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# Build Nest Boxes for Wild Birds

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Oregon has 45 species of birds that nest in holes (cavities) in rotting or dead trees (snags). But, though they are very valuable for wildlife, many snags in urban areas are cut down and removed for aesthetic reasons or because they are considered a hazard. If you have some dead trees in your yard, you can make them safer by cutting off their tops and cutting back the branches.

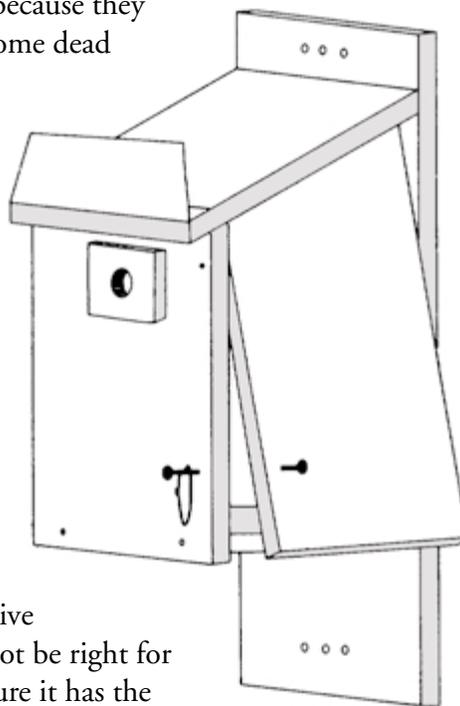
If you have no snags in your yard, you can help replace the loss of natural cavities by adding nest boxes. Nest boxes are a great way to attract wild birds to your yard. They provide birds shelter and a place to raise their young. Some birds that use nest boxes are chickadees, wrens, bluebirds, swallows, wood ducks, and owls.

There are many kinds of decorative birdhouses for sale. But, they might not be right for use. Before you buy a birdhouse, be sure it has the correct dimensions and other features important for birds' welfare and safety.

Or, you can build your own nest boxes. Building your own nest box can be fun and rewarding for you and for children.

## Materials

The best hardware for nest boxes is brass or galvanized wood screws or #7 galvanized nails. Screws are recommended, because they make it easier to fix mistakes and replace damaged parts.



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Do not use treated, stained, or painted lumber. Toxic fumes may harm the birds, and paint fills the pores and reduces the insulating capacity of the wood. Exterior plywood that is  $\frac{5}{8}$  inch thick works well. Or, you can use 1-inch-thick pieces of cedar or redwood. Cedar and redwood have natural preservatives.

For all types of wood, use straight boards with few knots and split ends. If you want a more natural-looking box, you can attach pieces of bark and moss to the outside.

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### Checklist of tools you need to build a nest box.

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- Electric or cordless drill
  - Awl
  - Tape measure
  - Saw
  - Wood rasp or sandpaper
  - Screwdriver and/or hammer
  - Galvanized or brass screws or galvanized nails
  - Carpenter's square
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## Construction

Nest boxes can be very simple in design. The most important features are the size of the box and the entrance hole.

Check that the dimensions of the box are right for the bird species you wish to shelter (see Table 1, page 4). Cut the wood into pieces with the correct dimensions. Figure 1 shows the dimensions and specifications for a basic songbird nest box.

The easiest way to make the entrance hole is to use a hole saw of the correct size attached to a power drill. You also can make an entrance hole with a jigsaw after drilling a start hole, or by drilling many holes within the

entrance hole circumference and filing them down with a wood rasp or file. Be sure the dimensions are correct and the entrance hole is smooth.

Pre-drill screw holes with a drill bit slightly smaller than the screw or nail. This prevents the wood from splitting. Drill all holes before you assemble the box. Roughen the inside surfaces of the box pieces with a wood rasp or sandpaper before you put them together.

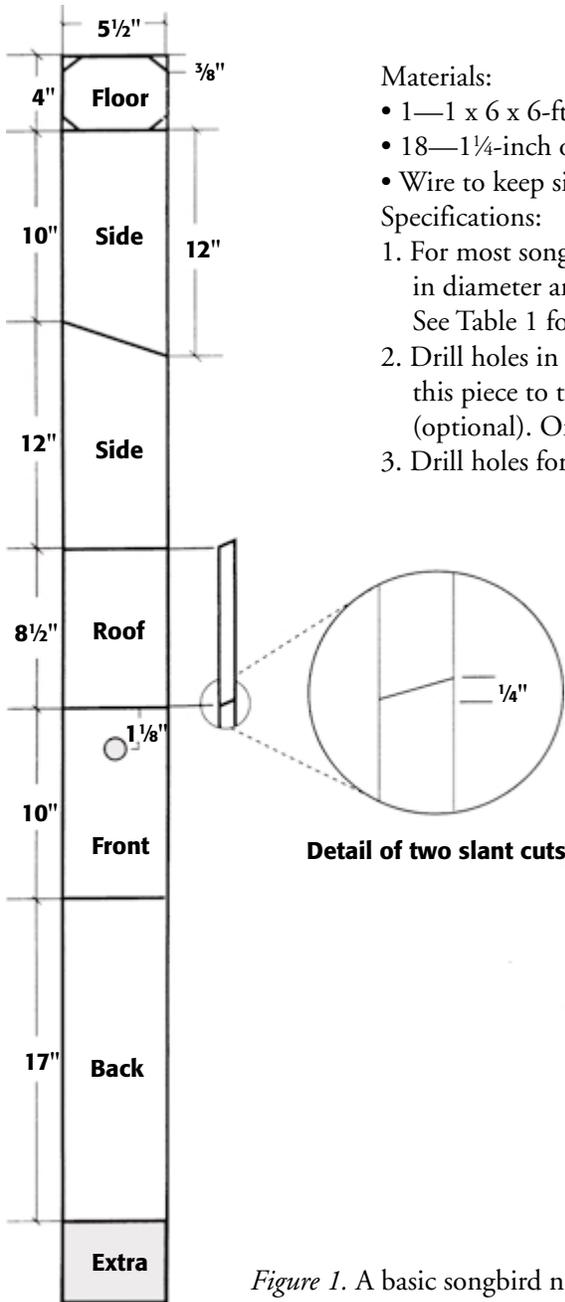
Cut  $\frac{1}{8}$ -inch grooves on the inside of the front panel with an awl or hammer claw. These grooves enable young birds to climb out of the box when they are ready to leave the nest (to **fledge**). Drill several  $\frac{1}{4}$ -inch holes in the bottom of the box to allow water to drain, and at least two  $\frac{1}{4}$ -holes in the sides of the box near the top for ventilation.

Use two pivot screws or nails to pin the top of one of the sides. This allows it to hinge open so you can clean the box inside (see "Maintenance," page 6). Be sure the pivot screw on the opposite side is at the same level as the one in front, so the side will open easily. Use two screws and a wire to keep the side closed firmly, as shown in Figure 3 (page 5).

Follow the assembly order shown in Figure 2 for putting the box together. Figure 3 shows more design ideas.

## Finishing touches

You can line the bottom of your finished box with an inch of nesting material such as wood shavings or wood chips. Some birds will use the material itself for nesting, and others will build their nest on top of it. Do not use sawdust, because it soaks up water and gets matted down.



Materials:

- 1—1 x 6 x 6-ft rough cedar, redwood, or plywood board
- 18—1 1/4-inch outdoor wood screws or #7 galvanized nails
- Wire to keep side door shut

Specifications:

1. For most songbirds, the hole must be exactly 1 1/2 inches in diameter and 1 1/8 inches from top.  
See Table 1 for dimensions for specific birds.
2. Drill holes in the floor to allow for drainage, and attach this piece to the sides 1/4 inch up from the bottom (optional). Or, cut corners 3/8 inch (see diagram).
3. Drill holes for ventilation near top.

Figure 1. A basic songbird nest box.

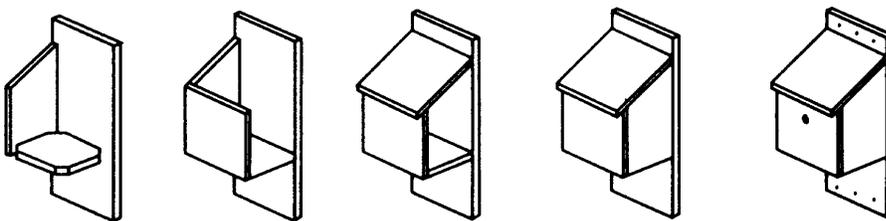


Figure 2. Assembly sequence.

**Table 1. Nest box dimensions (in inches) and placement recommendations for common bird species of the Pacific Northwest.**

Species	Bottom	Top	Side height	Entrance diameter	Distance of entrance from floor	Placement
American kestrel	8 x 8	12 x 8	12–15	3	9–12	10–30 ft high in open area or edge of a forest
Barn owl	18 x 18	22 x 18	15–18	6	4–6	12–18 ft high in open area
Black-capped chickadee	4 x 5½	8 x 5½	8	1–1½	7	6–15 ft high at edge of a forest
Chestnut-backed chickadee	4 x 5½	8 x 5½	8	1–1½	7	6–15 ft high at edge of a forest
Downy woodpecker	6 x 6	10 x 6	9	1¼	7	5–25 ft high on dead tree at edge of a forest
Hairy woodpecker	6 x 6	10 x 6	12–15	1½	9–12	5–25 ft high on dead tree at edge of a forest
House wren	4 x 4	8 x 4	6–8	1	4–6	6–10 ft high near dense underbrush
Northern flicker	10 x 10	14 x 10	16–18	2½	14–16	5–25 ft high on dead tree at edge of a forest
Northern saw-whet owl	8 x 8	12 x 8	12–15	3	9–12	5–20 ft high in forest near lake, stream, or wetland
Purple martin	6 x 6	10 x 6	6–8	2¼	4–6	10–20 ft high in riparian zone
Red-breasted nuthatch	4 x 4	8 x 4	8	1¼	7	5–15 ft high in open area or at edge of a forest
Tree swallow	5 x 5	9 x 5	6–8	1¼	4–6	6–15 ft high in relatively open area near lake, stream, or wetland
Violet-green swallow	5 x 5	9 x 5	6–8	1¼	4–6	6–15 ft high at edge of a forest
Western bluebird	5 x 5	9 x 5	8–12	1½	6–10	4–10 ft high near open area
Western screech owl	8 x 8	12 x 8	12–15	3	9–12	10–30 ft high in forested area
White-breasted nuthatch	4 x 4	8 x 4	8	1¼	7	5–15 ft high in open area or at edge of a forest
Wood duck	12 x 12	16 x 12	22–26	3 high, 4 wide	18	10–20 ft high next to a body of water

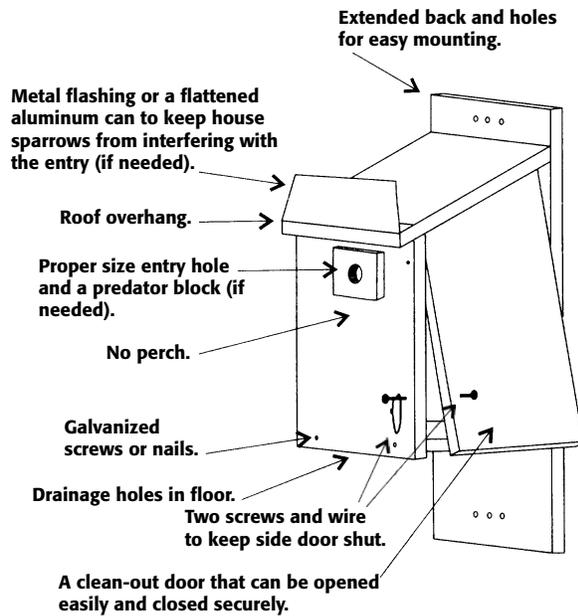


Figure 3. A nest box designed to keep birds warm, dry, and safe from predators.

## Where to place the box

Place the nest box where it is easy to mount, clean, and inspect. Put it on a sturdy support at least 6 feet off the ground, in a spot that allows birds safe and easy access (see Table 1).

Put the box in a spot that gets morning sun but is protected from afternoon heat. Be sure the place is sheltered from heavy winds so rain won't be blown into the entrance hole.

It might take a while for birds to use your nest box. Don't be discouraged! If birds haven't used your box after the first year, try moving it to a different spot. Try putting up several boxes. This gives birds more choices, and you'll find out which spots they prefer.

## When to put up the box

The best time to put up your box is in February or March for birds that begin nesting in early spring. Observe the behavior of the species you're interested in. Note their arrival time and when they start using the box. Continue to monitor your nest box to be sure predators or competitors do not become a problem.

## Competition for nesting space

European starlings, English house sparrows, and many squirrels are cavity nesters and often compete for nest boxes. The size of the entry hole is the most important way to keep out larger species. For example, starlings cannot fit into a box with a 1½-inch or smaller opening.

House sparrows defend their nests very aggressively and are difficult to exclude. Remove their nest again and again until they give up and go somewhere else.

Another way to protect the nest is to attach a piece of metal roof flashing that extends upward several inches from the top of the box (see Figure 3). This keeps sparrows and other birds from attacking the nesting birds, and makes access to the entrance hole more difficult for them.

To prevent competing animals from enlarging the hole, attach a piece of metal with a hole the same size as the entrance on the front of the box. Be sure to file down the edges so they are not sharp.

## Protect from predators

Cats, raccoons, snakes, crows, starlings, and house sparrows are the main predators of nesting birds. To protect the entrance, make a

predator block. Attach a block of wood 1 inch thick with a hole the same size as the entrance hole over the front of the box (Figure 3). This creates a short tunnel, which helps prevent other creatures from reaching easily inside the box. Be sure to sand the hole in the block to keep it smooth.

A **baffle** is another kind of predator guard. Place a baffle around a tree or post above or below the nest box to keep mammals from gaining access to it. You can buy baffles at specialty bird shops or home and garden stores. Or, you can create them from a piece of sheet metal or a stovepipe (Figure 4).

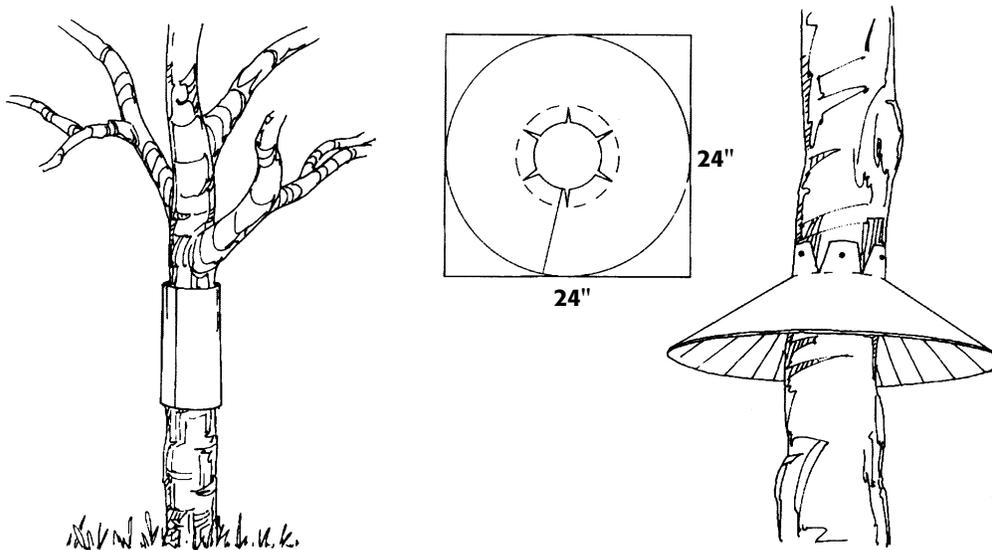
Be sure there are natural or artificial perches nearby, such as a dead tree, a branch, a pole, other vegetation, or a manmade structure, so nesting birds can survey the area before entering the nest box. Do not place perches on nest boxes, because they allow easier access for predators.

## Maintenance

The best time to clean nest boxes is during late winter before birds begin nesting. Do not try to clean or fix a box while birds are nesting in it.

When you clean a nest box, be sure to do the following:

- Remove old nesting material.
- Unclog drainage holes, entrance holes, and air holes.
- Make sure screws and nails fit properly.
- Do not use insecticides. If necessary, wash out the box with hot water to remove bird droppings or insects.
- Watch out for bees. If bees invade the nest box, avoid the box until they are gone.



*Figure 4.* Place a stove pipe or piece of sheet metal around a tree or post to keep mammals away from your nest box. Or, cut a baffle from a piece of sheet metal.

## For more information

### OSU Extension publications

See these other publications in The Wildlife Garden set:

*Attract Hummingbirds to Your Garden,*

EC 1541 (2002)

*Attract Reptiles and Amphibians to Your Yard,*

EC 1542 (2002)

*Create a Garden Pond for Wildlife,* EC 1548  
(2002)

*Create a Butterfly Garden,* EC 1549 (2002)

*Feed Wild Birds,* EC 1554 (2002)

*Create Roosts for Bats in Your Yard,* EC 1555  
(2002)

*Reduce Deer Damage in Your Yard,* EC 1557  
(2002)

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### Other publications

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