants year round. We also enhanced about 5 areas with additional perennials, with an emphasis on sign beds around campus where we added pollinator-friendly perennials such as Nepeta, Asclepias, and Salvia. Most of these perennials were grown within the University at the Grounds Greenhouse before installing them into the landscape, thanks to sustainability funding from the University. A group of students partnered with Grounds Services to install a campus garden with edible and pollinator friendly plants in April 2022, and students have also participated in maintenance of this garden. Grounds worked with students on the SOUL garden project with maintenance and updating the plant pallet to be pollinator friendly. The SOUL garden is a student-run, on-campus vegetable garden. Finally, a student group is installing an outdoor green terrace at Talley Student Union, which will include pollinator plants. The terrace is scheduled for completion in spring 2023.

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

8

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

10250

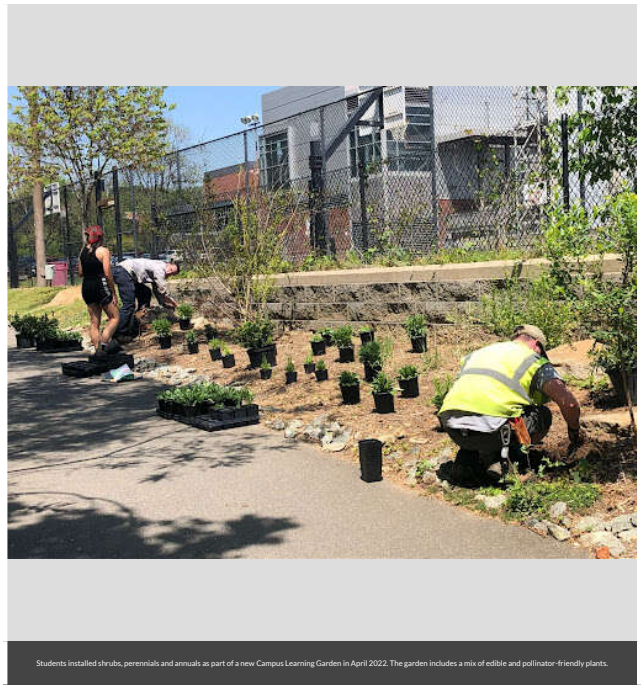
How many volunteers helped with those projects?

20

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

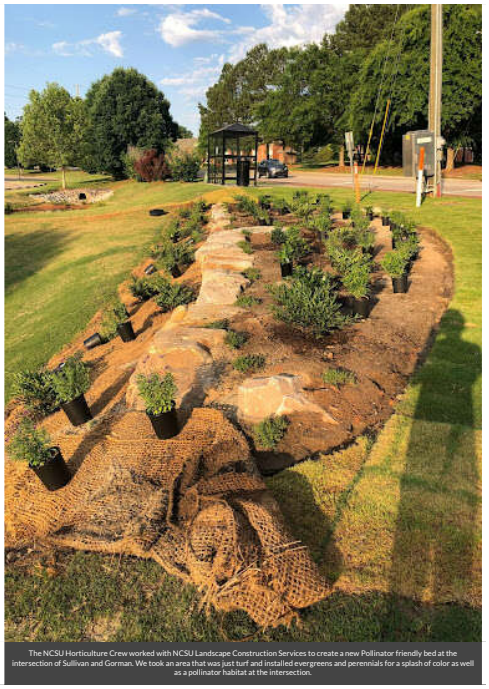
- Flower garden
- Natural area with tree snags and stumps, and bare areas for ground nesting species
- Pollinator-friendly lawn (with flowering clover, dandelions...)
- Native milkweed planting for monarchs and bees (where appropriate)
- Native pollinator-friendly shrub border/hedgerow planting
- Rain garden/bioswale

- School garden



Students installed shrubs, perennials and annuals as part of a new Campus Learning Garden in April 2022. The garden includes a mix of edible and pollinator-friendly plants.

Pollinator plants in the Grounds Greenhouse, potted up from small plugs and ready to be planted out into the landscape. Grounds does smaller projects in the Spring, Summer, and Fall with perennials grown at the Greenhouse.



The NCSU Horticulture Crew worked with NCSU Landscape Construction Services to create a new Pollinator friendly bed at the intersection of Sullivan and Gorman. We took an area that was just turf and installed evergreens and perennials for a splash of color as well as a pollinator habitat at the intersection.

Education & Outreach

During Pollinator Week 2021 and 2022, NC State's Staff Senate hosted four events focused on garden design, attracting pollinators with native plants, the basics of pollinator gardening, and bee habitat and pollinator protection. All events were led by NC State experts in these areas. In 2021, an educational scavenger hunt was hosted with bee hotels and books as prizes. Scavenger hunt participants had to find and submit photos of specific pollinators, flowers, or habitat plantings on the NCSU Campus. Several pollinator-related groups, including Beekeepers Club and Grounds Services, were part of the annual NC State Earth Fair in April 2022. This outdoor expo attracts hundreds of participants, who learned about pollinators from interactive displays. The Bee Campus committee hosted a table at the Earth Fair featuring information about wild bee pollination services and nesting habits, with bee trading cards and Bee Campus bookmarks as giveaways. The NCSU Urban Ecology Lab also presented wild bee outreach tables outside the immediate NCSU community with a table at the NC Museum of Natural Sciences for Bugfest 2021 (attendance 475), and at the Museum of Life and Science for Pollinator Week 2022 (attendance 100), also featuring wild bee biology, pollination, nesting, and a live colony of bumble bees in an observation hive. Members of the Urban Ecology Lab also offered virtual presentations about carpenter bees in the NC Museum of Natural Sciences Bugfest (9/2021, attendance 30), Pollinator Conservation Alliance webinar series (6/2022, attendance 35), and Southern IPM Hour (9/2022, attendance 40). NC State has also been involved in the Wake County "Swarm" of local Bee City USA affiliates, working to collaboratively plan pollinator-related education and

share ideas for the collective advancement of pollinator-friendly practices. The Entomology Graduate Student Association incorporated pollinator education into their Cape Fear Bioblitz Event on April 30, 2022. Also, in Feb. 2023, a Bee Campus USA committee member spoke as part of a pollinator-related film event at the NC State University Libraries. Pollinator education was also included in the NC State sustainability blog, social media and weekly e-newsletter. One of the articles is about NC State becoming a Bee Campus USA: https://sustainability.ncsu.edu/blog/2021/04/22/bee-campus-usa/ Several NCSU faculty and staff have led pollinator-related outreach and communication initiatives. Danesha Seth Carley and Anne Spafford (faculty, Horticultural Science) published the book Pollinator Gardening for the South: Creating Sustainable Habitats (March 2021, UNC Press). Elsa Youngsteadt (faculty, Applied Ecology) and Merideth Favre (staff, Lee County Extension Center) published a bee hotel handbook (2022, NC Cooperative Extension). And Elsa Youngsteadt (faculty, Applied Ecology) is a co-organizer, with collaborators at Michigan State University, of the Protecting Pollinators in Urban Landscapes conference, a biennial conference that provides an opportunity for researchers, educators and practitioners to exchange information, ideas, and experiences related to pollinator health and conservation in urban and ornamental landscapes. The 2022 conference was held in Athens, GA, with approximately 100 participants.

How many pollinator-related events did your affiliate host or help with last year (in total)?
19

How many people attended those events (in total)?
1000

Students learn about pollinators during the annual NC State Earth Fair in April 2022.

Raleigh City Farm is a study site participating in NCSU pollinator research. During pollinator week 2021, the farm hosted a pollinator festival, and the Urban Ecology Lab research team pitched in with a native-bee outreach table. Emma Briggs (research technician) and Malia Naumchik (undergraduate research assistant) ran the table.

Courses & Continuing Education

Our for-credit courses are numerous and varied across curricula, including those in Horticulture, Applied Ecology, and Entomology. Collectively, these courses account for hundreds of students every year across the entire university, especially those aimed at non-science majors that provide General Education Requirements (GER) and use bees as charismatic vehicles to gain an appreciation of biology and science. Our non-credit courses mostly consist of those in the Beekeeper Education & Engagement System (BEES). These are short (1-2 hours) asynchronous classes offered on the Moodle platform that span a variety of topics at both the 'Beginner' and 'Advanced' levels. This network of courses has been extremely popular for beekeepers across the country, and we are expanding the offerings to include those in other areas of pollination biology including the recent development of "NC Native Plant Propagation."

How many of your for-credit courses included pollinator-related information last year?
8

How many students attended those for-credit courses?
600

How many of your continuing education courses included pollinator-related information last year?
20

How many participants attended those courses?
194

David Tarpy with students from his AEC 203 course "An Introduction to the Honey Bee and Beekeeping" at their annual live swarm demonstration (honey bee swarm pictured on the "Cornell cross" at the center. No students were stung.

Service-Learning

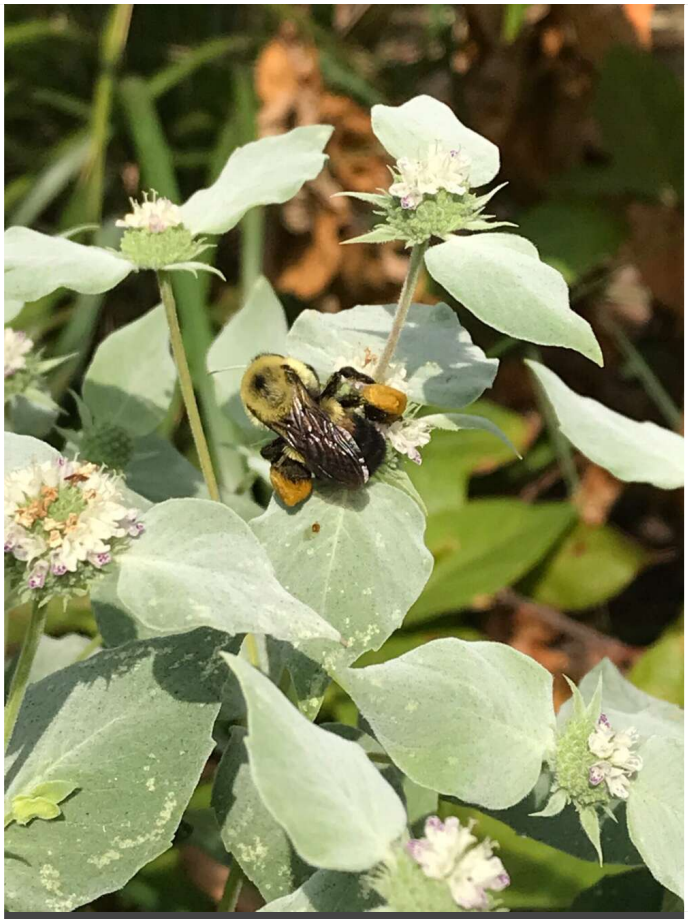
Three students are completing internships as part of a project to protect and preserve a habitat of ground-nesting bees on campus; this project is funded by an NCSU Sustainability Fund Grant and involves the students identifying the ground-nesting bees present in a nesting aggregation in front of a research building; identifying which floral resources they are using; and developing a landscape plan that will enhance the appearance of the building while providing floral resources and preserving established nesting activity. In fall 2021, 20 students in Planting Design (HS416/516, taught by

Horticultural Science professor Anne Spafford) renovated a rain garden cell on Hillsborough Street at Dan Allen Dr. to incorporate pollinator supporting plants. A local artist painted a pollinator mural around the concrete walls. The students each developed a planting design and presented to project stakeholders (City of Raleigh Stormwater Engineer, LiveitUp Hillsborough organization stakeholders). Based on their feedback, a final design was developed and planted by NCSU students. Raleigh Mayor, Mary Anne Baldwin, a few city council members, other City of Raleigh Stormwater Management Team, and LiveitUp Hillsborough stakeholders attended the garden opening.

How many service-learning projects did your campus host and/or support to enhance pollinator habitat on and off-campus?
2

How many students participated in service-learning projects last year to enhance pollinator habitat on or off-campus?
23

Students in Planting Design (HS416/516) designed and installed a rain garden that incorporated pollinator plants. Photo by Anne Spafford.



A brown-belted bumble bee loading up on pollen in the rain garden designed and installed by students in fall 2021. Photo by Anne Spafford.

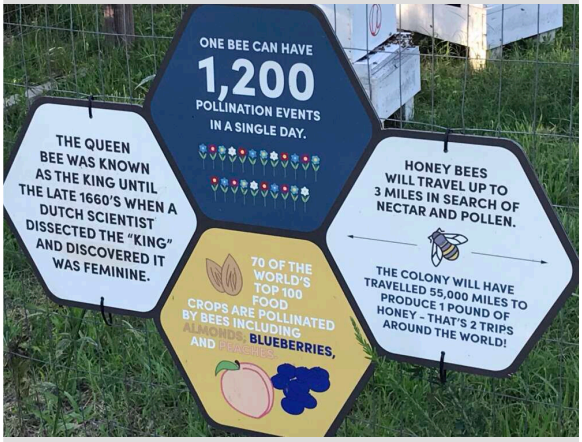
Educational Signage

We used temporary signs to highlight lawns left untouched during No Mow May. Our permanent signs were not installed last year, but include three signs on bee hotels, a sign in the Honors Commons pollinator garden, a sign on the Bee Downtown Apiary on Centennial Campus, the SOUL garden pollinator habitat sign, and a pollinator habitat sign on Centennial Campus.

Number of permanent interpretive/educational/Bee Campus USA signs installed to date?
7

Number of temporary interpretive/educational/Bee Campus USA signs installed last year?
2

NC State Grounds Services practiced "No Mow May" in the green spaces between Sullivan Drive and Wolf Village Apartments' parking lot areas in May 2022.



Permanent educational signage at the Bee Downtown apiary on Centennial Campus

Three NCSU bee hotels bear permanent educational signage; hotels and signs were supported by an NCSU Sustainability Fund Grant and installed in 2018.

Policies & Practices

NC State Grounds Services practiced "No Mow May" in the green spaces between Sullivan Drive and the Wolf Village Apartments' parking lot areas in May 2022. Grounds has implemented the use of compost heavily within the landscape. We have utilized it as a natural fertilizer for annual and newly installed perennial beds. We have gotten away from the use of pine fines, pine nuggets, and mulch in these beds, instead using the compost as a top dressing to add nutrients to existing soil. Grounds has pushed to have less chemical use for weed removal and focus more on hand removal of weeds and invasive species. We have made new pollinator beds chemical free by using the compost as well as only removing weeds by hand.

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)
- Implemented non-chemical pest prevention and management methods on city or campus grounds
- Eliminated pesticide uses that are solely to maintain aesthetics on city or campus grounds
- 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

Integrated Pest Management Plan: Maintenance Plan.pdf

Recommended Native Plant List:
https://growingsmallfarms.ces.ncsu.edu/growingsmallfarms-pollinatorgarden/
Recommended Native Plant Supplier List:
https://growingsmallfarms.ces.ncsu.edu/growingsmallfarms-pollinatorgarden/

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Grounds compost bin at Sullivan Shops. We have dedicated a space to always have compost on hand. With it being easily accessible we are able to get annual beds and newly planted perennial beds set with compost as soon as they are planted.

Learn More

https://sustainability.ncsu.edu/campus/pollinators/

ekyoungs@ncsu.edu

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