

DISTRICT OF COLUMBIA POLLINATOR PROTECTION PLAN





Introduction

On June 20, 2014 President Obama issued the Presidential Memorandum, “Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators.” The president called attention to pollinator health and asked that efforts be made to reverse pollinator loss and restore populations to healthy levels. Though most of the memo is directed toward federal agencies, the Environmental Protection Agency (EPA) was tasked with working with states, tribes, and territories to create individualized pollinator protection plans.

Since the memo was issued, states, tribes, and territories have been creating pollinator protection plans that specifically address pollinator issues in their jurisdictions. Because no state is exactly alike, no two pollinator protection plans will be alike. Even with this understanding, the District of Columbia’s plan will be unique. The District of Columbia is an urban environment that is relatively small in area and has no commercial agriculture or large-scale beekeeping. Despite this, the District is home to an active beekeeping community with several hundred hives and is habitat for numerous native bee species—including the rusty-patched bumble bee which was recently listed as an endangered species.

The initial focus for the states’ creation of pollinator protection plans was managed pollinators, such as those used in commercial beekeeping and under contract to growers for pollination services. Thus, the call for states to create managed pollinator protection plans (MP3). This model does not fit with what is found in the District. The District has no commercial agriculture or commercial beekeeping for pollination services or honey production. Therefore, the District has created a pollinator protection plan that not only focuses on the protection of managed pollinators, but also on the protection of all pollinators in the District. The goal of this plan is to engage non-profit organizations, government

agencies, businesses, pesticide applicators, beekeepers, educational institutions, and the general public in the promotion and protection of pollinators by helping people understand pollinators' importance and how there can be a home for them in our urban environment. While these are suggestions and not regulations the District sincerely hopes that people choose to follow them to make the District a better place for pollinators.

Pollinators in the District

In spite of it being a completely urban environment, many pollinators make their home in the District. The District has an impressive tree canopy, expansive parks, miles of shore, numerous buildings with green roofs, open space, and many avid gardeners. In 2016 the District had the distinction of being proclaimed a Bee City USA in part due to the efforts of the Department of Energy & Environment (DOEE) to promote pollinators through pollinator seed giveaways, native meadow creation, and educational outreach.

The District is quite proud to have a very active beekeeping community. Several hundred honey bee colonies are kept in the District, many in unexpected places. Unlike their native cousins, honey bees live in wooden ware and are managed by a beekeeper. In the warmer months they can be found foraging up to three miles away from their hive on a variety of plant species. When the temperatures drop they depend on their beekeeper to keep them fed through the winter with sugar water and fondant. Unlike commercial colonies, these colonies will generally stay in one place and not make a cross country trip or even a local move to perform pollination services.



Honey bees aren't the only bees around; the District is home to approximately 130 native bee species. Four of these species are designated as Species of Greatest Conservation Need (SGCN) in the 2015 Wildlife Action Plan (<http://doee.dc.gov/service/2015-district-columbia-wildlife-action-plan>), and these species and their critical habitats are targeted for management by DOEE. In addition, one of them, the rusty patched bumble bee, is an endangered species.

Unlike the managed honey bees, most of the District's native bees do not live in large colonies and are often solitary. For example, two of the District's native bees (*Pseudopanurgus virginicus* and *Protandrena abdominalis*) are mining bees. They nest in the ground in walkways and lawns. The entrances to their nests are usually marked with a small mound of excavated soil. Although they are solitary bees they may nest close together in the soil. They are docile and extremely beneficial to pollination for several different plants, including fruit trees. Another native, *Lasioglossum michiganense*, is a sweat bee named so because of its tendency to be attracted to human sweat. Even though it may be attracted to human sweat generally it is harmless and rarely, if ever, stings. Like mining

bees, it too is a solitary bee that nests in the ground and occasionally in rotting wood. Though tiny in size, less than 3/4 inch long, it is an excellent pollinator. The final four native bees are probably the most visible: bumble bees. *Bombus affinis*, also known as the rusty patched bumble bee, is the most vulnerable of the native bees in the District and has recently been listed as an endangered species. Three other bumble bees *Bombus auricomus*, *Bombus pensylvanicus*, and *Bombus vagans* are also native to the District. Bumble bees, unlike mining and sweat bees, are social and live in colonies. These colonies are underground in old abandoned rodent holes and can contain hundreds of individuals. Bumble bees are excellent pollinators and are used commercially more and more. Many garden staples such as berries, peppers, and tomatoes are bumble bee pollinated.

All over the world native bee populations are declining and managed bee colonies are in trouble. As part of the Presidential Memorandum, a national Pollinator Task Force was developed. The task force identified key stressors to pollinator health were identified: nutrition, land-use policies and practices, pesticides, pest and disease management, and rearing issues most notably in honey bees. For native bees habitat loss, degradation, and fragmentation are major issues resulting in the loss of nesting sites and native plants for forage. Invasive plant species taking over areas where native plants once grew coupled with climate change can cause native pollinators like bumble bees to move or disappear from their historical range. Pesticides may be an issue for both native bees and honey bees since insecticides kill insects and herbicides can reduce floral diversity. Pests are an issue for both native and managed bees and unfortunately they can be transferred between the two. These key stressors are not unique to bees.

Many other insects, and even birds and mammals, may pollinate native plants and specialty crops in the District. Butterflies are excellent pollinators. Close to 100 species of butterfly have been recorded in the District. *Andrena* bees pollinate spring ephemeral wildflowers like



spring beauty and trout lily, but bloodroot can be pollinated by flies and beetles. Beetles also pollinate many goldenrods, bonesets and magnolias. Slugs and flies can pollinate wild ginger. Skunk cabbage blooms in mid-winter, and can melt snow by maintaining a higher temperature than the air through thermogenesis. Its distinctive odor attracts flies for pollination. Hummingbirds are important pollinators of many long, tube-like flowers

such as trumpet creeper and cardinal flower. Nectar-feeding bats may act as pollinators in other parts of the United States, but all of the species found in the District are insectivorous.



Beekeeping Best Management Practices

Beekeeping is legal in the District and regulated by DOEE. Managed bees depend on beekeepers to keep them safe and healthy. Honey bee declines have been reported across the country, including in the District. There are many factors that are associated with honey bee declines including pests such as parasitic varroa mites, poor nutrition as a result of habitat loss and degradation, viruses, and exposure to harmful pesticides.

Beekeepers in the District are in a unique situation in that they are never far from another beekeeper's apiary. With hundreds of apiaries across the District the potential for the spread of pests and disease to another colony is very real. The control of varroa mites should be a top priority for all beekeepers. Not only does varroa parasitize honey bees it is also a major vector of bee disease. Something as simple as using a screen hive floor can minimize the presence of mites in a hive. Monitoring the mite load and knowing when to treat is key; waiting too long or not treating at all will not only have negative effects on your bees but also could affect nearby colonies. The Honey Bee Health Coalition has an excellent website dedicated to varroa mite management (<http://honeybeehealthcoalition.org/tools-and-resources/>) but the best resource is your local beekeeping club. The DC Beekeepers Alliance (<http://www.dcbeckeepers.org/>) has many knowledgeable members who have been keeping honey bees in the District for many years and know what works and doesn't work in the District. If you aren't already a member it is a good idea to join now.

Because of the close proximity of houses in the District, communication is vital between beekeepers and pesticide applicators. Pesticide applicators can be a professional company for hire or a neighbor who bought something for pest control at the local garden center. Letting them know that bees are present can help them determine when to treat and what to treat with.

Poor nutrition as a result of habitat loss and degradation is a real threat for honey bees as well as for native bees in the District. You can help honey bees and others during this difficult time by making an effort to plant native plants when possible and choosing ones that bloom early in the season as well as those that bloom later in the season. There are many planting guides available that are specific to this region and include both flowering plants and trees. Even with additional forage honey bees in the District need to be fed in order to make it through the harsher months.



Enhancing Bee Habitat and Forage

Bee habitat and forage are deeply affected by land-use policies and practices such as development and monoculture agriculture. Here in the District we have the benefit of not being in an agriculture environment that is dominated by monocultures but we are faced with increased development of our open spaces. Luckily, we have the ability to choose what we plant and where we plant it. Even the smallest patch of land can make a difference for pollinators. Lush green lawns may look inviting but not if you are a pollinator. Pollinators rely on a variety of flowering plants for forage and bare ground for nesting. There are a variety of things that everyone can do that require minimal effort to enhance bee habitat and forage.

Managed honey bees, though kept by beekeepers, venture far from home to forage for nectar and pollen. They will travel up to three miles from their home for this purpose. Bees in the District depend on a succession of blooms to make it through the season. Planting a variety of plants that offer forage throughout the season is ideal. This includes planting trees since they are an excellent source of forage for honey bees. Tree blooms can provide up to two acres of forage per tree. Since many plants bloom in the spring, planting plants that bloom mid-to-late summer is especially helpful to honey bees as they build their honey stores for winter.

Native bees need native plants. You can help by planting native pollinator friendly plants in your yard, patio, deck, or rooftop. DOEE has a webpage dedicated to helping residents plant pollinator friendly native plants at their homes. (<http://doee.dc.gov/pollinators>).

Native bees also require nesting habitat. Leave areas of bare ground undisturbed to encourage nesting. You can be proactive and create nesting sites by drilling holes into wooden blocks $\frac{1}{4}$ inch to $\frac{1}{2}$ inch in diameter with dead ends. Another method is to provide a cluster of cardboard or reeds with bent ends in a larger tube for bees to nest in. Both of these can be beneficial to native bees. There are several websites that give detailed instructions on how to do this. Xerces society has an excellent outline on how to make and maintain bee nests: <http://www.xerces.org/wp-content/uploads/2009/11/tunnel-nest-management-xerces-society.pdf>.



It is not just residents that can make a difference. Businesses, schools, and other land owners can do their part. If you have a small patch in front of your office building that currently has grass, you can easily replace it with a small pollinator garden. Plant native plants and trees, especially those that bloom later in the season. Not only will you provide habitat and forage you will also cut down on your maintenance since native plants do not require mowing. If you have a green roof you can plant species that will be attractive to pollinators for both forage and nesting.

Honey bees and managed bees are not the only pollinators out there. Pollinators such as monarch butterflies rely on native milkweed for both habitat and forage. If you do plant milkweed it is important to plant native milkweed. Tropical milkweeds that are available commercially can carry the protozoan parasite called *Ophryocystis elektroscirrha* that can make monarch butterflies weak and unable to fly or even kill them.

Because figuring out exactly what to plant and where to plant it can be a bit daunting, DOEE is planning to develop a few planting templates for the typical single family home/row house and multi-family unit, as well as a guide for businesses that have limited space in the form of a planting bed or median. In addition, there is a list of resources at the end of this document.

The Role of Residential and Commercial Pesticide Applicators

Pesticides are made to help us in our daily lives. The key to using pesticides correctly is to follow directions on the label. The label is the law. Communication is top priority when applying pesticides near managed honey bee colonies. If you are a beekeeper, get to know your neighbors. Let them know that you are keeping bees and that pesticides that they may apply could harm your colony. If you are a pesticide applicator, work with the beekeeper.

Let them know what you are applying, how you are applying it, and when. Allow the beekeeper to make preparations prior to the application whether it be covering their hive or sealing off the entrance. You can also plan to make the application at a time when the colony would be least affected. Try to make applications early in the morning or in the evening when pollinators are less active to reduce to risk of bees being exposed while foraging. Bees and other pollinators are most active during daylight hours and when it is warm. When possible, choose products that pose the least amount of risk to bees and other pollinators. Try to avoid spraying pesticides, including insecticides and fungicides, on plants that attract bees while the plants are in bloom. If pesticide is needed, apply it only after the blooms have fallen and are less attractive to foraging bees. Always try to choose the pesticide that is least harmful to bees and other pollinators.

If you are not a licensed pesticide applicator, the label is still the law. Homeowners have a wide variety of pesticides available to them with little regulation of their use. It is a homeowner's responsibility to follow the instructions for applying general use pesticides. The label was designed for your safety and the safety of others and the environment. Choose pesticides that are the least harmful to bees. Apply pesticides when bees are less likely to be present-early in the morning and later in the day-as well as when there are no blooms present. Choose plants that aren't pretreated with insecticides. Most plants are labeled if they are pretreated.

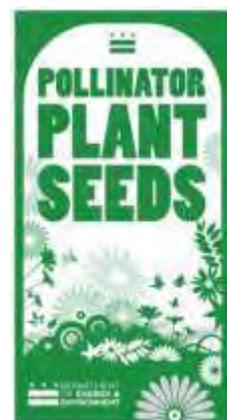
Beekeepers also have the responsibility of following the label when it comes to pesticide applications in their own yards and in their colonies. The label is the law and if something is not labeled for use in honey bee colonies, it should not be used.

Integrated Pest Management (IPM) is always the preferred method when trying to control pests. IPM is the environmentally friendly, common sense approach to pest management of first preventing pest and then using pesticides only when needed. If you can take action to control the pests before it becomes a problem, chances are you will not need to rely on pesticides. This approach is true for commercial and residential pesticide applications as well as applications made inside the hive by beekeepers.

If you suspect a bee kill is a result of improperly applied pesticides, it is important that you report it to DOEE. DOEE has inspectors that are trained to investigate pesticide misuse.

Education and Outreach

One of the main goals of the pollinator protection plan is to educate the public on ways that they can help protect and promote pollinators of the District. By becoming a Bee City USA and developing a pollinator protection plan, the District has made a commitment to the pollinators of the city. DOEE plans to continue our outreach to District residents and businesses through seed giveaways, presentations, and partnerships with sister agencies. DOEE plans to begin working with



businesses in the near future. In addition, DOEE has plans to incorporate pollinator protection into the pesticide applicator curriculum and find a practical way in which beekeepers can be notified of any pesticide spraying near their hives that may adversely affect the health of their colony.

Performance Measures

No plan is complete unless there is a way to monitor the progress and impact of the plan. DOEE will continue to monitor bee kills and complaints. Additionally, since a large part of the plan focuses on the improvement of forage and habitat, DOEE requests that companies, landowners, beekeepers, and the general public report any forage or habitat improvements that they have made. We hope to map this information so that we can better understand where pollinator corridors exist and where efforts need to be made to improve conditions for pollinators. Finally, DOEE will initiate an annual survey to evaluate how the plan is being implemented.

Resources

We are lucky to have a variety of resources available to us both locally and through the internet. DOEE is committed to promoting pollinator health and forage and has several programs that can help.

RiverSmart Homes - District-wide program offers incentives to homeowners interested in reducing stormwater runoff from their properties. Landscaping often includes pollinator friendly plantings. www.doe.dc.gov/service/riversmart-homes-overview

RiverSmart Schools – District-wide program that provides teachers with training and financial resources to install conservation sites on school grounds and integrate them into school curriculum. <https://doee.dc.gov/service/riversmart-schools>

Green Area Ratio - The Green Area Ratio is an environmental sustainability zoning regulation that sets standards for landscape and site design to help reduce stormwater runoff, improve air quality, and keep the city cooler. The office can offer assistance on the types of pollinator plants that would be acceptable for a commercial building. www.doe.dc.gov/GAR

Urban Apiculture – information on the beekeeping regulations in the District. www.doe.dc.gov/service/beekeeping-district

Pesticides – information on pesticide applicator licensing and pesticide registration www.doe.dc.gov/service/pesticides

Other agencies that can offer guidance

District Department of Transportation - Urban Forestry Administration manages the street trees in the District. www.ddot.dc.gov/page/ddot-urban-forestry-administration-ufa

District Department of Parks and Recreation – manages community gardens throughout the city that host several honey bee colonies and offers classes and workshops on gardening. <https://dpr.dc.gov/service/urban-garden-programs>

EPA – information on Managed Pollinator Protection Plan (MP3) completed by tribes and states, as well as updated information on pollinator protection. <https://www.epa.gov/pollinator-protection/policy-mitigating-acute-risk-bees-pesticide-products>

These non-profits are valuable resources

Alliance for the Chesapeake Bay – yard design tool that gives homeowners an option for coming up with the best plants for their site conditions. <http://www.stormwater.allianceforthebay.org/yard-design>

Casey Trees – offers continuing education classes and volunteer opportunities. Their website contains planting guides and other resources that can help community members learn about pollinators, pollinator habitat, and conservation efforts. www.caseytrees.org

DC Beekeepers Alliance – beekeeping club that offers short course in collaboration with the University of the District of Columbia as well as mentoring for new beekeepers and assistance and guidance for disease and pest treatment. www.dcbeckeepers.org

Bee City USA – non-profit dedicated to promoting pollinators in cities and college campuses throughout the United States. www.beecityusa.org

Honey Bee Health Coalition – resources for beekeepers on honey bee health including guides on Varroa management as well as information on state MP3s. <http://honeybeehealthcoalition.org/>

Xerces Society – non-profit dedicated to the protection of invertebrates and their habitats. Good source for planting guides and information about species whose populations are of concern. www.xerces.org

Bee Informed Partnership – resource for beekeepers looking to better understand different management practices. Great source of data on hive loss and disease in the United States. www.beeinformed.org

Pollinator Partnership - largest non-profit in the world dedicated exclusively to the protection and promotion of pollinators and their ecosystems. Sponsor of the Million Pollinator Garden Challenge and source of ecoregional planting guides. www.pollinator.org