# Give A Bee A Home

## How To Make Bamboo Nesting Tube Bundles For Tunnel Nesting Solitary Native Bees

About 30 percent of the 4,000 native bee species in North America nest in small tunnels such as hollow and pithy plant stems, ornamental grasses and branches; also abandoned borer-beetle holes in logs. Due to lack of habitat, you can help native bees find homes by making it for them.

Here is how I make bundles from start to finish.

I use bamboo because I can get it from friends for free. It is an invasive specie that people want to get rid of. I make something useful out of a problem plant and a lot of native bees find a home.

If you do not have a free bamboo source, fear not, because there are many flowering plants and ornamental grasses that you can substitute for bamboo. You can even grow them yourself.

I use loppers to cut the young bamboo canes. If you need more cutting power, like a chain saw, the cane is too big. The biggest inside diameter of the cane to use in a bundle is 1/2 inch. So, you mostly use only the tops of the canes.

Here is a picture of 6 pick-up loads of freshly harvested bamboo canes.

I use pruning shears to trim the branches off the canes.  Trim them as close to the cane as possible.  If you leave too much branch sticking out from the cane it is harder to make a tight bundle and the pointy ends really hurt when they poke you.

Trimmed bamboo canes.

Canes ready to be cut up.

Next, I cut the canes into pieces on the chop saw, leaving a node on the internode. That is, leaving a closed end on the hollow tube.  Only an experienced person, who knows how to operate a chop saw safely, should do this job.

I found that cutting up the canes with pruning shears cracked too many of the tubes and I don't have that problem with the chop saw.

The chop saw sometimes leaves stiff fibers sticking out the end of the tubes that are easy to trim off with scissors.

As I cut the canes, I also size them. For the small tube bundles, the hole size should be no smaller than 3/32 of an inch and no bigger than 1/4 inch. And for the big tube bundles, the hole size should be no smaller than 1/4 inch and no bigger than1/2 inch.

I use drill bits to do the tube hole sizing. If a 3/32 inch drill bit will not fit into a tube it is too small, throw it out. And if a 1/4 inch drill bit fits snugly into a tube it is just right for the small tube bundles. These sizes, ranging from 3/32 to 1/4 inch, go together into a box.

If a 1/4 inch drill bit can wiggle around a little in a tube, it is too big for the small tube bundles but just right for the big tube bundles. If a 1/2 inch drill bit can wiggle around in a tube then it is too big for the big tube bundles and should be thrown out. This range of sizes I put in another box.

Next I size the tubes for length. Small tubes should be between 3 to 6 inches long. And the big tubes should be between 4 to 8 inches long.

To make sizing quick and easy I clamp a 2X4 board to my work table to use as a stop. Then, I add strips of masking tape to mark out the 3, 4, 6 and 8 inch spacings. I add a half inch to these measurements to compensate for the thickness of the node on the end of the tube.

Small tubes.

Big tubes.

Dumping a box of tubes on the table, I line the tubes up against the 2X4 stop. For the smalls, any tube that does not reach the 3 inch mark gets thrown out. Any tube that is longer than the 6 inch mark gets set aside to be cut down. Do the same with the bigs. Any tube shorter than the 4 inch mark gets thrown out. Any longer than the 8 inch mark gets set aside to be cut down.

When using the chop saw, I set a stop at 6 1/2 inches for the long small tubes and 8 1/2 inches for the long bigs. Placing the tubes against the stop, I cut off the excess length.

When cutting and trimming bamboo, I find it easier when the bamboo is fresh and green. I then spread out the cut tubes to dry. When dry, the tubes become pale green to cream in color. The duct tape sticks better to the dried bamboo.

Now, with the bamboo cut up, sized and dried, it is time to make bundles.

This is how I decided how many tubes to put in a bundle. For the big tubes, 6 per bundle fit easily in my hand to hold and to get a rubber band around. For the small tubes, I picked 12 per bundle because they made

about the same size bundle as the bigs. You can make your bundles with as many tubes as you like.

When making a bundle, you want a variety of tube diameters to accommodate the variety of native bee sizes.

For the 6 big tube bundles, line up the tubes on the 2X4 stop so you can see the different lengths.  Pick out the longest tube and set it aside.  If I have several long tubes the same length, then I pick out the one with the smallest diameter to set aside.

In one hand, I lay 3 tubes, with the node ends lined up.  Then place the tube, that was set aside, on top with its node end sticking out a little past the other three.

Now, place the last 2 tubes on top with their node ends lined up with the first 3.

As I close my hand around the tubes, the set aside tube is in the middle of the bundle and its node is sticking out the bottom past the outer surrounding nodes.

Now, I wrap a #32 size rubber band, about 2 inches from the node ends, around the bundle as many times as I can, to hold the tubes tightly together.

For the small 12 tube bundles, I set aside 2 of the longest tubes for the middle.

And as I did with the big tube bundles, I place several tubes in my hand and then the 2 set aside ones, with their nodes sticking out past the others, in the middle.

As I add the rest of the tubes, I make sure that the shortest are around the outside of the bundle and their nodes are below the nodes of the tubes under them.

Then, I secure them with a #32 rubber band about 1  1/2 inches from the node ends.

The reason why I layer the nodes from the longest tubes in the middle, and the shortest tubes, on the outside, is that the outer tube nodes hold the inner tubes from sliding out of the front of the bundle.  The duct tape that

is wrapped around the node end of the bundle keeps the middle tubes from sliding out the back.

Next, I tie a 2 foot long piece of baler twine around the bundle. The long ends of the twine are used to secure the bundle in place when tied up for the native bees to use. You can cut your twine longer if you like.

I use baler twine because it is very strong, will not break, lasts longer out in the weather, is biodegradable and comes in a 9,000 foot roll. You can use any type of twine or heavy string that is available to you. Baler twine can be purchased at any farm supply store.

To make it easier to cut a lot of pieces of twine, I use a 1 foot wide piece of scrap plywood to wrap the twine around a lot of times. I use heavy scissors to cut the twine along the edge.

When tying the bundles, I place the twine over the rubber band and tie a square knot as tight as possible. If you know how to tie a better knot that won't loosen up, then go for it. The rubber band prevents the twine from sliding up or down the bundle.



Then, holding the bundle tightly in my hand, I bang the node end of the bundle down on a hard surface that I won't get in trouble for dinging up. This pushes all the nodes tightly together, like wedges, against the tied twine.

To finish the bundles, I wrap the tied end with duct tape. Pick several different colors to use if you want to tie up several bundles close together. The different color duct tape makes it easier for the native bees to find which bundle their home is in.

I know that duct tape is made to be ripped, but I prefer to cut it with scissors. This gives me more control of the length and has a nicer looking finished edge.

Holding the roll between me and the table, I have 2 free hands to hold the end of the duct tape and can cut off the length I want.

I use 2 pieces of duct tape to cover the end of the bundle.  Using one piece, I cover a little over half the node end and pull the ends and side of the tape down around the sides of the bundles.

I use the second piece of tape to overlap the first a little and pull it down the sides also.

I can't give you a measurement, I just eye it. The duct tape has to be long enough to reach over the top and down the sides, but not so long that it covers the twine and rubber band.

On the roll of duct tape, I make a cut into the end, length wise, about 1 and a 1/2 inches, so that there is 1/3 of the tape on one side of the cut and 2/3 of the tape on the other.

I tuck the bundle's knot of the twine into the cut of the tape, with the 2/3 of the tape on the node side of the twine and the 1/3 on the other side.

The 2/3 side of the tape, I pull tightly around the bundle to cover the ends of the tape that cover the top and also cover the twine.

The 1/3 strip of the tape, I pull around the twine knot and up to overlap the 2/3 piece of tape.  This keeps the twine from moving and sliding off the bundle.

Since, I did not cut the length, I can hold onto the roll to pull the tape tightly around the bundle, covering the ends of the 2 pieces of tape that cover over the top, the rubber band, the twine and any open gaps.

I cut the tape from the roll so that the end overlaps the 2/3, 1/3 of tape and tucks up to the knot.

The goal is to use as little duct tape as possible to seal the end of the bundle so that rain water can't get in. The 2 pieces of tape have to cover the end and come down the sides just far enough that the strip of tape that wraps around the bundle can just cover it with no gaps.

The same goes for where you place the rubber band and twine around the bundle. If it is more towards the middle of the bundle's length, then you will need a second wrap of tape to cover all the gaps. This use of extra tape can cause you to need almost twice as much duct tape, costing you a lot more money

Tied under the eaves of a roof.

Tied to a tree branch.

Now the bundles are ready to be put out for the native bees to use. Tie them securely so that they don't swing around in the breeze. The open end of the tubes should face east so that the morning sun can shine in to warm the bees. If not, facing south is good. Tip the open end down just a bit so rain water can't run into the tubes and get everything wet.

Be patient. It may take a couple of years for these little bees to find this new home you have made for them. But they will come. And soon you will find the tubes sealed up with mud, pieces of leaves and grass.

Please note:  In 2020, I enrolled into the Rutgers Environmental Steward program.  It is a 20 week course covering environmental topics affecting New Jersey.  In order to get certified, I had to complete an internship project of my choosing.  Wanting to help native bees, I created Give A Bee A Home, an informational packet containing fact sheets, brochures and 2 bamboo nesting tube bundles to inform people about the importance of native bees and the little things people can do to make a big difference in a native bee's life.  1,000 packets were given out, so I needed 2,000 bamboo nesting tube bundles.  It required 18,000 bamboo tubes, 3 pounds of #32 rubber bands, 5,000 feet of baler twine and 3,300 feet of duct tape in 6 colors.
Please scale it to the amount of bundles you want to make.

Thank you for wanting to help native bees.

Photo Credits:  Theodora Wang and Roseann Greenberg