MAKING AND CARING FOR A BEE HOUSE

Honeybees and our native bees are important. They are responsible for pollinating much of the food we eat. These important garden visitors need our help so they can continue to help us.

You may have seen honeybees buzzing in and out of their hives or bumblebees entering and exiting a hole leading to their underground colony. But did you know that most bees are solitary – meaning they do not live in colonies but rather in holes in trees, logs or the ground? They are neighborly and will build their nests next to each other. Invite mason and leaf cutter bees into your garden by providing them with specially designed homes.

Like you, bees need a safe place to live. Growing a garden that provides food, shelter and a place to raise their families is a great way to help them. You can also build a bee house for them to live in right in your own yard. It needs a roof and walls to protect them from the weather and space (holes or tubes) for nesting and raising their young.

Share your project with others on social media using the hashtag #GrowSmart22

Here's what you need

- Tubes for nesting
  - Finding tubes
    - Make your own tubes by wrapping printer paper or cooking parchment paper around a pencil and taping it to maintain the shape
    - Purchase paper straws
    - Use plants with hollow stems; cutting each stem below the node (ridge)
      - Check your garden for purple coneflower, lavender hyssop, bee balm or Joe Pye weed
    - Use plants with pithy stems and drill holes (with the help of an adult)
      - Sumac, elderberry and raspberries are good choice (just watch out for thorns)
  - Different sizes will attract different bees
    - 1/16 - 1/2 -inch in diameter
    - At least 5 inches and up to 8 inches long
    - One end needs to be open and one end needs to be solid or placed against the nesting structure
  - Optional – paint the open outer tip black to help attract bees
- Zip ties, string or wire to hold the tube bundle together and prevent shifting
- Glue to secure the tube bundle to the nesting box if needed
- A nesting structure protects the nesting tubes from rain
  - Steel cans
  - Pieces of PVC pipe
  - Plastic totes or buckets
  - Cinder blocks
  - Wood frames
  - Anything else that will keep the tubes dry
- Optional
  - Wire mesh to prevent birds and other animals from eating the bees
  - Paint for decorating your nesting box

Constructing the bee house

- Select or make the box to hold the nesting tubes
- Make or buy and gather tubes
  - You will need enough to snugly fill the nesting box or a way to secure them in place with twine, wire, glue or filler materials like the cardboard center of a toilet paper roll
- Fill the nesting box with the nesting tubes
- Make sure the tubes are completely covered by the nesting box
- Optional
  - Attach wire mesh to the front of the nesting box to keep out other animals with openings large enough for the bees
  - Paint or decorate your nesting box

Placing the bee house in the garden

- Place bee houses with clean tubes out in early spring or as soon as they are built
  - Mason bees complete nesting in mid-to-late June
  - Leaf cutter bees complete nesting in July and August
- Secure your bee house to a post, fence or structure to prevent it from blowing in the wind
- Face the open side of the bee house toward the southeast to receive morning sunlight and warmth
  - Set it at least 4-5 feet above the ground (6 feet to keep out rodents; 8 feet for bears)
  - Make sure there are flowers nearby that bloom in spring and summer
- Make a muddy spot nearby for the bees to use to create a safe space for each individual egg in the nesting tubes

Protecting bees from predators, parasites and cold

Parasites and predators (https://bit.ly/3sviYm4) can hurt native bees. Take some steps to keep them safe.

- Ants
  - Keep ants out of the bee house by covering the post, bottom of the nesting box and the area around the edge of the bee house with petroleum jelly or a thin line of sticky spray like Tanglefoot (note: thick layers of sticky sprays applied where birds land can trap them)
- Earwigs
  - Protect bee eggs and larvae from earwigs by trapping them with wet newspaper rolled up and set along side of the bee house or crumbled paper under a clay pot at the base of the bee house
- Birds
  - Place chicken wire over the front of the bee house to keep out birds, allowing 3 inches between the ends of the tubes and the chicken wire
- Wasps
  - There are several wasp species that will target native bees. The best way to protect your bee house is to watch for any wasps flying around it. Explore safe ways to manage these unwanted insects (https://bit.ly/3sviYm4)
- Rodents
  - Set the bee house at least 6 feet above the ground and cover the box with wire mesh to prevent rodents from chewing through the bee house

- Parasites
  - Once the bees have capped off the tubes with mud and leaf pieces, place the tubes, if removable, or the nesting box in a mesh bag to prevent parasite attacks; store the bee house in a dry location out of the direct sun

End-of-season care

- Place tubes, if removable, or the whole bee house in a ventilated box or plastic bin with a ½ inch diameter hole in one side and store the tube-filled container in a cold, frost-free location like an unheated garage, shed or barn

Next spring

- Set the overwintering tube-filled container outside in early spring when day temperatures warm to 55 degrees, near the new nesting box with new, clean tubes for that year
  - The bees will exit and find their way to their new home
- Clean out or compost the used tubes once the bees exit and find their way to their new home
  - This helps reduce the risk of certain pests and disease

More Resources

Building and Managing Bee Hotels for Wild Bees
https://bit.ly/3w8gbSh

Tunnel Nests for Native Bees - Nest Construction and Management
https://www.bitlylinks.com/okGoDf7Ff

Nurturing Mason Bees in Your Backyard
https://bit.ly/3PgW3om

DIY Bee Homes
https://bit.ly/3Pegfay

Creating Habitat for Stem-nesting Bees
https://bit.ly/3wollsj

MAKING AND CARING FOR A BEE HOUSE

Doing and Learning More

You're the scientist (youth with the help of an older sibling or adult)

- Draw or take pictures of your bee house when you put it in place
- Every few weeks check to see if any bees have laid eggs in the tubes
  - When do bees move into the bee box?
  - Count how many tubes are used
  - Write down the date they stopped laying eggs in the tubes
- Watch for bees visiting the mud puddle and nearby flowers
  - What flowers did they visit most often?
- Pretend to be a bee and pollinate a flower
  - Use a watercolor paintbrush to move pollen from one flower to another
    - Squash, cucumbers, lilies and daylilies are some of the easiest plants to pollinate by hand
  - Watch for fruit or seedpods to form – you'll know your pollinator efforts were successful!

You're the engineer (teens and tweens)

- Build a bee house from untreated wood
  - Research what types of bee houses mason and leafcutter bees like
  - Draw your design, making careful measurements so you know what size to cut the wood
  - Source the materials and put the bee house together (enlist an adult's help as needed)
- Evaluating the success of your design
  - Did your design and placement of the bee house keep bees safe?
  - Did bees use your bee house for laying eggs?
  - Was it easy to manage, store for winter and clean in spring?
  - What changes would you make for future bee houses?

You're the scientist and data analyzer (teens and tweens)

- Tracking visitors to the bee house
  - How many tubes in the nest box were used for nesting?
  - When did the bees stop laying eggs?
  - Were there any other visitors, like wasps, ants, and birds or wasps?
- Evaluate the impact of the surrounding environment
  - How close were flowers growing to the bee house?
  - Which flowers were visited most often by bees?
    - Take pictures or ask a gardener for help identifying them
  - Did the bees visiting the flowers lay eggs in the nesting tubes?
    - Was there a mud puddle nearby? If so, how close?
- Record data in a chart or spreadsheet
  - Can you see a relationship between the flowers or mud puddle and the distance between the bee house?
  - What impact did any visitors (e.g., ants, birds, wasps) have?
  - What other observations did you make?
  - Use this information when designing and installing next year's bee house.