

Worldwide, Insect and Bee populations are in decline. We rely on these important pollinators for our food! In North America, our Native bees are facing survival challenges caused by predators, parasites, pesticide use and many other factors.

## Why raise Mason Bees?

- To increase the species survival rate. By getting involved you will be providing a clean and safe nest environment, which greatly improves the survival rate of the next generation.
- It is a fun, fascinating and interactive hobby for adults and children alike. Inexpensive and not time-consuming.
- Minimal time and effort involved and provides great benefits to your garden. You will notice increased yield of fruit and vegetables and prolific blooms on your flowering plants.



*Mason Bees provide a fun, fascinating and interactive hobby for backyard gardeners and children!*

## What's involved in raising Mason Bees?

Here's what a year in the life of a Mason Bee Keeper looks like:

### March:

- When temperatures reach around 13 degrees Celsius, put cocoons out in a Release Box close to the Bee House (they will orient themselves to this location)
- It's not necessary, but it is helpful to provide a mud or clay source nearby the nest (within 20 feet) - Don't let it dry out!

*Have fun watching the bees nesting and pollinating in the garden for approximately 8 weeks!*



### June:

- Bring bee houses inside to protect them from active predators such as parasitic wasps and birds. (Get them out of harm's way!) Bring them into the house or garage. **Caution:** If storing in outdoor sheds be aware that mice are also predators!
- Store the boxes with mud caps **facing UP!** \*\*This will prevent the egg, larva (grub) from falling off the "Bee bread".

### October:

- Harvest the cocoons from the tubes and trays.
- Open paper tubes **GENTLY. Remember there are living bees inside!**
- Keep cocoons **COOL.** (If left out in a warm space, they might start to emerge)
- Clean, Wash and Dry the cocoons.
- Candling of cocoons (destroy parasitized cocoons).
- Place healthy cocoons in a ventilated container in fridge (about 34 -37 degrees Fahrenheit for winter dormancy).



### Prepare for next season:

- Thoroughly clean bee houses
- Roll paper tubes

# Building a Mason Bee House



*"If you build it, they will come!"*

You can be as creative as you like when building a Mason Bee House! You are only limited by your imagination and craftsman skills. Go small or go BIG - it can hold 10 tubes or 100. What it looks like on the outside is up to you! Be creative and have FUN!

When designing your bee house, the two most important criteria are the hole size and tube length:

- **Hole size:** Mason Bees prefer a 5/16" (8mm) hole to nest in (size of their bodies)
- **Tube Length:** Preferably 7" long (minimum of 6" long) (for correct ratio Female to Male eggs)

## Types of tubes:

- Make your own: Rolled newspaper
- Purchased cardboard tubes
- Wooden trays: Routed tubes (round) or Dado tubes (square)

## Placement of Bee House

### *Location! Location! Location!*

Fasten the bee house under a protective roof overhang on an East or South Wall about 6'-7' off the ground – a little above eye level provides great viewing. Consider a sunny spot in your yard (but not too hot!). The sunshine warms the bees up and gets them going early in the morning. They will work till dark!

Choose a location with minimal exposure to extreme temperature and protection from Wind and Rain.

### Alternative Mason Bee Houses:

- Try using a piece of 4" diameter PVC pipe cut on an angle so a 'roof' juts out in front. The pipe is capped at the back and fastened to a piece of wood backing that in turn is fastened to a wall. Bundle up tubes and wrap with insulation to hold firm in place and protect from pests. Set tubes back so they won't get wet.
- Use a router to make a stacked 'bee condo' where 5/16" (8mm) holes are carved in slabs of wood and fastened together with a big central bolt to create a sandwich-type box that's easy to take apart and clean. No paper tubes required.
- Joe's Drilled Front Mason Bee House: Use a sharp 3/8" drill bit to drill holes in a block of wood that will hold rolled newspaper tubes (5/16" diameter) Build the house to fit and make it "light tight" to keep parasites out.

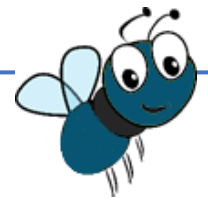
**A Release Box** will protect cocoons from predators while the bees wake up. Place the release box close to the Bee House so they can get oriented after they emerge.



**AVOID!** Any type of bee house where you are unable to access the cocoons for harvesting. This includes the trendy "Bee Hotels" that are primarily made of short bamboo stems in random sizes; most of the holes are either too small or too large for Mason Bees.



# Getting to Know Mason Bees



## Name(s):

- Latin: **Osmia lignaria**
- Common names:
  - Mason Bee (named for ability to build mud walls to create chambers in nest)
  - Blue Orchard Bee (BOB)

## Characteristics:

- Solitary Bee - Tunnel Nesting
- Native Pollinator to North America
- Non aggressive, gentle bee - won't sting!
- Early risers and late nighters; extremely hard workers
- Does NOT produce Honey or Wax



## Appearance:

- Shiny dark blue-green metallic body; often mistaken for flies
- Hairy body for collecting pollen
- Females slightly larger than males; All females are Queens



## Lifespan: Short!

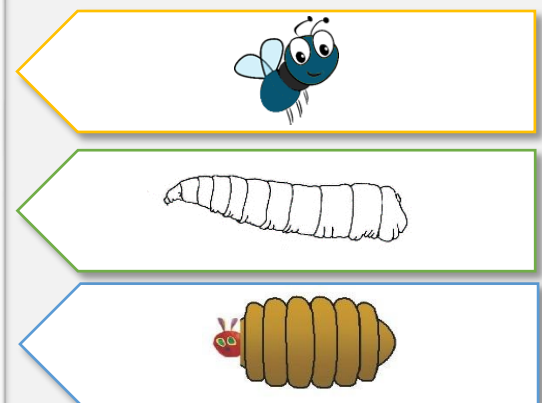
- Males - 2 Weeks
- Females 4 - 6 weeks (between March to May)
- One generation per year

## Forage range:

- 100m radius from Bee house; attracted to early blooming plants and native plants
- Emerge when temperatures reach approximately 13 degrees Celsius (before other bees emerge)
- Will fly in light rain
- Beneficial pollinator for a variety of plants and prized for efficiency in pollinating fruit trees

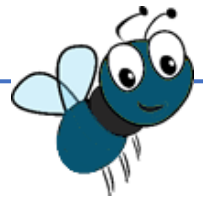
## Life Cycle

|            | March                | April  | May  | June | July-September | October-February |
|------------|----------------------|--|--|------|----------------|------------------|
| Adult Bees | bees emerge and mate |  | pollinate to collect food, lay eggs, build mud walls |      |                |                  |
| Larva      |                      | eggs hatch, eat food stores, spin cocoons, transform |  |      |                |                  |
| Cocoon     |                      |  |  |      |                | hibernate        |





# Life Cycle (continued)



## Spring – Summer

- Males first to emerge from cocoons - immediately begin foraging
- Females emerge shortly after males
- Mating occurs and males die; Females purpose in life is to collect food and lay eggs for the next generation
- Fertilized females start to collect nectar and pollen (pollinating flowers while doing this)
- Female starts her nest by building a mud wall plug, then deposits a pollen/nectar ball (Bee bread) collected in her large jaws. She lays one egg on the bee bread. Then seals off the chamber with a mud plug and repeats this process until the tube is full.
- Cream coloured larva hatches from egg after a week or 10 days and feeds on “bee bread”
- After about 10 days larva begins to spin a cocoon around itself.

**Females choose the sex of the egg they are laying!**

*She will lay female eggs first, deep in the tube and male eggs closer to the front of the tube. That's because:*

- Males emerge first in Spring
- Males are expendable in event a predator attacks

*Ratio of females to males is about 2:1*



## Fall – Winter

Inside the cocoon, larva forms a pupa which, in the Fall, transforms into a fully developed adult. Adult bees remain in dormancy in cocoon through Winter months.

**The cycle begins again when temperatures rise in Spring and the adults emerge from dormancy.**

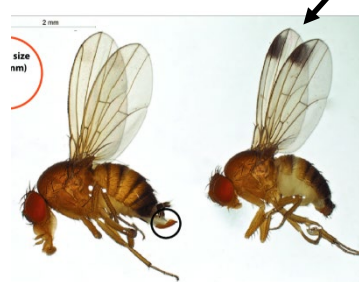
# Pests, Parasites and Diseases

The Mason Bee population is threatened by **many factors** to be aware of:

### Parasites:



Chalcid wasps  
(Monodontomerus)



SWD (Spotted Wing  
Drosophila) Fruit Fly

spotted wing



Houdini Fly

Also:

- **Hairy footed Mites** (Krombien mite) “The Hitchhiker”
- **Birds** - will peck at mud walls to get at cocoons (Pileated Woodpeckers, Flickers)
- **Mold/ mildew** - Can grow when a nest gets too damp or wet
- **Chalkbrood** - A fungus (Mummifies Larva)
- **Viruses / Bacterial infection**
- **Neurotoxic Insecticides, Pesticides and Herbicides - Avoid use in garden!**

