



**Six Steps to Protect and Encourage Native Wild Pollinators on Your Land**

A Guide for Land Owners

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Rusty-patched Bumble Bee Project



As a farmland owner, you can protect and encourage important wild pollinators, especially bees, on your land.

There are some basic, easy, and inexpensive steps that can be taken on a piece of farmland to increase the likelihood of pollinator survival and proliferation. Although farmland is the focus of this guide, it should be noted that the size of the piece of land matters very little. Many wild bees will thrive in the small spaces of an urban environment if they are encouraged to do so. Not all landowners or land managers can take all the suggested steps, but it is important to start somewhere and take the steps that you are able to take to protect and encourage pollinators.

These recommended six steps also apply to you if you are

- a gardener who has a yard or access to a plot in a community garden,
- a seed collector who works to preserve heirloom varieties or native plants
- a forest owner who manages a woodlot, or
- a land manager who makes decisions about practices in parks and other public green spaces
- a township public works manager who is responsible for maintenance of roadsides

Please note:

1. For the purposes of this guide, “Native Wild Pollinators” refers to native bees. Other non-bee pollinators and a wide variety of beneficial insects will benefit from these tices also.
2. Most native bees do not live in colonies, do not produce honey, do not swarm, and do not sting in the same way as honey bees do. Bumble bees do sting, but usually only around their nests or if trapped.

For more information on this topic, please visit the Rusty-patched Bumble Bee Project Facebook page or [www.beefriend.org](http://www.beefriend.org). The author can be contacted at [schan.farmsatwork@gmail.com](mailto:schan.farmsatwork@gmail.com)

## **Step 1: STOP using insecticides to kill pests.**

Insecticides may kill as many beneficial insects than they do pests. These beneficial insects include pollinators of all kinds. Bees are especially susceptible to poisoning by insecticides, including natural and home-made versions. If you must continue to use insecticides on parts of your land, consider creating resource-rich, insecticide-free zones that can act as pollinator preserves. Plant barrier hedges around those preserves to reduce insecticide drift into them and apply your insecticides in the evening after pollinators have stopped foraging. This will reduce the harm done by insecticides but will not eliminate it, especially for pollinators that live near the crop that they pollinate or for insecticides that persist for several days after application. It should be noted that it is illegal under the *Bees Act* to spray fruit trees when they are in bloom because of the harm done to pollinators. The insecticide Furadan is extremely toxic to bees and should be avoided. Certain classes of insecticides such as neonicotinoids have been banned in Europe because of their suspected harmful effects on pollinators—these should also be avoided. Currently OMAFRA classifies agricultural pesticides according to their toxicity to honey bees: For both field and fruit crops, close to half of the pesticides registered for use in Ontario are either highly toxic or moderately toxic to bees. Increasingly, scientists are raising concern about the pesticides that have a low toxicity because of their possible contribution to changes in bee foraging behavior and reproduction. For information about the relative toxicity of various pesticides used in Ontario, please see the following OMAFRA website:

<http://www.omafra.gov.on.ca/english/food/inspection/bees/pollination.htm#table1>

## **Step 2: BECOME aware of the pollinators on your property.**

Look for insects on flowers in all seasons and at various times of day; if they are covered in pollen or if they have pollen balls on their hind legs, they are certainly pollinating bees. Scan the ground for small, neat, holes that might be the entrances to bee nests in the ground. Take a moment to inspect dead tree trunks, or hollow stems for small holes that are plugged—this is evidence of bee nesting activity. Tear open a wilted pumpkin flower or two to search for sleeping male hoary squash bees, and look for neat, semi-circular cutouts on leaves and petals, evidence that you have leaf-cutter bees working on your property.

The more time you take to observe, the more bees or evidence of bees you will likely see. As you look, you will notice that bees can come in all sizes, colours, and shapes. Some wild bees are tiny (e.g. sweat bees) while others are large (e.g. bumble bees), with a range of sizes in between. Some are dull black (carpenter bees) or grey (hoary squash bees). Others are a beautifully coloured (e.g. the Blue Orchard bees or the Metallic Green Bee), while still others have bright yellow or white markings on them. Some bees seem almost furry (bumble bees), while others like the yellow-faced bees seem almost bald. Some bees are delicate and slim (*Mining Bees.*), making bumble bees look portly in comparison.

Identifying the wild bees you see may be difficult because there are over 400 species in Ontario, but for the purposes of most landowners, awareness is more important than identification. Once you've started paying attention to the fascinating world of wild bees, you may become interested in meeting the bees one by one and learning their names. To help you do this, a pictorial key to the bees of Eastern Canada is available on line at

### **Case Study: First Steps in Creating Wild Pollinator Foraging Habitat on a Cash Crop Farm**

Riley produces wheat, soybeans, and canola on his farms. To increase efficiency he removed the traditional hedgerows and fencing from them. Riley is aware that although both canola and soybeans can set seed without insect pollinators, both yield and seed quality improve when pollinators are present. In the past, Riley has depended upon the pollination services of managed honey bee colonies. However, over the past 5 years, because of honey bee diseases and high overwintering losses, it has become more difficult to find enough honey bee colonies to do the job, and the cost of these pollination services has been steadily increasing. Riley recently discovered that Ontario boasts nearly 400 species of wild native bees that are excellent pollinators. As a result he decided to implement a plan to increase native pollinators on his farms. His first step was to re-instate hedgerows on the exterior margins of his properties by planting apple trees, chokecherries, wild raspberries, sumac, vervain, elderberries, and bergamot. He was able to obtain cost-sharing funding for this through the Environmental Farm Plan for both the time he spent and the material costs of creating this perimeter habitat. In these perimeter hedgerows, Riley hopes to provide increased foraging habitat for pollinators which will then help him to increase the quality and yield of his crops.

[http://www.biology.ualberta.ca/bsc/ejournal/pgs\\_03/pgs\\_03.pdf](http://www.biology.ualberta.ca/bsc/ejournal/pgs_03/pgs_03.pdf), especially pages 6-15. An excellent and appealing new resource for identifying bumble bees is available at <http://www.fs.fed.us/wildflowers/pollinators/documents/BumbleBeeGuide2011.pdf>. Discover Life (<http://www.discoverlife.org/>) offers a helpful interactive identification tool for bees. Just browsing either of these websites is an excellent way to acquaint yourself with the many bees that may be found on your property and elsewhere. Pollination Canada provides an observer's kit that can be downloaded from their website to aid you as you observe the pollinators on your property ([http://www.seeds.ca/proj/poll/index.php?n=pc\\_observers\\_kit](http://www.seeds.ca/proj/poll/index.php?n=pc_observers_kit))

### **Step 3: LEAVE the hedgerows and natural places on your farm intact.**

Hedgerows are commonly made up of trees and shrubs that are excellent sources of food for pollinators. These include hawthorn, choke cherry, lilac, staghorn sumac, wild roses, and wild apples. Furthermore, hedgerows can harbour colonies of bumble bees that take up residence in abandoned rodent burrows or other cavities created by the piles of rocks that have been removed from the fields. Leave the edges and corners of fields alone—let them be wild, even if they are seemingly overgrown. Many of those wild plants are reliable and abundant sources of food for pollinators and other beneficial insects. To reduce seed dispersal, these plants can be mowed after flowering and before seed set. Even if you do nothing else on your property, preserving the hedgerows and naturalized places is an extremely important contribution to pollinator conservation.

### **Step 4: PLANT nectar/pollen-rich plants on your property.**

*Choose a Variety of Plants:*

Make sure that the plants you select bloom at different times over the season so that bees have something to forage on throughout the season, which for some bees may extend from April until October. To accommodate the variety of mouthparts, foraging behaviours, and sizes among native wild bees, try to include plants with different flower shapes and sizes. Pollination Canada (<http://www.seeds.ca/proj/poll/index.php?k=21>) has excellent photographs of the six flower types on its website.

#### *Choose Plants for Specialist Foragers:*

Some bees are specialist foragers who collect pollen from only certain plant species. Be sure to include islands of these plants if you wish to attract these interesting specialists. For example, evening primroses will attract the bee *Lasioglossum oenothera*, thistles will attract a specialist longhorned bee and staghorn sumac will attract the band-footed sweat bee. An annual planting of squashes or pumpkins will attract the hoary squash bee, an interesting specialist bee whose males sleep inside wilted squash or pumpkin flowers.

#### *Choose Native Plants:*

Native flowering plants are good resource plants for pollinators because they have co-evolved with their pollinators. Many of these are perceived as weeds or plants of no value, but this is a short-sighted evaluation of their contribution to the ecosystems in which they are found. Besides producing nectar or pollen, many native plants also produce food for other wildlife, such as birds and small mammals. For a list of native plants that are good for pollinators, see [www.beefriend.org](http://www.beefriend.org).

#### *Trees and Shrubs:*

Trees such as alders, willows, and maples produce some of the earliest supplies of pollen to be found in the spring. American basswoods and honey locust trees provide copious nectar in the summer. Fruit trees such as apple, plum, pear, and sour cherry are also excellent resource plants, as well as providing fruit for the grower (or the birds as the case may be!).

Shrubs can also be a good source of resources for bees. Consider planting shrubs that flower at different times during the season such as raspberry, elderberry, serviceberry, ninebark, high bush cranberry, false spirea, beauty bush, or staghorn sumac. These plants do well in a hedgerow, in gardens, or as specimen plantings in parks and are long-lasting and easy to maintain. Many shrubs can also provide food and habitat for other wildlife.

#### *Non-native Plants:*

Various non-native plants such as dandelion, sweet clover, red clover, white clover, coltsfoot, and cow vetch are also good nectar and/or pollen producers. Unfortunately, many of these are considered to be undesirable weeds. If you want to grow other more traditional garden flowers to attract pollinators, choose heirloom varieties that have retained their ability to produce nectar and pollen. As a case in point, many garden sunflowers, especially the more unusual ones, have been bred to be pollen-less and so are useless to bees.

Non-native aromatic herbs such as thyme, chives, sage, comfrey, oregano, and borage produce abundant nectar and are attractive to a wide variety of pollinators, as well as being useful in the kitchen. Some of these are herbs are perennial, while others self-seed year after year. Borage blooms well into the fall, long after many of the other herbs have become dormant for the season and is a favorite with bees.

### *Cover Crops:*

Landowners often plant soil-improving crops such as clovers, alfalfa, field peas, or buckwheat as cover crops or green manure in a crop rotation. If allowed to flower, these crops will provide nectar for many pollinators. Buckwheat used as a green manure or cover crop has traditionally been cut and turned under at first flower because the seed sets quickly, matures, and drops before flowering is complete. However, because buckwheat can provide large nectar and pollen resources to pollinators, increasingly many ecological farmers have begun to allow their buckwheat crops to go to flower. Care should be taken to choose a nectar-rich variety for this purpose, as some varieties have been intensely bred to reduce seed shattering (Koto variety, for example) and as a result have lost their ability to produce nectar. If buckwheat is allowed to flower and set seed to provide forage for pollinators, the resulting volunteer seedlings will germinate quickly and can then be eliminated by shallow cultivation.

### *Hay Crops:*

Hay crops that do not contain legumes are not used by pollinators as a source of nectar or pollen. However, because many hay crops contain legumes, they are an important potential source of nectar and pollen for pollinators. Conventional hay production practices involve cutting legume hay before full flower has been reached (usually between 10-25% flower) to achieve the highest nutritional quality. From a pollinator perspective, cutting the hay at 25% bloom is preferable to cutting it at 10% bloom. Research in the United States shows that in the north, allowing at least one cut of alfalfa hay to mature to the full bloom stage improves root reserves and stand persistence (see [ftp://ftp-fc.sc.egov.usda.gov/ID/programs/technotes/tn8\\_alfalfaguide3.pdf](ftp://ftp-fc.sc.egov.usda.gov/ID/programs/technotes/tn8_alfalfaguide3.pdf) ). Cutting stands of birdsfoot trefoil should also be delayed until full bloom to allow for increased accumulation of root reserves because this crop does not store reserves well at any time during the season. These management techniques to improve stand longevity also increase the availability of nectar and pollen to native pollinators.

Increasing the interval between cuts of hay reduces the nutritional value of hay but increases the yield. Because hay that will be fed to beef cattle does not have to be of the same high nutritional quality as that fed to dairy cattle, an opportunity is created for beef farmers to manage their legume hay crops for yield rather than nutritional value. This is also an opportunity for pollinators as they have a longer window to take nectar and/or pollen off the hay crop when it is in flower.

### *Intercropping:*

In high value perennial crops needing pollination, narrow bands of inter-cropped resource-rich plants can be planted within fields to create permanent pollinator reservoirs. This will not only increase the stability of pollinator populations in the field, it will provide resources for a large number of other beneficial insects. These crops can be chosen with other farm goals in mind also, for example, to improve soil quality.

### *Planting Methods and Funding Sources:*

To establish stands of resource-rich plants, sow seed from a variety of nectar rich and/or pollen rich plants in well-prepared ground in the unused or waste spaces on your property. Using

hydro-seeding is an effective method on a large scale. Just throwing seeds into thickly vegetated areas without cultivating the soil will not work well as the competition for light, water, and nutrients after the seeds have germinated will be too intense. Another option is to grow or purchase nectar/pollen plants and plant them into these areas in groups. This is the establishment method of choice for planting in hedgerows, though it is more costly. If you are planning to do a riparian planting along a waterway, consider choosing plants that will serve pollinators as well. Local stewardship councils often have plants for sale at very reasonable rates. To contact the stewardship council in your area see

[http://www.ontariostewardship.org/files/OS\\_Map\\_S\\_Eng\\_Colour\\_reduced\\_V1.pdf](http://www.ontariostewardship.org/files/OS_Map_S_Eng_Colour_reduced_V1.pdf). In some areas, conservation organizations work together to help defray the costs of plantings. The Environmental Farm Plan (EFP) has offered 50% cost-share funding for plantings to improve wildlife habitat on farms, including pollinator habitat. In cases where a species at risk may benefit, the EFP has had special 100% funding. Talk to your county EFP representative about funding for your on-farm planting project.

([http://www.ontariosoilcrop.org/docs/pr\\_wl\\_june\\_2011.pdf](http://www.ontariosoilcrop.org/docs/pr_wl_june_2011.pdf))

#### **Step 4: ESTABLISH and protect suitable nesting sites for pollinating insects.**

##### *Characteristics of a Good Nesting Site*

A large number of native bees make their nests in the ground. Most of these ground-nesting bees prefer nesting sites that

- are close to the plants they forage on,
- have heavier soils that keep their shape,
- have a southern exposure,
- are well drained,
- have minimal plant cover

##### *Artificial Mounds or Natural Slopes:*

Creating piles of heavy soils in a sunny place can be one way to create nesting sites. However, these will require maintenance as weed seeds germinate and cover what was once bare ground. Furthermore, the piles will erode in time. A less labour intensive solution is to find south-facing slopes that already exist on your land and reserve them as nesting sites. If these slopes are naturally sparsely vegetated, so much the better. If south-facing slopes are grassy, the grass can be cut short and maintained to give bees access to the soil.

##### *Uncultivated Field Margins:*

Field margins can also be reserved for ground nesting bees. Deep cultivation or plowing in these margins will destroy the nests of ground-nesting bees, but shallow cultivation to control weeds in these margins will do no lasting harm as the nests are fairly deep. Creating a nesting reserve as described above around the margins of fields planted to pumpkin or squash is a very effective way to build up a strong population of hoary squash bees, the most efficient pollinator of these crops.

**Case study: Building Up Wild Pollinator Populations on a Pumpkin Farm by Providing Undisturbed Nesting Sites**

Harry Zeimer owns and operates a small 30-acre pumpkin farm and has grown and sold his crop at the farm gate and through agri-tourism activities on the farm at Halloween for the last 20 years. Because he grows the same crop in the same fields every year and because pumpkin vines spread so far, Harry stopped cultivating the outermost 2-3 metres at the edges of his fields and concentrated his plantings within the middle portions of the field. As a result, the 2-3 metre edge strip of undisturbed soil became populated over time with a large nesting aggregation of specialist ground-nesting hoary squash bees (*Peponapis pruinosa*). These bees become active in the early dawn hours at the same time as the pumpkin flowers open. By the time honey bees become active in the pumpkin field around 9 a.m., the pumpkin flowers have already been fully pollinated and all the pumpkin flowers have been stripped of their floral resources (nectar and pollen). Furthermore, these bees cost Harry nothing and they do not sting, despite their large populations in the field.

*Sandy Nesting Sites:*

Unlike most ground nesting bees, the wild bee *Calliopsis andreniformis* prefers sandy soils for nesting. These bees can be well served by nesting in a sandy horseshoe toss, or an abandoned sandbox. Of course naturally sandy areas on your land can also be reserved for *Calliopsis* nesting sites.

*Stems:*

Another common nesting material used by native bees is the pithy stems of plants like blackberries and raspberries. Bees that nest in these pithy stems include most of the yellow-faced bees, all species of small carpenter bee, and many species of leafcutter bees. When you remove all the old stems from raspberries to encourage fruiting, you are likely removing many of the nests containing bees that would be helping to pollinate the crop the next year. Removing the canes from the plants is necessary for fruit production, but instead of destroying them, keep them in vertically oriented bundles within the field for at least one year. This maintains the nesting sites close to the plants and allows for the development of a stable population of pollinators. By burning the canes, shredding them, or sending them to the landfill site you are killing the pollinators nesting in them.

Making and setting out artificial nests for stem-dwelling bees is a fairly simple procedure which may help to stabilize pollinator populations from year to year. The success of these nests depends somewhat on their placement. Place them against an obvious landmark like a barn or shed wall so that the bees are able to locate them easily. They are best placed out of direct sun where they may overheat, and they should be protected from rain, flooding, or being knocked over. The closer the nest traps can be placed to foraging resources, the easier it will be for pollinating bees to establish themselves and thrive in a nest. Once the nest is occupied by adult bees flying in and out, be sure not to move it or the adults will not be able to locate the nest again.

Artificial nests commonly harbour more than one species of bee if the stem or hole diameters within a bundle vary. Furthermore kleptoparasitic bees (bees that invade the nests of other bees, destroy some of the eggs, and lay their own eggs there) may also show up at the trap nests. To reduce parasitism and to avoid overpopulating a particular area, scatter trap nests in different suitable locations on your property.

Artificial nests should be changed once the next generation of pollinators emerges from them to avoid creating a reservoir of a fungal disease called chalkbrood that kills bee larva. Burn the discarded trap nests, if possible. Commercially, trap nests used in alfalfa fields are cleaned and sterilized with a bleach solution to solve this problem.

Instructions for how to construct a trap nest for mason bees (*Osmia*) can be found at <http://www.discoverlife.org/bee/opp/design.html>.

#### *Wood:*

Native Virginia carpenter bees, (*Xylocopa virginica*) bore holes in wood to make their nests. Drilling an assortment of holes of different sizes in dead standing trees, or in blocks of wood can encourage these bees to nest on your property. Some leaf-cutter bees like to nest in rotting wood so leaving rotting logs can also create wild bee nesting sites.

The website <http://www.studioblog.com/shed-other-garden-buildings/encouraging-native-bees-with-insect-walls/> provides many inspirational photographs of bee houses made of a wide variety of materials. It should be noted however, that although the idea of creating a visually beautiful nesting “condo” for bees is very appealing to humans, concentrating bee nests in one location over many seasons, especially in a structure that cannot be cleaned or disinfected, will lead to an increase in the pests and diseases that affect those nests. It may be better to be less artistic and scatter bee nests around your property in simple, cleanable or disposable nests.

#### *Cavities:*

Bumble bees are cavity nesters. Because overwintered queen bumble bees begin their search for nesting cavities early in the spring, if you want to attract them to nest in artificial cavities like overturned clay pots or empty wooden nest boxes, these need to be put in place the previous fall. Avoid the use of metal containers for this purpose because they may get too hot for bees in the summer. If a bumble bee colony does become established in an artificial cavity that you provide, do not move it or you will substantially weaken the colony. Choose a location that is not too close to areas where you work, play, or sit. Bumble bees can become very protective of their nests, and will defend them. Instructions for making a bumble bee nest box are located at [http://www.bumblebee.org/nestbox\\_plans.htm](http://www.bumblebee.org/nestbox_plans.htm).

#### *Mud Puddles:*

### **Case Study: Pollinator Conservation on a Rural Residential Property**

Dorothy lives on a ten-acre rural property. No chemical fertilizers or pesticides are used on the property.

To provide nesting habitat for wild bees, Dorothy has placed trap nests made from large hollow stemmed grasses that she grows around her property. She purposefully creates piles of brush along the edges of her small forest, leaves standing dead wood to provide nesting habitat for wood-dwelling bees and makes trap nests by drilling holes into rotting birch logs placed near her large vegetable garden. As a hobby, Dorothy and her family contribute to the growing body of knowledge about pollinating insects by participating in a citizen-scientist research project to study the effects of climate change on the nesting habits of the mason bees. The gardens on the property are planted to aromatic herbs, Jerusalem artichoke, sunflowers, elderberry, sedum, borage, and gayfeather, all of which provide nectar and pollen to bees. Dandelions and coltsfoot are abundant on the property in the spring and the wetlands are full of red maples and pussy willows that provide pollen in the spring.

Although the pollinator conservation measures that Dorothy and her family have taken on their property initially required some planning, and effort, they have been easy to maintain, and they have cost next to nothing. Over the years, insect biodiversity on the property has increased noticeably.

Some wild bees use mud to construct their nests. Creating small areas in which water can collect and form mud gives these bees access to the material they need for their nests. This is especially important during droughts when mud is not naturally available. A pail of soil saturated with water also makes an excellent “mud puddle”, especially if you create landing areas for bees with twigs.

### **Step 5: PROVIDE water.**

Water is used by some bees for cooling, for creating their pollen balls, and sometimes for making mud for nest construction. Keeping a source of water available is a good idea but it must be in a form that is useful to insects. A shallow container filled with small pebbles or coarse sand that rises above the level of the water is ideal, as is a container that has wood chips floating on the water’s surface. Both of these arrangements allow bees to land and drink without falling into the water and drowning. A pond with a gradual gently-sloped bank can also work. It is crucially important that water sources are not contaminated with insecticides to avoid poisoning bees.

### **Step 6: PARTICIPATE in citizen-scientist research projects.**

Take photographs of the bees you see, recording the place, time, host plant or nesting site, and date of the photo. Submit these photos to on-line identification services such as the one offered at <http://bugguide.net/>. As a result you will learn and your identified photos will be added to a growing collection of data about wild bees in North America. If you are excited by the idea of playing a more active role in research on your property, DiscoverLife has a variety of citizen-scientist projects about bees that anyone can participate in. All the instructions you need are on their website

(<http://www.discoverlife.org/>), including instructions for participating in a study of the nesting habits of mason bees. Within Ontario, the Rusty-patched Bumble Bee Project is encouraging people to take photos of bumble bees and to post them to the project's facebook page or email them to [bumblebee@xerces.org](mailto:bumblebee@xerces.org).

### **Four Things to Remember As You Create Habitat for Pollinator Bees**

#### ***1. Nesting sites for wild pollinating bees need to be located close to food resources***

Nesting sites and floral resources go together. Any effort to encourage pollinator populations on your land needs to take this into consideration. Some of the smaller wild bees cannot travel farther than about a hundred meters between their nest and the plants they forage on. For many wild bees, creating perfect nesting sites hundreds of meters away from flower resources is futile.

If you do find a good place to establish a nesting site, especially a ground nesting site, make the extra effort to provide resources for foraging alongside the nesting site. This will improve the likelihood of success. In an agricultural context, this is why using field margins as nesting preserves is so effective.

The bees live and work in the same neighbourhood and commuting is kept to a minimum.

#### ***2. Establishing strong, stable populations of wild bees takes time.***

Most wild bees are solitary. This means that even relatively strong populations may go un-noticed by the casual observer because the bees nest in scattered nesting sites. Because each female solitary bee only raises a handful of offspring, and some of these may die of natural causes, there is not likely to be a noticeable population explosion of

wild bees on your property in the short term. Be patient, and take the long view when you are striving to conserve wild bee populations. Remember also that if you have few bees on your property at present, they will have to migrate in slowly and then establish themselves.

#### ***3. Some species of wild bees may only be around at certain times.***

Specialist wild bee species forage for only the period of time when their host plants are blooming. On a seasonal basis, for example, you may notice a variety of wild bees on early spring forest plants. However once those plants stop blooming, the bees that visit them seem to disappear. In fact, they have completed their lifecycle. The adult females that you noticed have collected pollen from the spring flowers, provisioned their nests, laid eggs and died, all in the short period of time in which these flowers bloom. The same holds true for any specialist pollinator. You may also notice a similar pattern on a daily basis. For example, if you were to wake up at dawn and wander down to your pumpkin patch, you might see large numbers of hoary squash bees flying from flower to flower. However, if you were to wander in the same patch in the afternoon, you wouldn't find a single squash bee. If you were observant, you would notice that all the pumpkin flowers were also closed and wilted at that time. These squash bees are specialist foragers and when the pumpkin flowers wilt,

they simply stop foraging for the day. So do not panic if the wild bees that you are seeking to protect disappear after a certain time of season or day; this may be a reflection of their normal lifecycle or foraging cycle.

**4. *Honey bees can compete heavily with wild bees for resources.***

Honey bees are wonderful pollinators and produce the nectar of the gods—honey!

Maintaining a few hives of bees or hosting the bees of a beekeeper on your land is an excellent idea, but keep in mind that they can also compete with wild bees for pollen and nectar resources. Limiting the number of managed hives on your property and keeping those hives in a single location may be the best way of maintaining healthy populations of both wild and managed bees.

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