Boston University Pollinator Protection Plan

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Mission Statement: With pollinators on the decline, Boston University has an opportunity to work towards making its campus, and the city of Boston, more sustainable. Without pollinators, the global food supply cannot be sustained and local ecosystems can become vulnerable to instability. This plan aims to be a working document designed to help increase pollinators on campus by improving their habitats and eliminating the pesticides that harm them, to achieve ecological integrity and to become a leader in campus pollinator protection.

Urban v Rural Pollinators: Pollinators are a key player in ecosystem functionality, yet many public documents have seemed to ignore them. Tree ordinances, urban planners, and many universities have yet to implement pollinators into their goals, guidelines, or plans. Although some entities do have pollinator plans,(Maryland, Massachusetts, and Minnesota have notable plans), the problem seems to be a missing link between



the pollinators and urban landscapes. Many of these plans focus their energy on agricultural practices and how they relate to pollinators. While agriculture is still important as it is key to feeding the world population, <u>more people are living in cities</u> than ever and these areas need to be addressed in the context of pollinators as well. Two plans that have done this well are <u>Minnesota's pollinator report</u> and <u>Tufts'</u> <u>Pollinator Initiative</u>. With urbanization on the rise comes land-use change, and <u>habitat</u> fragmentation is a large threat to pollinators in addition to <u>pesticide use</u>. As a large urban campus Boston University is a great candidate to help lead to the forefront of urban pollinator protection.

Why Pollinators are Important: Biodiversity helps make ecosystems more resilient to climate change, therefore, protecting the status of pollinators can help make BU more resilient. Pollinators also help support the global food supply and are crucial for the continued growth of crops. Massachusetts has about <u>380 species of bees and 120</u> species of butterflies, and this rich diversity helps provide these key ecosystem services

like resilience and food security. Yet the decline of pollinators can put entire ecosystems at risk through pesticide use and land use change.¹

Dangers of Land-Use change and Pesticides: ² Land-use change is inevitable when urbanization happens, so in the case of urban campuses pollinator habitats must be considered. Pollinators need cohesive land in order to thrive, rather than fragmented patches. However, Boston University lacks a pollinator friendly land strip. Also, pesticides like neonicotinoids have shown to be harmful, and even deadly, to pollinators. A key factor in promoting pollinator habitats is proper pesticide usage. Boston University currently manages its land through a hybrid fertilization approach using organic and synthetic products. Each year BU applies two blankets of treatments with an herbicide and one with an insecticide, and then they apply three applications of organic material. The specific brands that the university uses are Confront, Dimension, Merit, and Natures Safe. Confront and Dimension are both herbicides and Natures Safe is an organic fertilizer. None contain any neonicotinoids, however, Merit is an insecticide containing the ingredient imidacloprid, a neonicotinoid. OSHA does not consider Merit to be hazardous



yet it is listed as a pesticide containing neonicotinoids.

¹ Bringing Nature Home: How You Can Sustain Wildlife with Native Plants. Douglas W. Tallamy, Timber Press, 2007

² https://www.pollinatorfriendly.org/pesticides

What BU has Already Done:

Boston University plants many native plants across campus. 70.7% of known plant genera on campus are native to Eastern Massachusetts. However, only15.5% of all known plant genera planted on campus are listed in the Tufts Pollinator Initiative as native pollinators to the area. BU has a student run Beekeepers club, which keeps and maintains two beehives in Cambridge, MA. BU also has a self maintained rooftop garden on 100 Bay State Road and on CAS and has made a strong initiative to implement organic treatments for grounds keeping activities.

What has been Done to Help Pollinators Already in Densely Populated Areas:

-<u>Westchester County Executive</u> <u>George Latimer</u> has issued <u>executive order 10</u> to protect native plants from invasive species in order to protect pollinator habitats in addition to Percent of Native to Eastern Mass. and Non Native Plants on Campus



preserving their natural ecosystem and maintaining environmental health. This order prohibited the use of invasive plants on any county property like parks, public gardens, and roadsides.

-<u>Minnesota</u> plans to offer incentives through a subsidy, <u>HF 776</u>, for homeowners to have biodiverse lawns, which improve pollinator habitats. This will be executed through the <u>Lawns to Legumes Program</u> and will start in spring/summer 2020.

-<u>Minnesota's pollinator plan</u> highlights the importance of roadside native plants, implementing urban pollinator habitats, and the health of urban pollinators. Funding and support has been received from many sources like the Roadsides for Wildlife Program, Minnesota Department of Transportation, Department of Natural Resources, Prairie Passage Route, Roadsides for Wildlife, and University of Minnesota. -<u>Toronto</u> has created a <u>biodiversity plan</u> that includes a pollinator protection strategy plan that identifies ways that the city can protect pollinator habitats along with the initiation of projects that help create pollinator habitats and will engage and educate local communities on the importance of pollinators.

-<u>Chicago's</u> City Hall has a <u>rooftop garden</u> that has the potential to attract monarch butterflies, which can fly up to 11,000 feet. Most pollinator attracting plants have shallow roots making them great candidates for rooftop gardens. More information about the garden can be found <u>here</u>.

-Boston's greenway is a long continuous strip, which is called a "pollinator ribbon" of land that houses many plants that are biodiverse, dense, and lush attracting pollinators like moths, butterflies, and bees. Because this land is continuous it provides pollinators a more supportive ecosystem allowing pollinators to thrive.

-Atlanta's newly

developed Beltline, which is a large pedestrian and bike path route that encompasses the city, was decorated with <u>pollinator gardens</u> with the help of a youth-based non-profit (Pebble Tossers). TheBeltline also has an <u>urban farm</u> which is designed to attract pollinators and be a food resource for community members.

-<u>New York City's</u> Battery Park and the Cathedral Church of St. John the Divine are home to <u>bee villages</u> that resemble famous buildings in New York, with the goal to give bees and monarch butterflies a home in a greenspace-lacking city.

-<u>South Oregon University</u> has created a branch of Bee City USA called <u>Bee Campus</u> <u>USA</u>, which is a certification for pollinator friendly campuses. There are currently <u>86 bee</u> <u>campuses</u> that have committed to pollinator habitat protection through the work of faculty, staff, and students.

-<u>2 Million Blossoms</u> is a new quarterly magazine launching in January 2020 dedicated to pollinator protection that is designed to be an educational source.

-<u>Tufts University</u> has a comprehensive pollinator initiative which outlines their two pollinator gardens and highlights their <u>guide</u> of native plants that attract pollinators. The students who run this initiative are currently working on their third garden, and their gardens are equipped with a range of pollinator attracting plants with a variety of different seasons. In addition, this club has worked on educational endeavors like working with a local brownie troop to create bee hotels.

What BU Can Do

- Add a rooftop pollinator gardens or beehives to a building on campus. All <u>buildings on campus</u> are less than 9,000 feet, which is how high bees can fly so all are suitable, however, buildings like COM, SHA, or CGS may have easier access because they are smaller.
- 2. Plant open greenspaces on campus with more biodiversity and with pollinator plants. For example, the COM lawn, BU beach, south campus, patches behind and around the FitRec and StuVi 1, and the elevated patches of grass in front of SCI. In these gardens there should be enough spaces for burrowing bees as well as a diverse selection of native pollinator attracting plants.



- 3. Aim to make a pollinator ribbon of continuous land on campus, similar to the Boston Greenway, which could run across Bay State, in front of brownstones and the path between GSU, LAW, and Marsh Chapel.
- 4. Student clubs and other students who have an interest in sustainability can create a student-run garden equipped with native pollinator attracting plants.
- 5. Become Bee Campus certified, which <u>entails</u> creating a habitat plan, hosting events, leading educational service projects, offering courses or workshops about pollinators, posting educational signs on campus, and having a website that shares updates on these activities.
- 6. Overall aim to increase the amount of native pollinators. Areas with less than <u>70% of native plants</u> were deemed less successful. BU has 70% native plants, which is a great starting point. However, adding more native pollinators would help support Boston University's ecological integrity. Since BU has only9 of the

26 listed pollinators on our campus we suggest a goal of incorporating more of the native plants from Tuft's Pollinator Initiative while making sure that these plants are located near each other rather than spread out and isolated.

- 7. Completely eliminate the use of pesticides that contain neonicotinoids, such as Merit, and switch over to pollinator conscious chemicals. The EPA supplies a <u>list</u> of alternatives that have reduced environmental impacts. In addition, alternative gardening practices, like the ones from <u>this list</u>, can be instituted to lower the need for pesticide use.
- 8. Educate students and faculty about the importance of pollinators and making BU's campus more sustainable. This can be done by distributing information through sustainability@BU, the Earth and Environment Department, the Biology Department, through clubs and organizations on campus, and with outside material like 2 Million Blossoms magazine, educational posters, garden plaques, and media.

Multifaceted Benefits

- 1. Help contribute to BU's goal of complete carbon neutrality by 2040.
- 2. Make BU more stable and resilient to climate change
- 3. Increase campus biodiversity
- 4. Reduce demand and cost of mowing
- 5. Reduce pesticide runoff to nearby waterways like the Charles River
- 6. Make BU part of the frontier in this field, possibly leading other universities and cities to follow suit and take action on pollinators

You can help pollinators by growing native plants!

Native Plant+	Bloom Time	Bees	Butterflies/moths	Wasps	Hoverflies	Beetles	Hummingbirds
Pussy Willow (Salix discolor)	Mar - Apr	x	*				
Columbine (Aquilegia canadensis)	Mar - Jun	x					
Serviceberry (Amelanchier spp.)	Apr	x	*		х		
Redbud (Cercis canadensis)	Apr	x	*				
Blue wild indigo (Baptisia australis)	May	x	X*				
Culver's root (Veronicastrum virginicum)	May/Jun	x	x	x	х	х	х
Foxglove beardtongue (Penstemon digitalis)	May/Jun	x	x		х		х
Anise hyssop (Agastache foeniculum)	Jun/Jul	x	x		х	х	х
Swamp milkweed (Asclepias incarnata)	Jun/Jul	x	X*	x	х	х	х
Purple coneflower (Echinacea purpurea)	Jun/Jul	x	x	x	х	х	х
Canada elderberry (Sambucus canadensis)	Jun/Jul	x	x	x	х	х	
New Jersey tea (Ceanothus americanus)	Jun - Aug	x	x*	x	x	х	
Wild bee balm (Monarda fistulosa)	Jul	x	x	х	х	х	х
Spotted joe-pye weed (Eutrochium maculatum)	Jul	x	x	x			
Mountain mint (Pycnanthemum virginianum)	Jul	x	x	x	х	х	
Button blazing star (Liatris aspera)	Jul/Aug	x	x		х	х	
Summersweet (Clethra alnifolia)	Jul/Aug	x	x	x	х	х	
Woodland sunflower (Helianthus divaricatus)	Jul - Aug	x	x*	x	х	х	
White turtlehead (Chelone glabra)	Jul - Aug	x	*				
Steeplebush (Spiraea tomentosa)	Jul - Sep	x	X*				
Showy goldenrod (Solidago speciosa)	Jul - Oct	x	x*	x	х	х	
Cardinal flower (Lobelia cardinalis)	Aug	x					х
Blue vervain (Verbena hastata)	Aug/Sep	х	X*	x	х	х	x
Sneezeweed (Helenium autumnale)	Aug - Oct	x	x	x	х	х	
Smooth blue aster (Symphyotrichum laeve)	Sep - Oct	х	X*	х	х	х	
New England aster (Symphyotrichum novae-angliae)	Sep - Oct	х	x*	x	х	х	
x = adult food plant: * = larval food plant							

x = adult food plant; * = larval food plant

+ = non-native herbs like oregano, thyme, dill, and borage are okay too!

REMEMBER, choose plants that:

- 1. Are native (NOT native cultivars)
- 2. Differ in bloom time
- 3. Vary in color, height, shape
- 4. Are not treated with systemic pesticides
- 5. Support pollinators throughout their lifecycle

Where to buy in MA:

- Prairie Moon Nursery
- Garden in the Woods
- Mahoney's Garden Center



https://sites.tufts.edu/pollinators/files/2019/09/TPI nativeplanthandout logo.pdf



Areas of Pollinator Insecurity Across Campus