



NYC Pollinator Working Group's Formal Recommendations on European Honey Bee Colonies in New York City

The [NYC Pollinator Working Group \(NYCPWG\)](http://www.nycpollinators.org) is a coalition of New York citizens who care deeply about pollinators and are committed to initiatives that will increase our understanding of the ways of urban pollinators and their conservation, and lead to the creation, improved management, and protection of their habitats. Following are our formal recommendations regarding the placement and management of European Honey Bee (EHB, *Apis mellifera*) colonies in New York City. These recommendations reflect our commitment to pollinator conservation, and are informed by current best understanding of local experts and pertinent scientific studies.

Abstract

Native bees are key pollinators of both wild plants and human food crops. Evidence is mounting that native bees, whose populations are declining, can find sustainable refuge in cities. Integrating best practices for pollinator conservation in cities is therefore crucial for protecting both urban food supplies and biodiversity, both important features of climate resilience in cities. An emerging threat to native bee conservation in cities is the unregulated increase in honeybee hives. Though European honeybees (EHB's) have noted value in certain agricultural and educational settings, research suggests that in resource limited environments they can impact native bee and other wild pollinator populations through competition for floral resources, transfer of pests and diseases, and disruptions in plant-pollinator networks. New York City has the opportunity to model how cities across the globe can manage EHBs with consideration for wild urban pollinators.

The following article summarizes current research on EHB impact on native bees, outlines the current state of EHB management in NYC, and makes specific recommendations for regulatory action including:

- Transparency in the permitting process;
- Mapping hive locations;
- Ensuring that hives are the proper distance from natural areas and do not exceed the carrying capacity of specific locations;
- Identification of a scientific advisory liaison to assist with management decisions;
- Public education measures around native plants, pathogen management and identifying research needed to inform best management practices for the health of NYC's pollinators.



Wild bees in NYC

NYC is home to over 200 species of wild bees (Ascher et al., 2021). Recent scientific articles have shown that cities can harbor wild pollinator diversity, denoting the value of conservation efforts (Hall et al., 2016). Emerging scientific data shows that cities are safe havens for many species of bees that are disappearing from agricultural and suburban landscapes due in part to overuse of pesticides, particularly neonicotinoids, as well as habitat loss from monoculture and development (Hall et al., 2016).

Pollinators are essential to the reproductive cycles of most flowering plants, and thus to the ecosystems in which they live, supporting plant populations that other species—including humans—rely on for food and shelter. Bees are fully dependent on flowers for their survival, using nectar and pollen to nourish their young and sustain their adults.

Having co-evolved with flowers, bees are the most effective of all pollinators. At least 80 percent of the hundred or so crops that make up the world's food supply are pollinated by wild bees and other wildlife; only 15% are pollinated by domesticated honeybees. This includes culturally important food and medicinal plants as well as those found in community gardens in neighborhoods with a desire for fresh vegetables and fruit. Lastly, resilience of cities during the climate crisis will be supported by maintaining high levels of biodiversity among insects that provide free ecosystem services like pollination. Therefore, beyond their own intrinsic value, native wild bees provide many benefits to people.

EHB impacts on wild bees

Research suggests that competition from EHBs for pollen could reduce the diversity of wild pollinators and disrupt the structure and functionality of plant-pollinator networks. For instance, in springtime, when individual wild bees begin to forage provisions for their young, or recoup energy lost from overwintering, they may not be able to compete with thousands of overwintered EHBs living in previously established perennial hives. In fact, the pollen and nectar loads of every three returning EHB foragers is enough to produce one average-sized wild bee (Renner *et al.*, 2021; Valido *et al.*, 2019).

In New York City, interactions with EHBs—which are considered livestock by scientists and farmers—may endanger their wild counterparts because they can:

- Compete with, or possibly outcompete, local wild species for floral resources and may impact the reproductive success, population health and survivability of these wild bee populations (Mallinger *et al.*, 2017; Ropars 2019; Thomson 2004; Valido *et al.*, 2019; Wojcik *et al.*, 2018), even possibly negating attempts to provide resources for wild bees, e.g.: “pollinator gardens” (Angelella *et al.*, 2021; Bonmarco *et al.*, 2021; Renner *et al.*, 2021);
- Transmit pests and disease to wild bee populations and other insects (Bailes 2018; Fürst *et al.*, 2014; McMahon *et al.*, 2015);



- Disrupt plant/pollinator networks and produce negative, or at least unknown, effects on native plant communities (Mathiasson and Rehan 2020; Page *et al.*, 2021; Ropars *et al.*, 2019; Thomson 2004; Valido *et al.*, 2019; Xerces 2018; York 2020).

For these reasons, NYC Parks “prohibits the introduction, placement and/or management of new [EHB] colonies, hives, or apiaries within NYC Parks including community gardens under Parks jurisdiction that are within 1.5 miles of Forever Wild natural areas” (GreenThumb 2021, p. 40; Forever Wild). This minimum distance is already a compromise among competing interests in a complex and densely populated city. Research shows that honeybees will forage up to 4 miles from their hive, an area of 50 square miles (Garvey 2013). The Xerces Society for Invertebrate Conservation recommends that apiaries must be at least 4 miles from “habitats of special value for biodiversity” (Xerces 2018, p. 2) such as NYC’s Forever Wild sites.

Management of EHBs in NYC

Since beekeeping was legalized in NYC in 2010, the City has been concerned primarily with regulating EHBs through the New York City Department of Health and Mental Hygiene (DOHMH) as a nuisance or a hazard. The only rule regarding placement of EHB hives is that “the movement of bees does not become an animal nuisance” (Article 161, §161.01(b)(12)). Impacts of EHBs to the health of wild pollinator populations, and locations of existing hives or the capacity of their neighborhoods to sustain more, are not considered.

DOHMH reported 326 registered hives in 2020 (Richard 2021); DOHMH has not publicly shared the figures for 2021. Meanwhile, NYC beekeepers often don’t register their hives (Richard 2021). In September 2021, Andrew Coté, president of the New York City Beekeepers Association (NYCBA) and owner of Andrew’s Local Honey, estimated the real number is closer to 1,000 (Spitznagel 2021), triple the registered number.

Even so, hundreds of beehives are sold and distributed every Spring in NYC (Kilgannon 2018; Chen 2021; Richard 2021). As recently as April 2021, NYCBA distributed an additional 200 beehives containing 2.4 million EHBs on the Upper West Side of Manhattan (Chen 2021). It is impossible for public citizens to know how many of those were registered because DOHMH doesn’t make their registration data publicly available.

NYCBA recommends that beekeepers limit the number of hives based on carrying capacity “within three miles” (NYCBA Practices), an area of 28 square miles. NYC covers 304.8 square miles. Whatever the actual number of hives, it is likely that we have already exceeded EHB “carrying capacity” in NYC.



Recommendations

We do not believe EHBs within the five boroughs of New York City are being appropriately regulated by DOHMH. Because these issues have not been adequately studied, the NYC Pollinator Working Group is hereby issuing the following formal recommendations:

Necessary Regulatory Actions for DOHMH

1. **Transparency:** DOHMH regulation of EHB registrations for compliance with Article 161, should be adapted to include a publicly transparent process for approving or denying EHB permit applications.
 - a. DOHMH must make the data regarding EHB permits—whether approved or denied—available and easily accessible to the public in a timely manner.
 - b. A map should be created and published on the public website to illustrate where EHB hives are currently located. The map should ideally include all EHB hives, both registered and unregistered. If it is determined that there are too many EHB hives in the city, an equitable regulatory scheme would then need to be devised by the appropriate regulatory bodies to remedy that. To protect the beekeeper’s privacy, we suggest an imprecise location that might cover half a city block.
 - c. Clear and easily accessible language on regulatory obligations, the EHB permitting process, approved EHB management training resources, how to report an unpermitted hive as well as gardening to attract wild pollinators should be linked from the DOHMH website.
2. **Hive Distance:** The EHB permitting process should be informed by current science, as well as treat community, private, and commercial applications equitably. All city agencies, including DOHMH, must reject the registration of new hives within 1.5 miles of all sensitive natural areas, to protect and preserve ecologically valuable lands and ecological systems, in alignment with NYC Parks and other city and state agency restrictions and recommendations.
3. **Hive Number:** DOHMH must ensure that the number of hives within New York City does not exceed the carrying capacity of current habitat. This must be based on the science regarding the provision of adequate floral resources for both wild bees and honeybees. This would include adequately regulating EHB hives by enforcing non-permitted hive owners to remove unregistered hives and exacting fines from those who do not.
4. **Scientific Advisory:** We recommend that there be a pollinator conservation liaison to the DOHMH to assist with any questions that arise regarding the placement and regulation of EHB



hives. This could be someone from NYC Parks or the NYC Pollinator Working Group, or elsewhere.

Additional Recommended Actions

5. **Natural Areas:** All NYC and state agencies should ensure that their rules, policies, and procedures protect and preserve ecologically valuable lands and ecological systems, prohibiting beehives within 1.5 miles of these natural areas. Anyone selling or distributing hives within NYC, or for distribution within NYC, should require that the recipient provide proof of DOHMH approval and registration for placement outside these zones.
6. **Public Education.** The City should promote pollinator friendly practices and educate the public about native bees. NYC Parks in particular can play a more active role in educating, and communicating with, the public about pollinators and the roles that EHBs and wild bees play in our environment since public engagement is part of NYC Parks' mission. Other city agencies, such as urban agriculture proponents (Urban Agriculture), may also have a part to play.
7. **Insecticides:** The City should continue to pursue diverse avenues to reduce insecticide use in the city on both public and private lands in order to protect insect pollinators and pollination services.
8. **Urban Pollinator Research:** The City or an appropriate designee should conduct an analysis—based on current data—to understand the health and conservation status of wild bee populations in the city and support the coordination of partnerships that would promote the study of wild bee species including the availability of floral resources and competitive pressure from EHBs.
9. **Planting Native:** The City should expand the work of NYC Parks – e.g.: producing and regularly updating the Native Species Planting Guide (Parks 2019), the establishment of Pollinator Places – to support and promote native plant use by all stakeholders and land managers, including private property owners. The City should partner with and support other agencies and organizations doing this work. To protect all pollinators, NYC should move forward immediately with native plant focused land management techniques that have been demonstrated to effectively conserve and bolster plant-pollinator food webs. Subsidizing planting and horticultural management for native plants as well as educational opportunities for workers at all levels and members of the public are critical primary conservation actions.
10. **Pathogen Prevention:** Because hives can carry a variety of pathogens from their locations of origin to local populations of insects, limiting the number of new imports is desirable. Repopulating registered and permitted sites where EHB hives do not survive overwinter with donations of local hives from individual beekeepers who are willing to surrender them could avoid trafficking pathogens and reduce the number of hives in the city.