



Mason Bee

Native Bees

Helping Grow More Food & Flowers



Leafcutter Bee

Native bees, like the mason and leafcutter, are North America's pollination super-giants.

They pollinate at a rate much higher than honey bees. A recent study by Dr. Lucas Giribaldi showed that adding native bee species to a crop can increase yield by an amazing 24%.

Spring Mason Bees

Spring Mason Bees are named after masonry for mason bees' habit of using moist clayey mud to build protective walls. The moist clayey mud must stick together when pinched. If it is too sandy and grainy, supplement your soil with a clayey mud mix, without it they will leave your sight and go elsewhere.

Mason bees are gentle dark iridescent blue bees perfect for fruit orchards, nut orchards, and berry fields. They're among the first bees to fly in cool, wet spring weather, and will forage under overcast skies at temperatures as low as 55° F. Mason bees have a short flying range of only 300 feet from their bee house. They are super cross-pollinators that belly flop their dry hairy bodies onto flower's pollen. The female mason bee takes nectar with her tongue while vigorously shaking the anthers—the part of a stamen that contains the pollen—with her bottom, rear and middle legs to collect the pollen.

The preferred nesting cavity is a tube 8mm in diameter that can be comprised of reusable wood trays, cardboard tubes or lake reeds. The female mason bee allows about ¾ of an inch of the tube for the new bee to develop in, at which point she constructs a mud wall to seal the chamber. She then starts collecting pollen



and nectar again for the next egg. She continues this procedure until the tube is filled. The mason bee is very wise; she lays the female eggs at the back of the tube and the males towards the front. In the event of predator attacks the males are sacrificed first, hopefully leaving the females to reproduce next year. In spring the males emerge first. When the females emerge, the first thing they do is mate. Males also visit flowers, but they do not live long after mating and are not as

effective as pollinators.

It takes about 75 flower visits to gather a full load, and an average of 25 loads for an average pollen wad. The female mason bee completes about one cell a day, so that means she visits about 1875 blossoms a day. She goes into the nesting cell in the bee house head first to regurgitate the nectar, then backs out, turns around and backs in to deposit the pollen. The last load for the cell is nectar only, to which she attaches the egg. The egg hatches in about a week. There are 5 larval stages and it is the second stage that starts using the pollen wad for food. The developing

larva will cocoon in the 5th stage and pupate in late summer. It then takes about a month to metamorphose to an adult bee, which will then go dormant until the following spring.

In late spring and early summer you can collect newly filled nesting tubes because the adult female mason bees are done nesting. Protect against pests by putting them in a Bee Guard Bag or a fine mesh bag, with the mud-capped ends up. Store them in the garage/shed with outdoor temps. The bee larvae need the heat of summer to develop. They are now eating the pollen loaf and will spin the cocoons.

Starting in October, you can begin to harvest your cocoons, which simply means removing the cocoons from the nesting materials, then cleaning and sorting them for winter storage. Removing and storing healthy cocoons is important since mason bees have their own deadly pests which you want to protect against. To harvest, open your nesting holes. Using your fingers or a Philips screwdriver, gently scrape out all cocoons and debris. Sort out the cocoons and throw away the debris: mud, pests, larva feces and pollen balls. Healthy cocoons are firm, dark brown, with no holes. The female cocoons are larger than the males. Wash your cocoons in cold water. Rub them carefully between your fingers to get most of the mud, feces and mites off. If you find pests in the tubes, add 1 tbsp. bleach to 1 cup of water and rinse. Pat cocoons and dry in a cool area for an hour or so. Place clean cocoons in a HumidiBee or other container into your fridge. Check on the bees in the fridge at least once a month. Add 1 tbsp. of water to the HumidiBee each month. If mold forms on cocoons, wash them in mild bleach solution.



Leafcutter Bees

Leafcutter Bees are efficient pollinators for summer gardens and flowers. The female leafcutter bee carries pollen on the underside of her hairy abdomen, and then scrapes the pollen off within her individual nesting hole. Pollen is carried loose and dry on her hair and it falls off easily as she moves among blossoms. These bees will visit many different kinds of flowers. Leafcutter bees have a short flying range of only 300 feet from their bee house. They are active in warm summer months and are perfect for pollinating squash, melons, cucumbers, peas and other summer vegetables and fruits. Leafcutter bees are solitary, which means each female is fertile and does all of the chores needed to raise her young. The female bees gather nectar, lay eggs, cut and gather leaves, and defend their nesting holes. They are extremely gentle. However they do have stingers and they will only sting if their life is threatened.

Leafcutter bees are hole-nesting bees that lay their eggs in existing holes. Each solitary female chooses a nesting hole, 6mm in diameter, that she claims as her own. She uses her large jaws to make small, near-circular cuts in thin-walled leaves, such as rose,



hosta and lilac, that she can then curl in half and carry back to her nesting site. The female leafcutter bee builds a protective leafy cocoon for each egg. Inside the cocoon is a pollen loaf, which is a mix of nectar and pollen, and a single leafcutter egg. Leaf cocoons are



positioned next to each other, and sometimes when you harvest the cocoons they are stuck to one another. When the nesting hole is filled, she adds an extra thick layer of leaf bits at the opening.

The leafcutter egg might hatch right away or it might go into hibernation for the fall and winter. If the summer season is long enough, the larva has time to develop quickly into an adult. These second generation bees go right out to mate and start the cycle again.

If you'd like to raise leafcutter bees and keep them in your garden, all you will need is a bee house and nesting materials and plants with the proper leaves for bees to use in their cocoons. Bee activity usually stops in late August or when daytime temperatures no longer reach 75 degrees, at which time you can collect and store the bees nesting holes with the capped ends up in a fine mesh bag in a garage or shed. The larvae will overwinter in here until spring.

Harvesting leafcutter cocoons is a little different than harvesting mason bees for two important reasons: leafcutter cocoons are not waterproof and they hibernate as delicate larvae. Harvesting leafcutter cocoons is a key first step before incubating them. If you wish to harvest the cocoons, open your nesting holes. Using your finger or a Philips screwdriver, gently scrape out all cocoons and debris. The cocoons tend to stick to each other in a line. They come in a range of greens, yellows and sometimes are made of petals. Cocoons with small pin holes in the side had parasitic wasps, throw them away. Place healthy cocoons into a fine mesh bag and store in a cool place, but not in the refrigerator.



Four weeks prior to emergence in the summer, place the mess bag full of harvested cocoons into a dark warm location and check them periodically. Development is dependent on time spent in warm temps. At 84 degrees adults emerge after 20 days and at 70 degrees adults may emerge after about 42 days. After 7-10 days begin checking for and kill small parasitic wasps in the mesh bag. Release emerged adult bees as they emerge and place remaining unopened cocoons into the bee house out of direct sunlight.

Pesticides

The use of pesticides on your plants can unbalance your ecosystem and will cause solitary bees to leave where they were previously happy to nest. It will also kill predators that control pests in your garden. Neonicotinoid pesticides (neonics) are systemic pesticides that are applied to seeds which permeate the entire plant from root to flower. Neonics, including Roundup, harm bees' memory—their ability to learn, and they also reduce fertility in both male and female bees. Many big box stores are starting to require labels for their plants and seeds, stating that they are free of neonic chemicals.

Quotes from the National Resources Defense Council newsletter: “The EPA acknowledges that it previously underestimated the risks neonics pose, not only to bees and other insects but to birds, mammals, and even human health.”
“Increasingly, science is showing that neonics are a major player in the broader biodiversity crisis. They are all over the environment.”

The Future of Bees

As our population grows, we need to grow more food for more people. A simple solution to increasing food production is to improve bee diversity to ensure proper pollination. Using mason and leafcutter bees to diversify a farm's portfolio of managed bees is an easy way to increase crop production.

To create a bee friendly habitat--don't use chemicals like liquid fertilizer, herbicides & pesticides; have abundant pollen sources such as a variety of blossoming plants; moist clayey mud for mason bees; supple leaves for leafcutter bees; and provide a bee house, to keep nesting materials dry, facing the morning sun, towards the SE is best. Install it 5 – 7 feet off the ground to protect from small animals and to make watching the bees come and go easier. Place it within 300 feet of your blooms.

Raising mason and leafcutter bees is an innovative journey and an exciting chapter in the future of sustainable pollination.

Resources

Crown Bees—tips, research and beekeeper supplies—www.crownbees.com.

For more information google: mason and leafcutter bees.