



Barn Owl Nest Box

Construction and

Installation

The barn owl is a nocturnal species that occurs in open habitats where it preys on rodents and other small mammals. Although they are one of the most widely distributed birds in the world (found on all continents except for Antarctica), they are listed as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan, due to local decline. Nest site availability is a limiting factor for barn owl populations and providing thoughtfully placed nest boxes to barn owls may increase nest numbers.



Is your property suitable for barn owls?

Large, contiguous tracts of land which contain open habitats (grassland, fallow fields, hayfields, pasture, open marshes, savannah, and to some extent, cropland) are ideal for barn owls. At least 35 acres of open habitat is probably necessary to support a nesting pair. Barn owls tend to avoid forested areas, but will sometimes nest near the edge of town.

Abandoned or seldom-used barns are probably the best location to install a nest box. However, if you have no barn or outbuilding in which to install a barn owl box, you may consider mounting one on a sturdy pole. We do not recommend putting barn owl nest boxes on trees since, too often, they attract non-target species (e.g. squirrels).

Barn owls are more common in central and western Kentucky and nest boxes placed near where barn owls are known to exist have a higher likelihood of success. You can find the latest range map for barn owls in Kentucky here: <https://fw.ky.gov/Wildlife/Pages/Barn-Owls-in-Kentucky.aspx>



What to expect if your nest box becomes active:

Kentucky barn owls can nest at any time of year, but nesting usually occurs from mid-March through August. Minimize disturbance around the nest site during the nesting period.

Barn owls will usually return to the same nest site year after year. Clean out boxes when the owls are not nesting. Between September and February is usually a good time for a careful check and subsequent cleaning if the owls are not nesting. Box cleaning is not required but can help reduce parasites and prevent the box from filling up with debris.



As each box is installed, please e-mail GPS coordinates (or address/location description), installation date, and landowner contact information to Kate Slankard (kate.slankard@ky.gov). If you notice barn owl nest activity, please contact Kate (1-800-858-1549) to let her know so the data can be included in our long-term research project.

Construction

Below, we describe a barn owl nest box design that is relatively easy to construct and install in a variety of situations, is durable, sturdy, relatively lightweight, and easily maintained. Be sure to read this entire document before beginning construction so you'll have a basic understanding of the end product and hopefully there will be no surprises as you build and install your nest box.

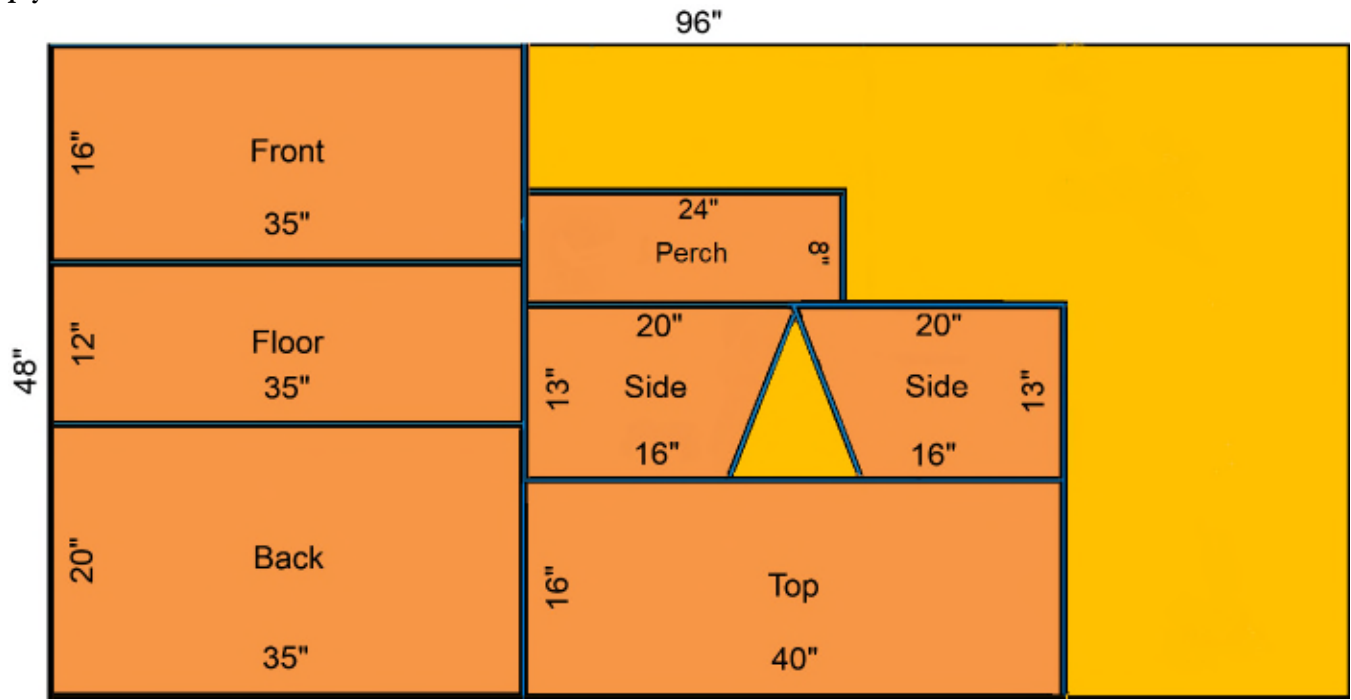
Wood and Hardware Required:

- 3 – 2" x 2" x 8'
- 1 – 4' x 8' sheet of 1/2" A/C exterior plywood – Use B/C exterior plywood if necessary but its longevity may be diminished slightly depending on type of installation (sheltered or unsheltered). DO NOT use chemically treated plywood.
- 1 – Package of 2, 1-1/2" galvanized hinges
- 1 – pound box of 1-5/8" exterior wood screws
- 8 – 2-1/2" exterior wood screws
- 4 (at least)- 9" x 11-1/2" metal shelf brackets, rated for at least 50lbs each

Cut From 2" x 2" stock:

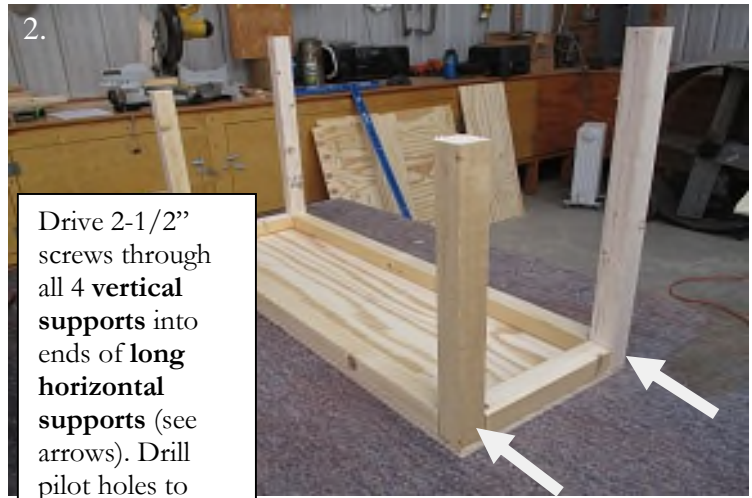
- 4 – 32" (Long horizontal supports)
- 4 – 9" (Short horizontal supports)
- 2 – 15-1/2" (Short vertical supports)
- 3 – 19" (2 long vertical supports and 1 doorstop for access door)
- 1 – 8" (1 foothold for end of perch)

Cut From 4' x 8' x 1/2" plywood: The illustrated plywood sheet shown below is to show the shapes and dimensions of the various pieces, and not to necessarily dictate how the pieces are to be laid out on your plywood.

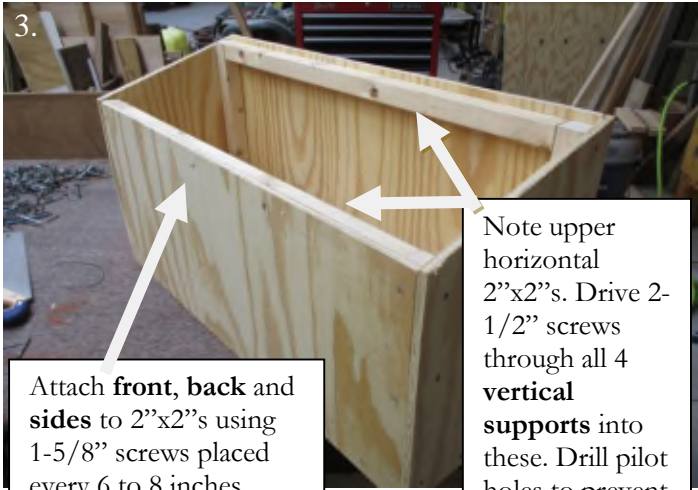




1. Drive 1-5/8" screws through plywood floor into 2"x2" supports. Note the placement of the 2"x2" supports. Use a "C" clamp as an extra hand while driving screws.

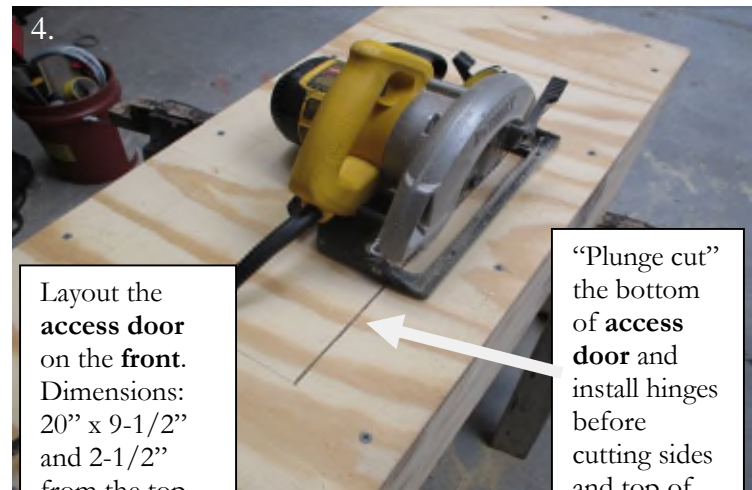


2. Drive 2-1/2" screws through all 4 vertical supports into ends of long horizontal supports (see arrows). Drill pilot holes to prevent splitting.



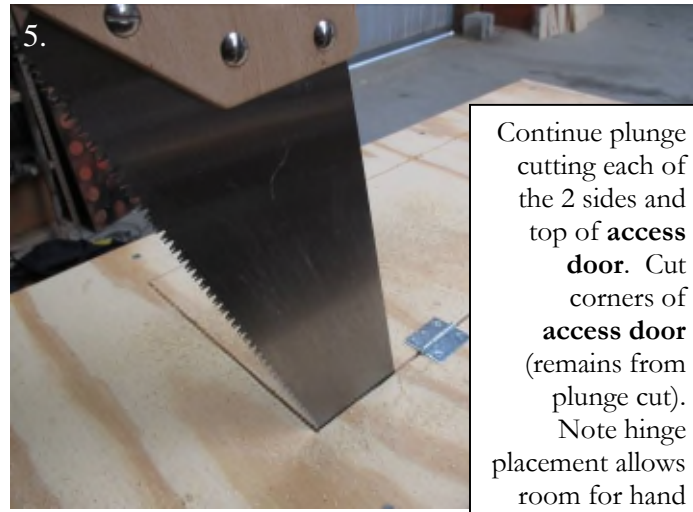
3. Note upper horizontal 2"x2"s. Drive 2-1/2" screws through all 4 vertical supports into these. Drill pilot holes to prevent splitting.

Attach front, back and sides to 2"x2"s using 1-5/8" screws placed every 6 to 8 inches.



4. Layout the access door on the front. Dimensions: 20" x 9-1/2" and 2-1/2" from the top of the front.

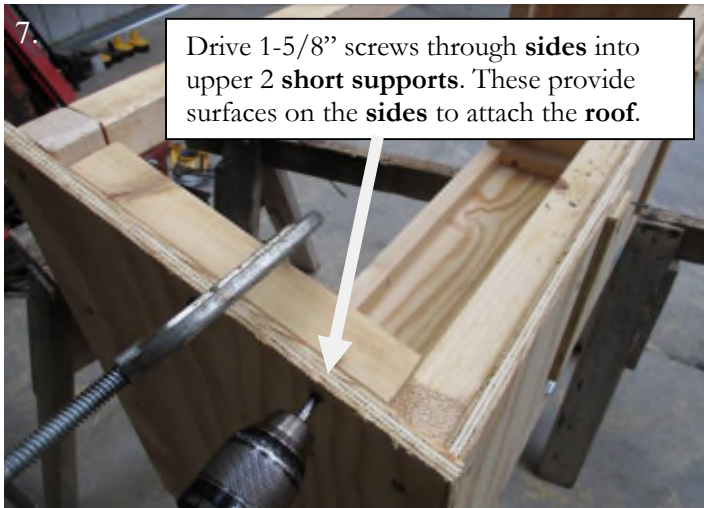
"Plunge cut" the bottom of access door and install hinges before cutting sides and top of access door.



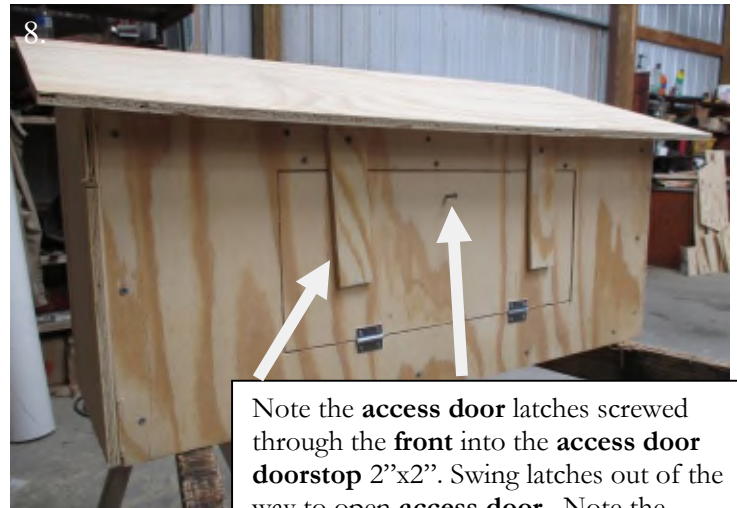
5. Continue plunge cutting each of the 2 sides and top of access door. Cut corners of access door (remains from plunge cut). Note hinge placement allows room for hand saw.



6. Drive 1-5/8" screws through plywood into 2"x2" doorstop. Use a "C" clamp as an extra hand.



7. Drive 1-5/8" screws through **sides** into upper 2 **short supports**. These provide surfaces on the **sides** to attach the **roof**.



8. Note the **access door** latches screwed through the **front** into the **access door doorstop** 2"x2". Swing latches out of the way to open **access door**. Note the partially driven screw at the top of the **access door**. Assists with opening and closing.

Additional construction tips:

- Always drive screws through the plywood first, then into and terminating in the 2"x2" supports for maximum holding strength.
- For this project, the only time that rule isn't followed, is when driving the 2-1/2" screws through the **vertical supports** and into the **horizontal supports**. Remember to drill pilot holes into the supports before driving screws into them to prevent splitting.
- For sheltered installation (e.g. inside a barn), there is no need to varnish or paint the exterior. For unsheltered installation, consider exterior varnish or a light-colored exterior paint applied only to the outside of the box. Leave the interior unfinished.
- Drill six or eight holes in the **bottom** to allow drainage and increased airflow. Holes should not exceed 1/2" diameter.
- The **top** measurements shown above will provide an approximately 2-1/2" overhang over the **front** and each **side**. Typically, the **top** is attached even with the **back** (i.e. no overhang) to allow the box to be installed flush against a structure.
- If planning to cut the **entrance** in the front of the box, open the **access door** before cutting the 5-1/2" square entrance. The **access door** opening and the 5-1/2" square **entrance** can be connected.
- If planning to cut the **entrance** in the front of the box, align the top edge of the **entrance** with the top edge of the **access door**
- Use a wood rasp or coarse sandpaper to remove splinters and smooth rough edges.
- If the ends of any screws are protruding into the box interior, cut them off, so they do not injure young owls.
- Upon reviewing the example installation pictures below, you may notice there is only 1 latch on each **access door**. We now recommend using 2 latches for additional predator deterrence.

Installation

Site Selection Tips:

- Foraging habitat is essential. The chance of a barn owl using the box increases if open habitat is plentiful in the area. Do not place the nest box in the woods.
- The barn owl box should face an area where you would expect a barn owl to hunt (open habitat), so that it is noticeable. Be sure it has a very open, conspicuous entrance. Barn owls do not prefer forested habitat, so do not face the box towards the woods.
- Avoid placing the box in an area where vines and other vegetation could grow up around the box entrance.
- If possible, it is better to face the box entrance north or east to avoid the afternoon heat.
- The area in front of and below the nest box entrance may become messy with “whitewash.” Consider the direction the owls will fly from the box entrance and do not install nest boxes directly above where you store equipment or other items you don’t want to get dirty.
- Be sure to consider future accessibility to the box. Future repairs and maintenance may be necessary, or Kentucky Department of Fish and Wildlife Resources (KDFWR) personnel may wish to access the box for banding young.
- Try to keep the nest box out of reach of raccoons and other predators, if possible.
- If your barn/outbuilding is not well ventilated and gets hot in the summer, place the box where air can flow above and below the box.
- Think about human disturbance when choosing a site. Do not install boxes immediately next to roads or driveways, as cars can easily hit disoriented fledglings.

Installation Examples:



The exterior entrance is a 5-1/2” square hole cut into barn siding providing access to the box. Note the **perch** below attached with a shelf bracket.



Inside view of the same installation. The nest box rests on and is attached to heavy-duty metal shelf brackets capable of supporting at least 50lbs each. It also sits on and is screwed into the horizontal part of the barn structure. Not seen in this view is another shelf bracket attached to the top of the side of the nest box and the barn siding. Orient all shelf brackets so screws will extend into the 2”x2” supports and not into the living area. Note that for this installation the **back** should be left off and the actual barn siding will serve to enclose the box. A “**backless**” box is lighter and easier to install.



Note the upper bracket installed sideways to help hold the box tightly to the barn wall.

On outside of barn with 5-1/2" square entrance cut into **front** alongside of **access door**. Note the **top** overhang on this unsheltered installation. Note that for this installation the **back** could be removed and the barn siding could serve to enclose the box. A "**backless**" box is lighter and easier to install. Note the **perch** just below the entrance. Here, the perch extends under the box and is attached with 1-5/8" screws through the perch into the plywood bottom and extending into the 2"x2" support.



Inside a barn with 5 -1/2" square entrance cut into box. Use this installation type only when you are ABSOLUTELY SURE the barn will remain open to the outside, so the owls will not be inadvertently trapped in the barn. Note lack of overhang on roof on this sheltered installation.



On a pole with a 5-1/2" square entrance cut into box. Note overhang on this unsheltered installation. The pole extends to the top of the **back** so the box is attached with screws to the side of the pole. In addition, the box is sitting on heavy-duty metal brackets (illustrated here for clarity) that are attached to pole and the bottom of the box in a splayed orientation.

Installation (contd.)

Additional general installation tips:

- Install shelf brackets first. Cut a scrap board to 35" (the width of the box) and use that board to insure the brackets are spaced properly. If desired, use a small level placed on the scrap to level the brackets.
- Exercise caution! Carrying a nest box up a ladder can be extremely hazardous. Examine and pursue other methods, including using a rope and pulley setup to allow raising the box from the ground, or a tractor with a bucket to raise the box. Also, recruit at least one other person to assist. Safety First!
- To avoid weather damage on unsheltered installations, put a coat of exterior varnish or a light-colored exterior paint (to reflect heat) on the outside surface of the box. Leave the inside unfinished.
- There is no need to add shaving or nesting material to the nest box. Owls will use their own pellets to pad the eggs.
- After installing the box, check the inside once more for nails or screws that may be protruding into the new box. File or grind smooth any found.

Additional pole installation tips:

- Be sure the pole will be surrounded by open habitat. Do not install the pole in the forest.
- The pole should be in an area where you do not expect climbing vines or other vegetation blocking the entrance. An occasionally mowed area is fine.
- Wrap the pole with sheet metal, at least 2 feet wide and about 4-6 feet from the ground, to keep possible predators out of the box.
- Hang the box at least 15 feet high. Make sure the pole is long enough to allow at least 3 feet in the ground.
- The pole needs to be sturdy enough to lean a ladder up against it.
- Salvaged power poles work well for sturdy installations.
- DO NOT place barn owl boxes on active power poles!