

How to Build BAT HOUSES

Safe homes for important flying mammals!

HOW DO YOU BUILD A BAT HOUSE?

DESIGN	Ensure the design provides multiple compartments and a rough surface for bats to cling to. Make sure you caulk the edges. The more chambers the better, and do not use mesh.
COLOR	Paint the house in a dark shade if you live in a cooler climate to absorb heat, and a lighter shade if you live in a hotter climate to reflect heat. Avoid oil-based stain/paint.
SIZE	A larger bat house can accommodate more bats, ideally at least 24 inches tall, 16 inches wide, and 3-6 inches deep.



WHERE SHOULD I INSTALL THE BAT HOUSE?

HEIGHT	Mount the bat house at least 10 feet (ideally 12-20 feet) above the ground on a building. Buildings work best because they will keep the bat box a nice stable temperature, but posts with boxes mounted back-to-back are a good second choice.
SUN EXPOSURE	Ensure it gets at least 6-8 hours of direct sunlight. Trees are not a good place to mount because of shade and predators.
LOCATION	Place it within 1/4 mile from a water source such as a pond, lake, creek, or trough, but avoid areas with bright lights. Make sure there is 10 to 14 feet of clearance, and it is 20 feet from any trees.



WHEN WILL BATS OCCUPY THE HOUSE?

TIMING	Bats may take several months to a few years to occupy a new bat house. They will be more likely to move in the first spring if you place it in the fall.
SPACING	Bats are less likely to move in during the winter as they look for more stable climates. Bats will move in during spring, summer, and fall.
PATIENCE	Be patient and monitor the house regularly for signs of bat habitation. Monitor by looking for the presence of guano (bat poop!) or listen for bat sounds.

BLUEPRINTS & KITS

MAKE YOUR OWN BAT HOUSE

It's important to choose a safe and vetted bat box so you don't harm the bats. These plans were created by Bat Conservation International, Inc. (BCI) and were recommended by Montana Fish, Wildlife, and Parks. The pictures and steps after this section follow the same blueprints. More chambers provide more cozy places for bats and help the box maintain a more stable temperature.

BLUEPRINTS FOR A FOUR-CHAMBER BAT BOX

<https://bit.ly/four-chamber-bat-box-plans>

USE A PRE-CUT KIT TO KICKSTART YOUR PROJECT

If you don't have power tools, this pre-cut kit from Habitat for Bats is a great choice. It meets all the criteria we listed above, meaning it's safe and comfy for bats. If you're looking for a different kit or pre-built house, choose one that is certified by Bat Conservation International, Inc (BCI).

FOUR-CHAMBER BAT HOUSE KIT

<https://bit.ly/habitats-for-bats-kit>

BUILDING INSTRUCTIONS

The pictures and steps in this section illustrate the instructions from Bat Conservation International's plans for a Four-Chamber Nursery Bat House. The instructions are created by BCI, with notes and tips added to demonstrate the building process. See the original text and sawing diagrams online: <https://bit.ly/four-chamber-bat-box-plans>

MATERIALS



These are all the materials to make two four-chambered bat boxes. We chose two paint colors, but this was optional. Paint shade influences the internal temperature of the boxes, and using two shades lets the bats choose whether to be in a warmer or colder box. We also had a leftover gallon of dark stain which is more than needed for this project.

One pound of coated deck screws, 1 5/8"

20 to 25 coated deck screws, 1 1/4"

20 to 25 exterior-grade screws, 1"

One quart water-based stain, exterior grade (one gallon pictured)

Two quarts water-based paint & primer, exterior grade

One tube paintable latex caulk

1/2 sheet (4' x 4') 1/2" outdoor-grade plywood

1/2 sheet (4' x 4') 3/8" outdoor-grade plywood

Two 1" x 6" (3/4" X 5 1/2" finished) x 8" pine or cedar

Two 4" wooden bat cutouts, 1/4" thick with two 3/4" screws (optional)

RECOMMENDED TOOLS



This is a picture of tools we used. Safety glasses, work gloves, and ear protection are not included in the original instructions, but we added them as essential safety gear. A few of the tools we used are not pictured, as noted below. Many tools such as saws and sanders can be rented from a hardware store. You might also be able to pre-cut lumber at the hardware store.

Sawing diagrams (<https://bit.ly/four-chamber-bat-box-plans>)

Personal safety equipment

Circular saw

Table saw (not pictured)

Miter saw (not pictured)

Paintbrushes (or small roller, not pictured)

Paint tray

Stain applicator

Caulking gun

Tape measure

Variable-speed reversing drill

Screwdriver bit for drill

1 1/2" hole saw

Sander (not pictured)

CONSTRUCTION STEPS

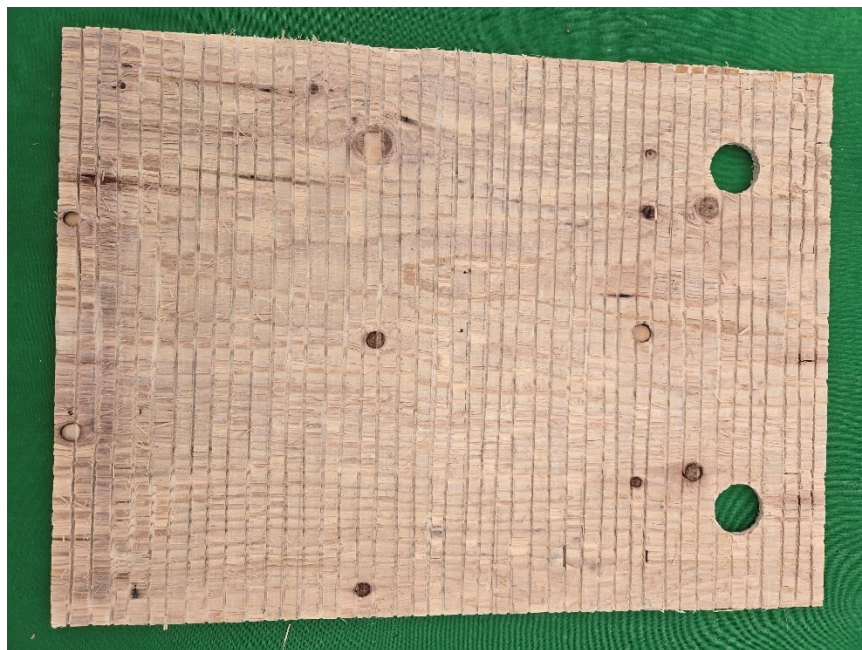
1

Measure, mark, and cut out all wood according to the sawing diagrams.



2

Roughen interior and landing surfaces by cutting horizontal grooves with the circular saw, 1/2" apart, cutting 1/32 to 1/16" deep. DO NOT USE MESH AS PUPS (BABY BATS) CAN BECOME ENTANGLED.



3

Apply two coats of dark, water-based stain to interior surfaces. Do not use paint as it will fill the grooves.



4

Attach both sidepieces to the back, caulking first. Use 1 5/8" screws. Make sure the top angles match. The picture below shows the left side attached. See both sides in the next step.



5

Attach 5" and 10" spacers to inside corners per drawings. Use 1" screws. DO NOT BLOCK SIDE VENTS.



6

Place the first roosting partition on spacers even with the bottom edge of the roof. Place 20" spacers on the partition and screw to first spacers (through the partition), using 1 5/8" screws. Repeat this step for the other partitions and spacers.



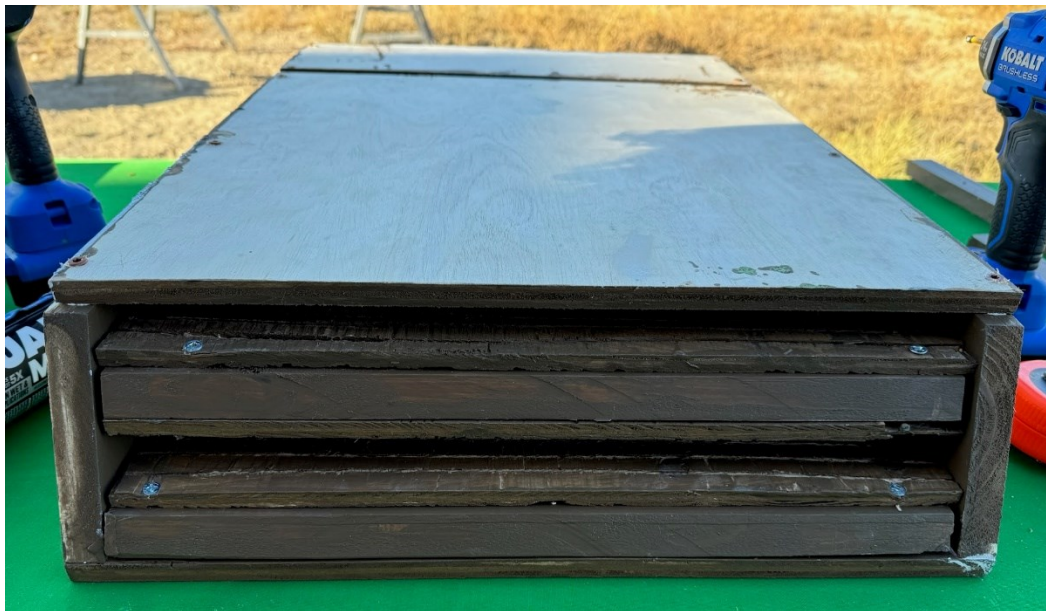
7

Attach the front panels to the side panels, starting with the top piece. Be sure the top angles match, and sand if necessary. Caulk all seams. Leave a 1/2" vent space between the top and bottom front pieces. If the sides have flared during construction, a bar clamp may be useful.



8

Attach the roof supports to the top inside of the back and front partitions with 1" screws. **DO NOT LET SCREWS PROTRUDE INTO ROOSTING CHAMBERS.**



9

Caulk around all top surfaces, sanding first if necessary to ensure a good fit with the roof. Attach roof to sides and roof supports with 1 1/4" screws, and finish by caulking around the roof and side joints to protect the bats from any wind or rain that might get into the box.



10

After the caulk dries, paint the exterior with three coats of paint. Note, you might want to sand any excess caulk, debris, or wood imperfections for a smoother finish. See the BCI plans for a map of suggested colors, but darker tends to be best for cooler climates.





OPTIONAL: While the paint dries, paint your 4" wooden bat cutouts with exterior, water-based paint, preferably in black but whatever you have on hand will work. Once all paint has dried and cured for 24 hours, attach the bats to the house using a dollop of wood glue on the back of the bat and a 3/4" screw.



FINISHED BAT BOXES!



This resource was created by Eleanor Kamp for the Montana State Library's virtual Bat Week program as part of her Girl Scout Silver Award project, "The Freaky Fungus Among Us: Protecting Bats from White-Nose Syndrome."

RESOURCES

Bat Conservation International, Inc. (2024, March 7). Bat Gardens & Houses.
<https://www.batcon.org/about-bats/bat-gardens-houses>

Montana Fish, Wildlife, & Parks. (2021, April 21). Living with bats: Montana FWP.
<https://fwp.mt.gov/conservation/living-with-wildlife/bats>

Montana Natural Heritage Program. (n.d.). (Family) Bats.
<https://fieldguide.mt.gov/displaySpecies.aspx?family=Vespertilionidae>