



**NEWTON  
CONSERVATORS**

F A L L I S S U E

# NEWSLETTER

*Newton's land trust working to preserve open space since 1961*

NEWTONCONSERVATORS.ORG • FALL 2022

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## Are Pollinators Being Supported in Newton?

*By Richard B. Primack (a life-long Newton resident and professor at Boston University), Selby Vaughn, and Katia Landauer (Boston University undergraduates)*

Is Newton — replete with public open spaces, private landscapes, and ever more pollinator gardens — adequately supporting its native pollinators? Are non-native European honeybees

competing with or harming our native insect pollinators? The City of Newton is asking these questions as it considers new regulations that would restrict honeybee numbers on public and private land. The questions emerge from two interrelated activities.



*Honeybee visiting milkweed flowers*



*Pollinator garden at Wellington Park; Richard and Selby making observations*

First, the Newton Conservators and the City of Newton, among others, are establishing pollinator gardens in public places and encouraging homeowners to plant native wildflowers favored by native insects. These gardens are intended to

support native pollinators that are declining in Newton and elsewhere in the region and around the world. In particular, certain native bumblebee species are declining, with three of the remaining species at risk of disappearing from Massachusetts over the next decade.

Second, some residents keep honeybee hives on their properties. For them, keeping honeybees is a satisfying, educational, and delicious hobby. Some beekeepers have permission to keep multiple hives on public land in Newton, in part because of their educational value.



*A group of researchers from Boston University, Tufts University, and University of Massachusetts at Dartmouth meet in Newton Centre to discuss bees and pollinator gardens.*

However, some residents are concerned that native pollinators and non-native honeybees might be competing for flowers. Will masses of honeybees consume most of the floral nectar and pollen the native insects need to survive?

*Continued on page 2*



*A carpenter bee visits coastal pepperbush flowers in Webster Woods.*

To help answer these questions, from June to August 2022, during a period of drought, we (the authors and our colleagues) systematically visited Newton's natural areas, pollinator gardens, community vegetable gardens, public ornamental gardens, private gardens, and vacant lots to determine what flowers native insects are visiting and whether honeybees are competing with native pollinators (or more precisely, flower

visitors). We recorded the types of pollinators visiting flowers: non-native honeybees and native insects, including bumblebees, small, medium, and large solitary bees (almost all of which are native), large carpenter bees, wasps, skipper butterflies, other butterfly species, beetles, syrphid flies, and other types of flies.

### What plants do pollinators visit?

Not surprisingly, we found the most pollinators in places with lots of flowers. The biggest displays of flowers were primarily non-native plants, often cultivated, on private and public property. There were some native and non-native plants flowering in Newton's forests and fields during summer months, mostly along the Charles River, wet meadow habitats, and in disturbed edges of fields.

We surveyed more than 300 plant species and found that just a few plant species accounted for a surprisingly large proportion of the flowers visited by insects. Honeybees,



*A tiger swallowtail settles on Joe Pye weed at Wellington Park.*

native bumblebees, and solitary bees were found on dozens of different plant species, but the greatest numbers visited flowers of non-native species like white clover, privet, catnip, Japanese spirea, and purple loosestrife. Large numbers of pollinators also visited some native

plants, such as buttonbush, coastal pepperbush, winterberry, Joe Pye weed, and goldenrods.

In contrast, we found that few insects visit the extensive floral displays of many ornamental plants, such as petunias,

zinnias, and day lilies, planted throughout Newton. And aside from scattered skippers and occasional tiger swallowtails and spicebush swallowtails, we saw surprisingly few other butterfly species visiting flowers, perhaps due to dearth of appropriate nectar sources, the effects of the drought, or competition with honeybees and other native pollinators. The only common butterfly we observed was the non-native cabbage butterfly.

### Honeybees and native insects



*Honeybee hives at Nahanton Park*

We expected plants growing near apiaries with numerous honeybee hives at Nahanton Park and the Old Deer Park in Hammond Woods to be visited in a much greater proportion by honeybees. But instead, plants near hives were visited

by similar mixtures of pollinators to plants growing farther away from honeybee hives. And the fact that mixtures of honeybees, bumblebees, and other native insects were found visiting both native plants and non-native plants suggests that honeybees are not so severely depleting the floral resources that other pollinators are excluded. However, it remains to be seen if native pollinators would be more abundant with reduced honeybee densities.



*Cabbage Butterfly on Winterberry*

Honeybee enthusiasts estimate that there are around 25 apiaries in Newton, most of which are in homeowners' backyards. Considering that honeybees have a foraging range of about two miles, honeybees flying from hives scattered around Newton can reach every part of the city. Native bees tend to live in holes in open undisturbed ground, so their homes are also likely dispersed around the city, and larger ones like bumblebees can fly at least half a mile.

### Benefits of pollinator gardens and best practices

Newton has a growing number of public and private pollinator gardens, which, when done well, provide pollen and nectar for some native pollinators. Pollinator gardens at Newton City Hall and Wellington Park in West Newton





*A great black wasp visits swamp milkweed flowers at Wellington Park.*

and the All-America Selections garden at the Newton Centre parking lot have an abundance of bumblebees and other native insects visiting flowers, including large solitary wasps. There were also many honeybees on the flowers.

Public flower displays and private and community gardens also provide important flower resources for pollinators, because the plants are often large, well-watered, and flower abundantly. Ornamental plants such as coneflowers, catnip, and penstemons and the flowers of cultivated plants such as raspberries and coriander attracted many insect visitors.

At some parks, pollinators were active in the pollinator gardens, but there were few flowers elsewhere in the park. This emphasizes important points about the value of pollinator gardens. To be most effective, these gardens have to be maintained and watered, or else like the pollinator garden in Kennard Park, the plants stop flowering. Also, more pollinator gardens and larger gardens need to be developed on both public and private lands as they currently represent only the tiniest fraction of Newton's area.



*A bumblebee visits sundrops in a private garden.*

Professor Rob Gegear (University of Massachusetts at Dartmouth) argues that the small list of plant species found in most pollinator gardens neglects the broader needs of the most threatened native pollinators. Instead of planting a few species that attract large numbers of common bumblebees and honeybees, he advocates for maximizing native plant-pollinator interactions, including endangered insect species, by planting a wider variety

of native plants such as hairy penstemon, heal-all, giant St. Johnswort, and purple flowering raspberry.

It is also important to consider the full life cycle of the insect pollinators. Gardens should include diverse plants with high quality nectar and pollen sources, including those that flower during the spring, host plants for the larval and caterpillar stages of insects, and adjacent habitats with undisturbed soil

and overwintering stems where native bees can nest. (Dr. Gegear's list of plants that meet these requirements can be found at <https://gegearlab.weebly.com/plant-list.html>)

### **Additional strategies**

To promote more flowers that could benefit pollinators, homeowners and the City could mow lawns and fields less frequently so that native plants, such as milkweeds, goldenrods, and asters have a chance to flower. Or better yet, they could set aside edges of yards and fields as unmown pollinator habitat. Planting native wildflower meadows along with pollinator gardens could increase the amount of flowers in parks and other areas. The City could also stop or greatly restrict the use of herbicides and pesticides to treat lawns and playing fields. The application of herbicides to fields both reduces the abundance of flowers available to pollinators and directly kills ground-nesting insects, like many native bees.

Our observations of similar mixtures of honeybees,



*Bumblebees swarm an ornamental onion plant in a private garden.*

bumblebees, and solitary bees on flowers throughout Newton suggests that native pollinator populations are often visiting the same kinds of flowers as honeybees.

It remains unknown how native pollinator populations would change if the number of honeybee hives increased or decreased. In addition to regulating honeybee hives, Newton residents and the City should also consider protecting, managing, and expanding flower and habitat resources, including larger and more diverse pollinator gardens, that native pollinators need in order to thrive.

The authors thank Robert Gegear, Nick Dorian (Tufts University), Jennifer Steel and Ellen Menounos (City of Newton), and Beth Wilkinson for advice in writing this article.

### **For additional resources:**

<https://sites.tufts.edu/pollinators/planting-guides/>  
<https://newtonconservators.org/pollinator-toolkit/>  
<https://gegearlab.weebly.com/beecology.html> ♦