BEES AND SCHOOL GARDENS

There are multiple options to incorporate bees to your NYC school garden. Outlined below are three possible directions.

1. Create a pollinator garden to support native bee populations
2. Build native bee homes
3. Conduct apiculture with honeybee hives and a trained beekeeper
1. Create a Pollinator Garden to attract native bees:

- This is the #1 recommended option from bee experts. Due to widespread habitat loss, native bee populations are suffering. They struggle to find proper food, as most of them rely on specific native plants and lots of green space.
- Native bees and native plants are great partners because they have been co-evolving together for thousands of years to meet each other’s needs.
- There are over 4,000 species of native bees in North America. Read more in the USDA resource on North American bees: https://efotg.sc.egov.usda.gov/references/public/SC/Bee_Basics_North_American_Bee_ID.pdf
- The Honeybee Conservancy based on Governor’s Island tracks bee species currently in New York City; there over 475 bee species in New York. The Honeybee Conservancy hosts free trainings and native bee walks, and offer bee information to the general public in areas all over NYC: https://thehoneybeconservancy.org/
- The National Wildlife Federation (NWF) and Xerces Society for Invertebrate Conservation both offer a pollinator planting guides
  - NWF: https://www.nwf.org/garden-for-wildlife/about/national-initiatives/plant-for-pollinators
  - Xerces Society: https://xerces.org/bring-back-the-pollinators
- Grow a variety of native plants, so that there is a consistent source of flowering plants throughout the spring, summer, and fall for the bees to feed on. Check out
this list from the Honeybee Conservancy of plants for spring, summer, and fall: 
https://thehoneybeeconservancy.org/2017/03/27/21-flowers-that-attract-bees/

Where to get native pollinator plants in NYC:

• The Gowanus Canal Conservancy in Brooklyn has a native plant nursery and they offer a 35% discount to school gardens: 
  https://gowanuscanalconservancy.org/nursery/

• The Greenbelt Native Plant Center in Staten Island also offers native plant seedlings at discounted rates: https://www.nycgovparks.org/greening/greenbelt-native-plant-center

Some pollinator plant ideas (widen your list for maximum plant and bee diversity!):

➢ **Eastern U.S. varieties of milkweed**: Common milkweed, Butterfly milkweed, Swamp milkweed, Purple milkweed, Whorled milkweed, Poke milkweed
  ➢ Note: It is not recommended to plant tropical milkweed (Asclepias curassavica) as it can carry a parasite and be detrimental to monarchs

➢ **Spotted bee balm** - Monarda punctata

➢ **Anise hyssop** - Agastache foeniculum
➢ **Sunflowers!** – Helianthus

2. **Build Native Bee Homes:**

- Many species of native bees are even more effective pollinators than honeybees (they visit more flowers in a day, pollinate more efficiently, and pollinate certain plants that honeybees are not physically able to, such as tomatoes).
- Native bees do not form hives like honeybees. Most do not produce honey and do not sting.
- They make their own types of solitary nests, often in **abandoned beetle tunnels, dried stems of plants, dead trees, and bare soil**. You can allow these structures to remain in your garden to provide hospitable places for them to nest; increase their population, and your pollination!
- You can also help provide housing by creating a native bee box. It is important to use untreated wood and paper tubes because bees are sensitive to chemicals and will not inhabit treated wood. It is also important to follow the directions of the bee box (such as cleaning them properly in the winter), otherwise you could end up attracting the wrong types of insects!
- Ensure that your native bee homes are sheltered from the wind and rain, and clean them out at the end of the season (making sure to leave cocoons intact).
- Besides yearly cleaning in early winter, you can leave the native bee boxes to function mostly on their own, or you can take a more involved approach and actively help the native bees by collecting their cocoons, sheltering them during the winter, and observing their life cycle.
Overview: Build a Basic Native Bee Home

These homes are meant to attract mason, leafcutter, and carpenter bees, which are all amazingly efficient pollinators! There are many ways to build them, two options are below.

Native Bee Box, Type A: Use an untreated wooden box that contains one open side and is about 6” deep. Roll clean paper/parchment paper into 6” long tubes and secure them with tape: tubes should be a mix of 3, 6, and 9 millimeter diameters to host multiple species of native bees. Insert tubes in wooden box. Face open side of the box to the southeast so it receives morning sun. Clean bee box at the end of the season to prevent build-up of mites, debris, etc. (more detailed instructions below)

Native Bee Home, Type B: Use a power drill to make holes 3/8” in diameter and 5” deep in an untreated, dry piece of wood or a stump. Some holes can be slightly smaller or larger to accommodate different sizes of bees. Face the openings of the holes to the southeast and in a dry place, so the sun hits the nests in the morning and allows the bees to warm up. Insert clean paper/parchment paper tubes the holes so you can remove them at the end of the season, clean the wood, and observe the cocoons. (more detailed instructions at the links below)

Detailed Native Bee Box Instructions:

- https://www.instructables.com/id/Mason-Bee-House/

Fun Class Activity: Look out for Citizen Science Projects on bees, such as the annual Bee Blitz from The Honeybee Conservancy. Students and garden members can observe and take photos of as many bees as possible in their garden in a certain amount of time, and send the data to scientists. It is a real contribution to bee science!
3. *Keep Honeybee Hives (Outdoor or Indoor)*

Beekeeping requires a hefty amount of research, planning, and training beforehand. You should only keep honeybees at your school if you are a **trained beekeeper** or if you have a trained beekeeper dedicated to helping the school year-round (look for community gardeners, graduated apprentices from The Honeybee Conservancy, or contact us at GrowNYC School Gardens so we can help you find an expert). Having a fully trained beekeeper is important for **safety purposes and bee disease control**. Resources for trainings and apprenticeships are posted below, at the end of this document.

*N.B.* It is important to note that honeybees are an agricultural animal. If your main goal is to help endangered bee populations and boost pollination, it is recommended to work on native plant habitats, pollinator gardens, and native bee nests (instead of apiculture, or honeybees).

Be aware that to decrease both disease spread and competition with native pollinators, honeybee apiaries should be separated by at least 4 miles ([Xerces Society](https://www1.nyc.gov/nycbusiness/description/beekeeper-registration)).

If your main focus is keep honeybees, you can do so with an outdoor hive (most common) or indoor hive.

- **Once you have a hive, you must REGISTER YOUR HIVE with NYC DOHMH:** [https://www1.nyc.gov/nycbusiness/description/beekeeper-registration](https://www1.nyc.gov/nycbusiness/description/beekeeper-registration)
Outdoor Hive

➢ Choose between a Langstroth or Top Bar hive
➢ Langstroth hive: pictured above, it is the most common way to keep honeybees in the U.S. It consists of supers (what look like drawers/boxes) stacked on top of each other. More supers can be added throughout time as the hive produces more.

Overview: Get an Outdoor Beehive

The time to start a hive is in the spring, generally in April. You will have to plan ahead and pre-order to reserve a hive and a colony of bees.

Grants for Hives:

▪ Sponsor-a-Hive (Honeybee Conservancy)—application opens in September: https://thehoneybeeconservancy.org/beekeeping-grants/
▪ WholeKids Foundation Bee Grant—application opens in September: https://www.wholekidsfoundation.org/programs/honey-bee-hive-grant

If not using a grant, you can purchase hive equipment and honeybee colonies from Andrew’s Honey, a well-known beekeeper that works throughout NYC and heads the New York City Beekeepers Association. Bees must be pre-ordered in the fall/winter (approx. $160 per bee package) and then are delivered to Manhattan for pick-up in April: http://andrewshoney.com/product/live-bees/

Hive location: Place your hive away from public sidewalks, in an intentional setting that can be accessed easily for observation, but is not too close to general public areas where someone may accidentally stumble upon it. Although honeybees can fly around 2 miles to forage for nectar and pollen, it is best to place the hive near green space and a variety of plants that flower throughout spring, summer, and fall (see native plant list above). Place a small water source near the hive, which can be as simple as a shallow bowl of water. Place the hive in full and direct sunlight, never in shade, as the bees need the warmth. Face the hive entrance to the south or southeast, as the bees need the sun to hit in the morning in order to warm up and start
the day. Place your hives on a hive stand at least 4” off the ground to avoid rot and dampness in the hive (you can use bricks or something similar for the hive stand).

**Indoor Observational Hive**

- Fully functional indoor observational hive
  - In this set-up, the hive is contained within transparent plexiglass, and tubing is attached that leads from the hive to the outdoors so the bees can collect food.
  - WholeKids Foundation offers a grant in which they supply and set up an indoor hive. The application opens in September: [https://www.wholekidsfoundation.org/programs/honey-bee-hive-grant](https://www.wholekidsfoundation.org/programs/honey-bee-hive-grant)
  - Here is a description of how an indoor hive works: [https://entomology.ca.uky.edu/ef016](https://entomology.ca.uky.edu/ef016)
  - Here is an example of how to purchase an observation hive (you’ll have to purchase the bees separately): [https://www.betterbee.com/educational-tools/oh1-observation-hive.asp](https://www.betterbee.com/educational-tools/oh1-observation-hive.asp)

- Temporary observational frame
  - This is a way to bring a few frames from your outside or indoor hive to show around. It is a great way to allow multiple classes to get up front and personal with the bees. Don’t do this too often (once a month is good) or for more than a few hours at a time because it disturbs the hive and the bees are trapped inside without access to other needs.
Beekeeping Resources and Training:

- The Honeybee Conservancy: [https://thehoneybeeconservancy.org/](https://thehoneybeeconservancy.org/)
  - A non-profit based on Governor's Island that offers a grant program for school hives and free beekeeping workshops, as well as lots of information
  - They also offer affordable apprenticeship programs
  - Network of beekeepers in NYC
  - Offers beekeeping classes and internships for a fee (for-profit business)
- Citizens Committee for NYC: [https://www.citizensnyc.org/workshops](https://www.citizensnyc.org/workshops)
  - Offers free beekeeping workshops periodically throughout the year, and garden grants
- Cornell Cooperative Extension guide: [http://smallfarms.cornell.edu/2017/05/02/32-beekeeping/](http://smallfarms.cornell.edu/2017/05/02/32-beekeeping/)
  - Urban beekeeping information

*Tip* Reach out to nearby community gardens that have beehives, since that means there is a local beekeeper somewhere in the neighborhood who may want to help out!

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Recommended Books: