

Providing nesting areas for wildlife is a popular and growing hobby for many Americans. Building houses according to the proper specifications, placing them in the right habitat, and maintaining them can benefit both bird and mammal populations. However, if they are not monitored for detrimental species such as the house sparrow, they may actually do more harm than good.

Building Nesting Boxes & Platforms



It is important to realize that not all birds and mammals nest in cavities. Many birds, like the American robin or meadowlark, either build cup-shaped nests in trees or nest on the ground. The nest box plans that are found in this publication are specific to wildlife that utilize a cavity, either within a dead or dying tree or a man-made structure such as a nest box.

Cavity nesting birds will accept any kind of nest box that they can enter. Before deciding on what kind of nest box to build, there are considerations which should be taken – the size of the entrance hole, interior dimensions, proper ventilation, and the capability to open the nest box for monitoring and cleaning. Do not construct a box for “birds” in general as most species require different sized houses and entrance holes. The following guidance and construction plans will provide specific plans for most common species.

For all practical purposes, wood is the only appropriate building material to use. Wood is a natural material with good insulating properties. Plastic and metal often overheat. Green “pressure-treated” lumber is impregnated with copper arsenate as a preservative. If the chemical is not applied perfectly, the wood is toxic to birds and humans. Exterior grade plywood contains dangerously high levels of formaldehyde and therefore is also not the best choice. The best woods to use are rough cut cedar or redwood. They naturally resist deterioration when exposed to sun and rain and the weathered look is inconspicuous and attractive.

Never paint or stain the inside of a nest box. If you want to paint the exterior, close up the box and paint only what you can see. Use an exterior grade latex paint and give the top a second coat. Choose a light shade which reflects most heat or a natural color such as green, tan, or gray. A heavy grade of linseed oil stain works well also. Houses that blend in with their

surroundings are more appealing than brightly painted boxes and less likely to draw the attention of human vandals.

Nest boxes can be mounted in several ways. They may be attached to existing wood or metal fence posts, power or telephone poles, existing trees, or on wood or metal posts or pieces of pipe used specifically for this purpose. Utility poles are often suitable for mounting nest boxes; however, permission should be obtained from the utility companies before this is done. Discretion should also be used before mounting to trees. Do not place bird boxes designed for bluebirds on trees because this invites competition from too many other species.

Predator-proofing should be considered for all bird nest boxes that are not mounted on steel fence posts or pipe. A piece of sheet metal, tin, or used aluminum plates from newspaper offices serve well to prevent predators from climbing wooden posts. Sheets should be stapled or screwed on around the outside of the wood post at least 12" high. The bottom of the guard should be at least 2 ft. above ground level.

Do not put perches on any bird houses. Only the unwanted house sparrows and starlings prefer perches. If house sparrows or starlings begin nesting in a bird house, tear out the nest material as these species are not protected by state or federal law. Nests may need to be removed numerous times before these birds abandon their efforts.

Good sanitation and maintenance of the nest box at the end of the breeding season are your best defenses against ectoparasites and other insects. To repel blowflies, wasps and ants during the breeding season, some researchers recommend using a pyrethrin insecticide as the safest pesticide.

Contents

Tree Swallow and Eastern Bluebird	3
Peterson Bluebird House	4
House Wren, Black-capped Chickadee, White-breasted Nuthatch	7
American Robin and Barn Swallow	8
Northern Flicker	9
American Kestrel, Northern Screech-owl, Gray Squirrel, Red Squirrel, Fox Squirrel	10
Small Bat House	11
Johnson Bat House	12
Wood Duck and Hooded Merganser	13
Raccoon and Common Merganser	14
Entrance Hole Sizes for Duck, Merganser and Raccoon Nest Boxes	15
Entrance Hole Sizes for Songbird, Woodpecker, and Squirrel Nest Boxes	16
Canada Goose Nest Platform	17
Mallard Nest Basket	18
Mourning Dove Nest Basket	19
Great Blue Heron Nest Platform	20

*Written by Chris Grondahl & John Dockter,
North Dakota State Game & Fish Department.*

*Special thanks to Carrol Henderson of the Minnesota Department
of Natural Resources for the nesting box and platform plans and to the
Northern Prairie Wildlife Research Center.*

*WindStar Wildlife Institute is a national, non-profit,
conservation organization whose mission is to help individuals and families
establish or improve the wildlife habitat on their properties.*

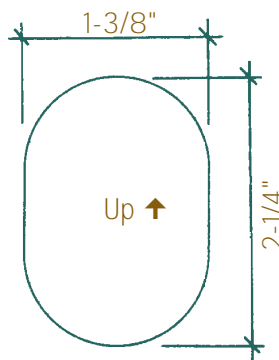
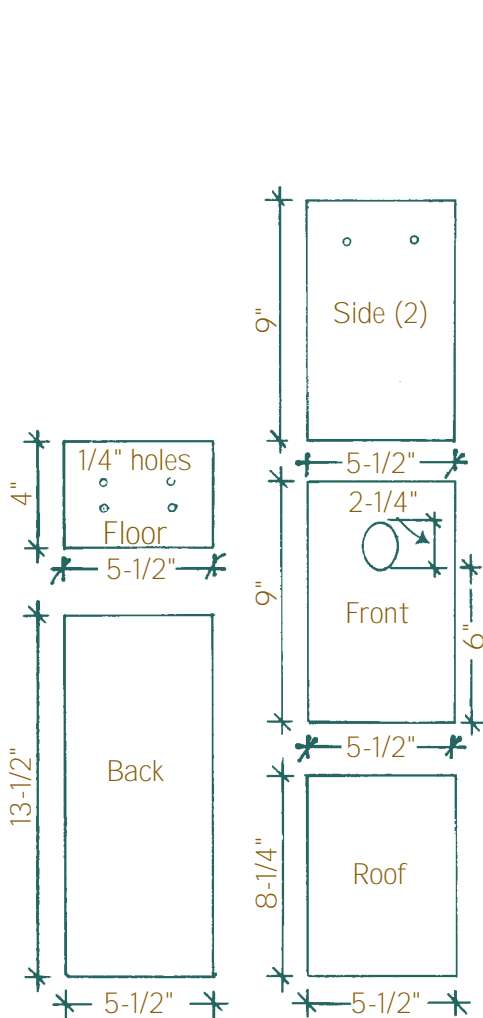
*For more information or for the name of a Master Wildlife Habitat
Naturalist in your area, please contact:*

*WindStar Wildlife Institute
10072 Vista Ct. • Myersville, MD 21773
Phone: 301-293-3351
E-mail: wildlife@windstar.org
<http://www.windstar.org>*

Tree Swallow and Eastern Bluebird

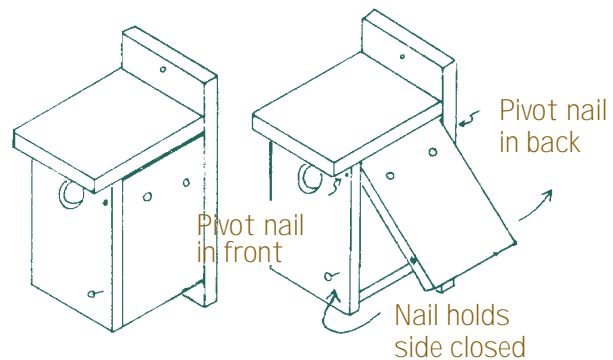
The best habitat for Eastern bluebirds consists of areas comprised of short grasses with nearby fence posts, high line wires, or sparse trees where birds can perch. Bluebirds normally will not nest within city limits or farmsteads where competition from house sparrows is intense.

For best results, nest boxes should be placed in pairs about 10-25 ft. apart and 100-200 yds. between pairs. They should be 4-6 ft. above the ground on steel posts or wood posts with predator guards. The entrance hole should face in a general northeast direction to prevent sun from shining in and overheating the box.



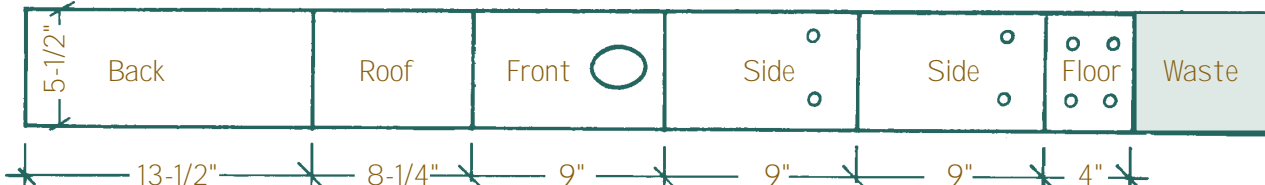
Note: Entrance hole for Great Crested Flycatcher should be a round hole 1-3/4" in diameter.

Note: These dimensions assume a 3/4" thick board. Some cedar boards are 7/8" thick. If so, the floor must be 3-3/4" wide, not 4" wide.



Two pivot nails allow side to swing out for cleaning. use one nail at bottom to close side.

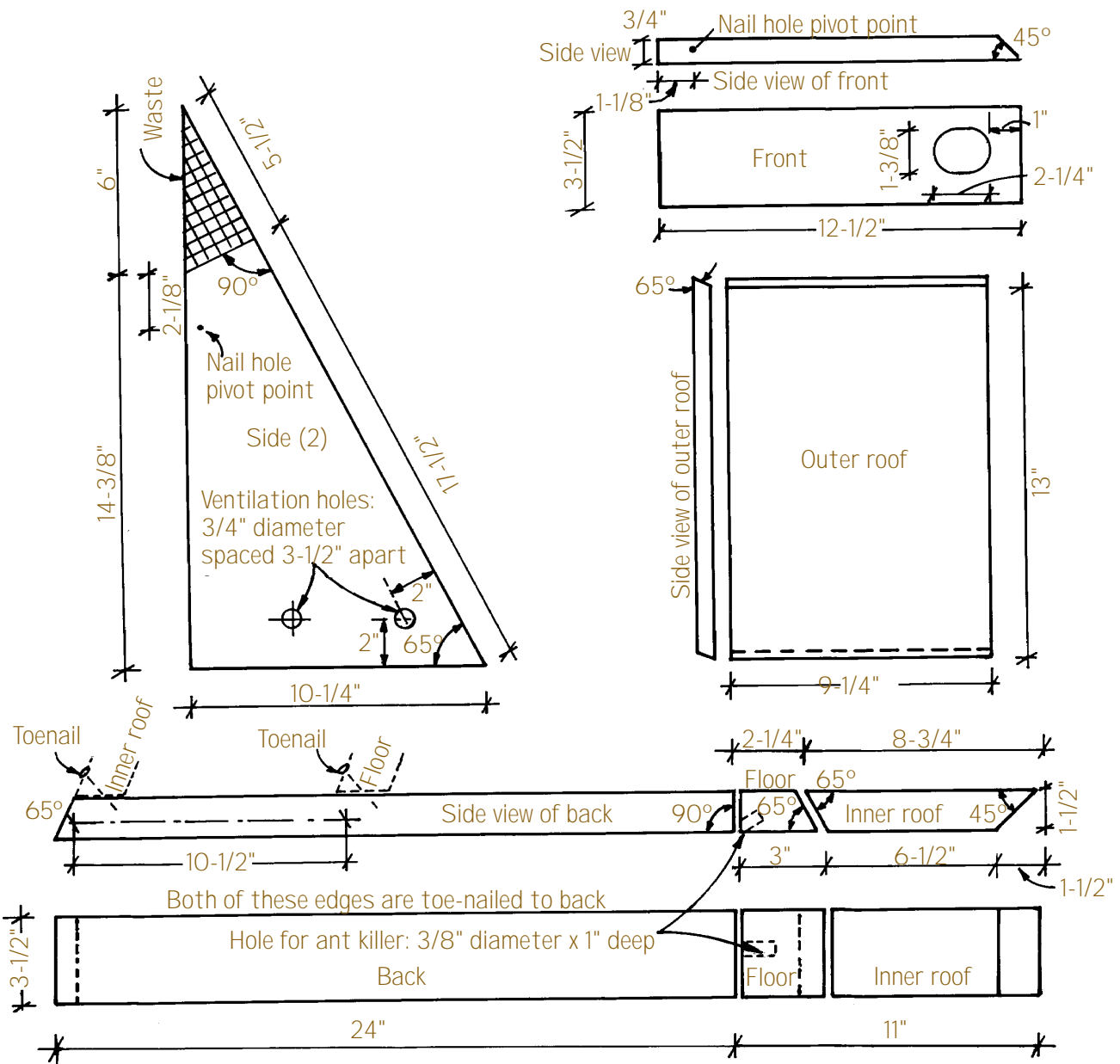
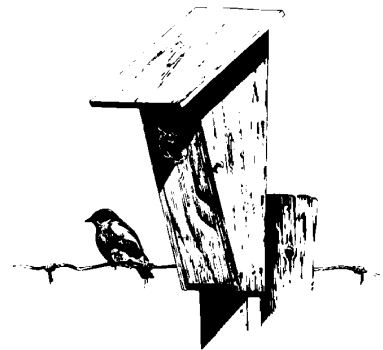
Lumber: One 1" x 6" x 6'

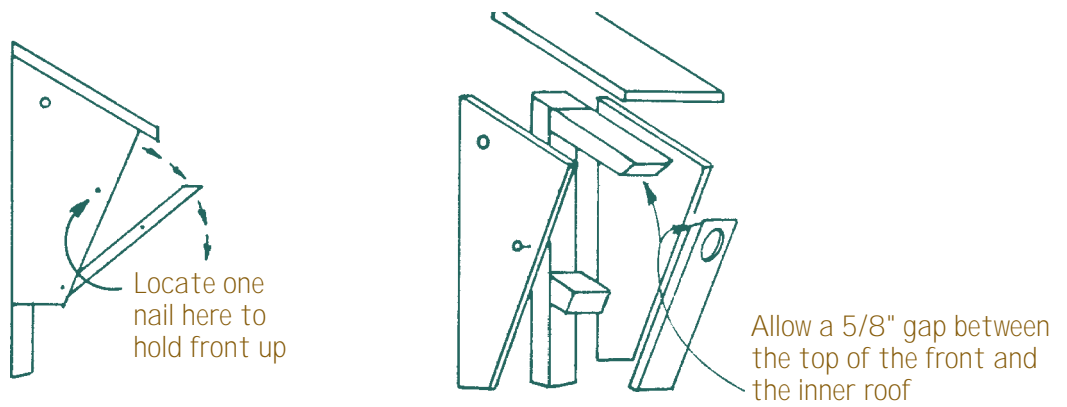


Peterson Bluebird House

Data presented by W.H. Davis in the *Journal of Field Ornithology* in 1996 suggests that Eastern bluebirds prefer this style of house over the traditional rectangular box. Bluebirds seem to prefer the oval entrance and slightly smaller floor area of the Peterson house.

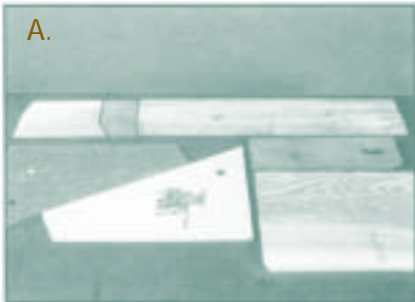
This design is more difficult to build because of the angled cuts required. It is also more costly because of the increased material involved. Personal preference also plays a part in nest box choice and the Peterson house is often chosen for its appearance.





The most commonly known bluebird house is a rectangular house with a 1-1/2" diameter entrance hole. A hole any larger will admit European starlings. This house is relatively easy to make, but it should be on a predator-proof post to avoid predation by cats. But probably the best all-around design is the Peterson bluebird house, developed by Dick and Vi Peterson of Brooklyn Park, Minnesota after experience with over 3,500 bluebird houses.

It meets all the requirements of a bluebird house. The front opens for easy cleaning. The sloping roof with wide overhang discourages cats. There are provisions for insulation, ventilation, drainage, and ant control.



A. The Peterson house has seven parts and is assembled in this order:



B. The inner roof is toe-nailed to the back.

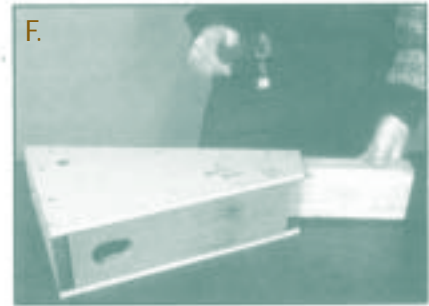
C. Then, the floor is toe-nailed to the back.

D. Third, one side is nailed to the resulting frame.

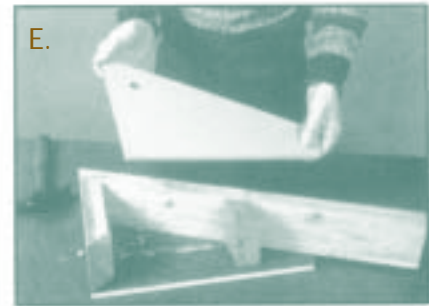
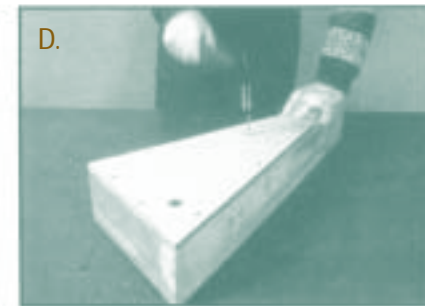


E. Then the other side is nailed to the frame.

F. Next the swing-down front is fastened by a nail into each side. A third nail is pounded part-way into the side near the entrance hole. This is removed each time the house is checked.

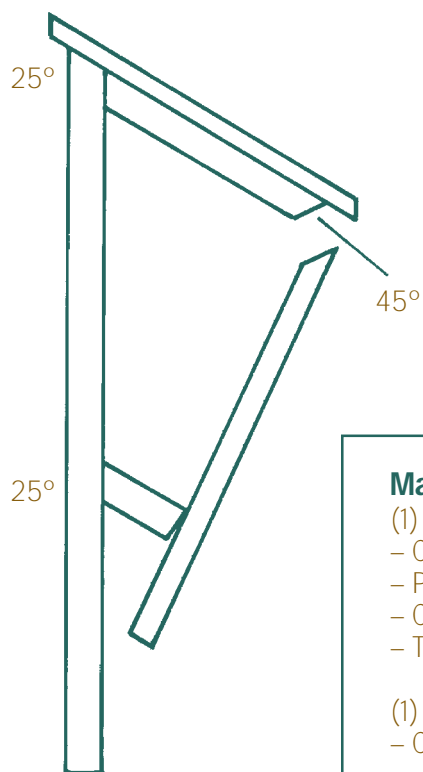
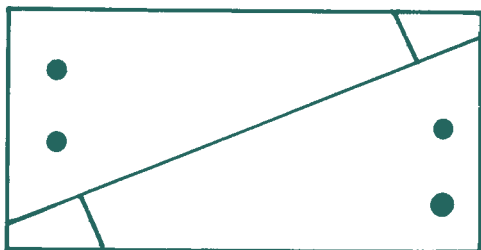


G. Finally, the outer roof is nailed on top.



Peterson Bluebird House

– Materials to Build 10 Houses –



Materials

- (1) 7/16" x 12" x 16' hardboard lap siding primed (for sides)
 - Cut into 8' pieces
 - Put two pieces finished sides together
 - Cut into 19" pieces
 - Trace pattern and cut

- (1) 1" x 10" x 12' rough sawn cedar (for outer roofs)
 - Cut into 13" lengths (11 pieces)

- (1) 1" x 4" x 12' rough sawn cedar (for fronts)
 - Cut into 12-5/8" lengths (11 pieces)

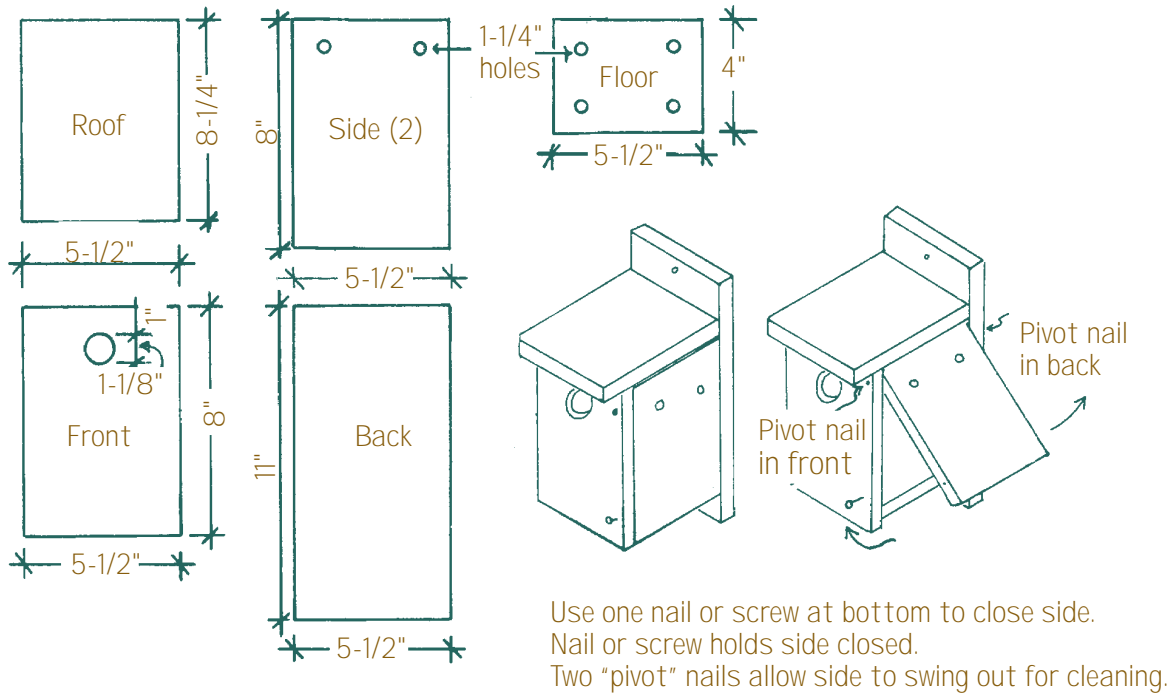
- 30 ft. 2" x 4" pine or cedar
 - Cut to ten 2' lengths, angle top at 25° for backs
 - Cut inner roof and floor pieces (takes approximately 1' per house)

To assemble:

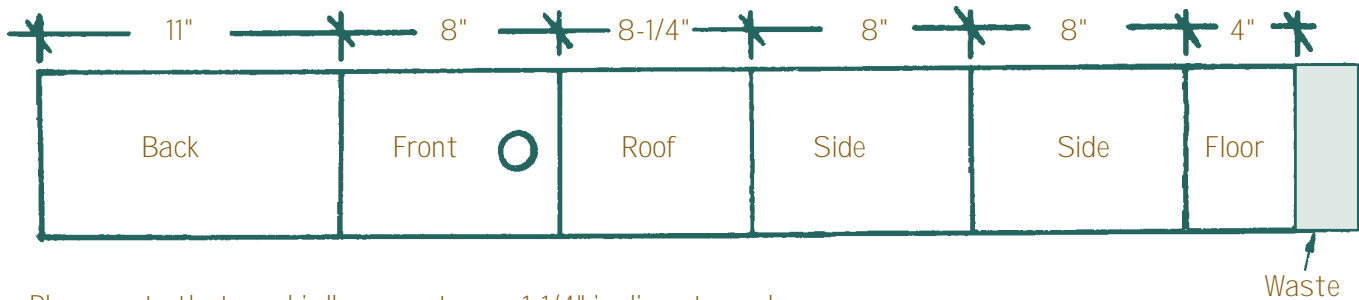
Use either cement coated 8d nails or 1-7/8" ring shank flooring nails.

House Wren, Black-capped Chickadee, White-breasted Nuthatch

Note: Entrance hole diameter is 1-1/8".
(An entrance hole diameter of 1-1/4" is needed for the white-breasted nuthatch and flying squirrel.)



Lumber: (1) 1" x 6" x 4'

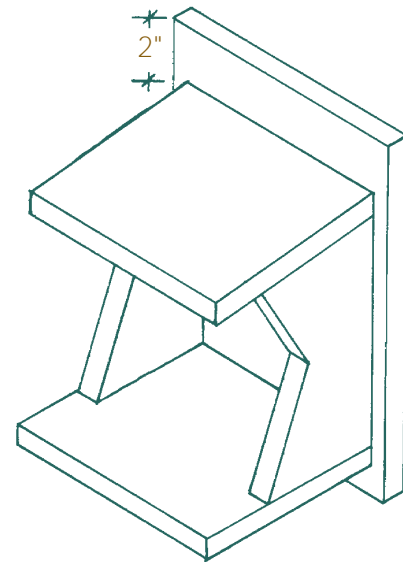
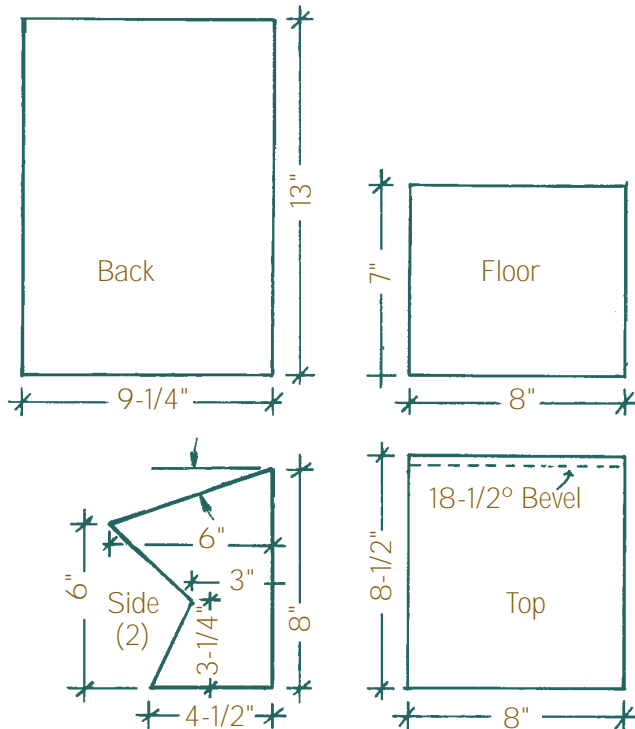


Please note that any birdhouse entrance 1-1/4" in diameter or larger will admit house sparrows! All wren and chickadee nest boxes should have an entrance hole of 1-1/8" in diameter.

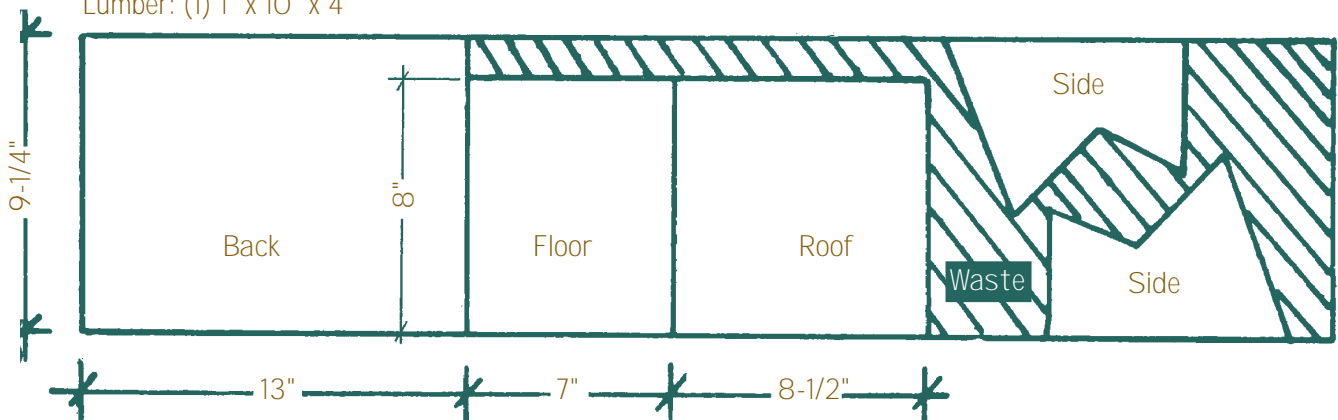
American Robin and Barn Swallow

The American robin is one of the most commonly known urban birds and is a joy to welcome back in the spring. A shelf, as described below, can be placed on the wall near a window where the birds can be observed throughout the nesting season, or to a tree trunk or post 6-10 ft. above the ground.

Barn swallows will also utilize this shelf structure and may be encouraged to nest away from a doorway or other inconvenient location if presented with this opportunity.



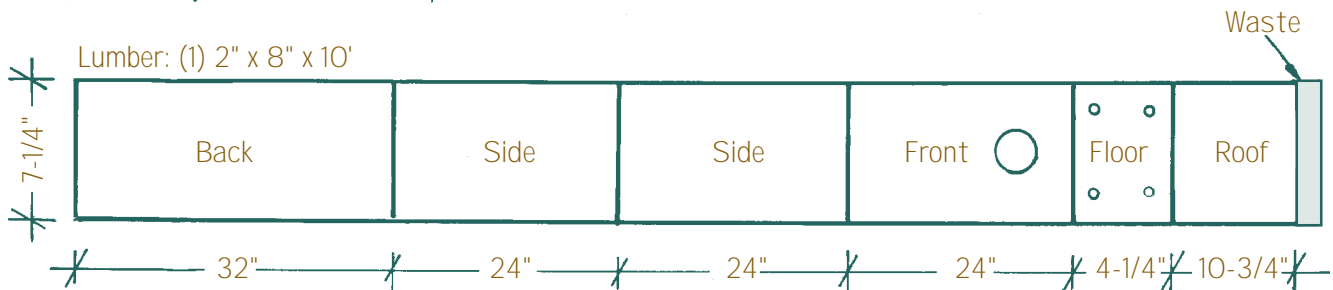
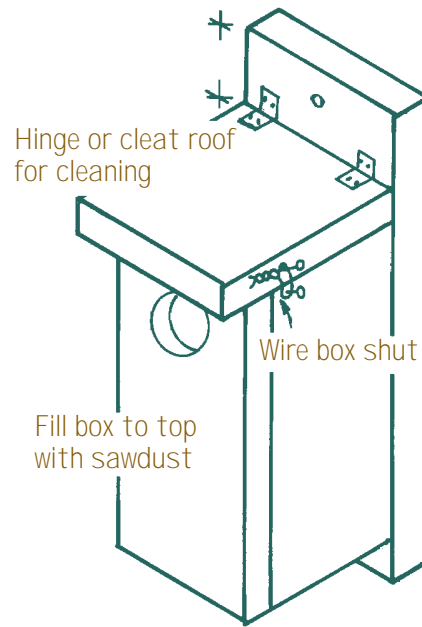
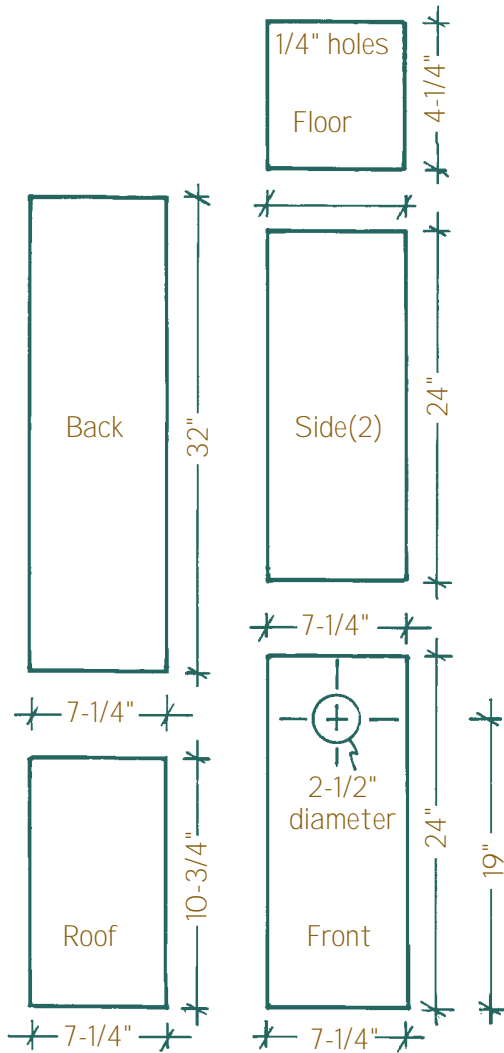
Lumber: (1) 1" x 10" x 4'



Northern Flicker Nest Box

The flicker is a common woodpecker, distinguished by its yellow tail feathers and red patch on the back of the head and neck. They nest in wooded areas and in town. Flickers are excavators and are more likely to use a nest box if it is completely filled and packed with sawdust. This simulates a dead tree with a rotting inside.

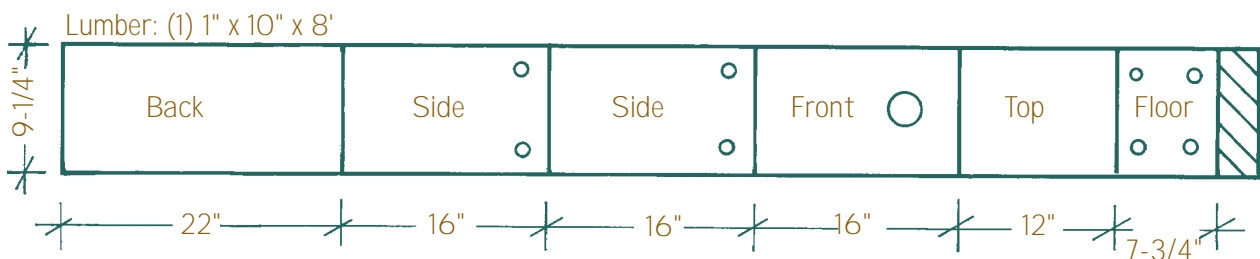
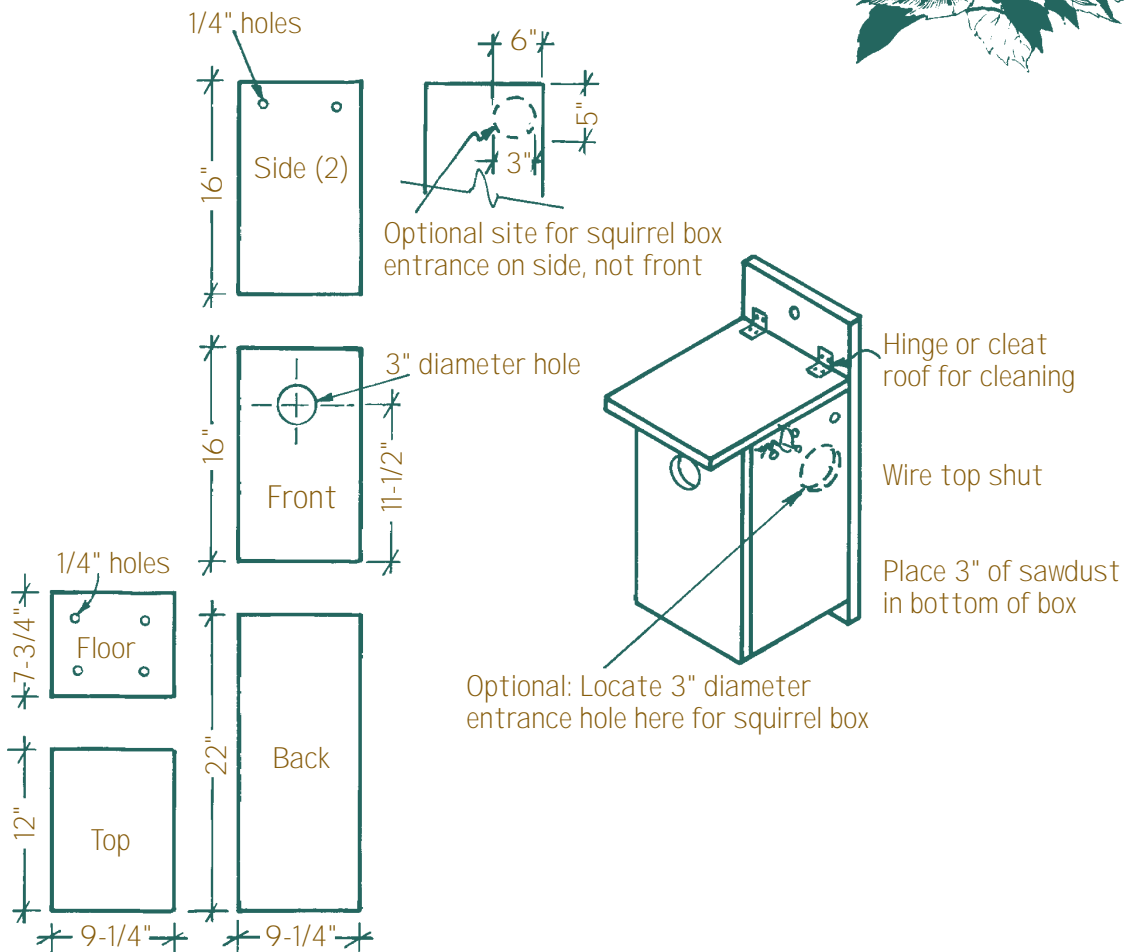
Boxes should be attached to a post and placed 4-6 ft. high. A 1-1/2" thick rough-cut cedar material is preferred.



American Kestrel, Northern Screech-owl, Gray Squirrel, Red Squirrel, & Fox Squirrel Nest Box

To attract kestrels, place the box in relatively open country on a tree or post 10-30 ft. high with grassy habitat nearby. Screech-owls can be attracted along the edges of hardwood forests adjacent to fields or wetlands. Boxes should be placed at least 10 ft. high. Both the kestrel and owl boxes should include a predator guard to keep squirrels from using the next boxes.

Squirrels can be attracted to using this box by filling it half-full with leaves and mounting at least 30 ft. above the ground on a tree at least 10" in diameter. It is not necessary to clean out squirrel boxes.

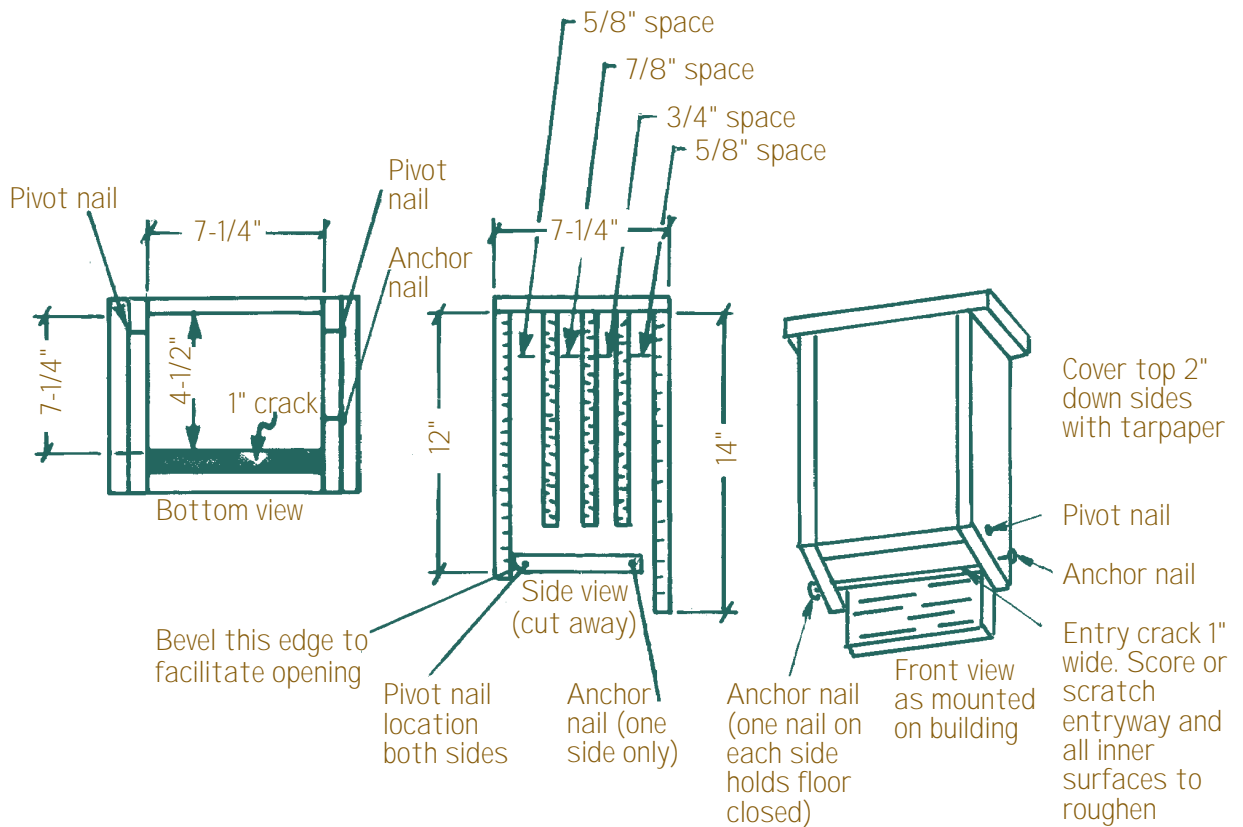


Small Bat House

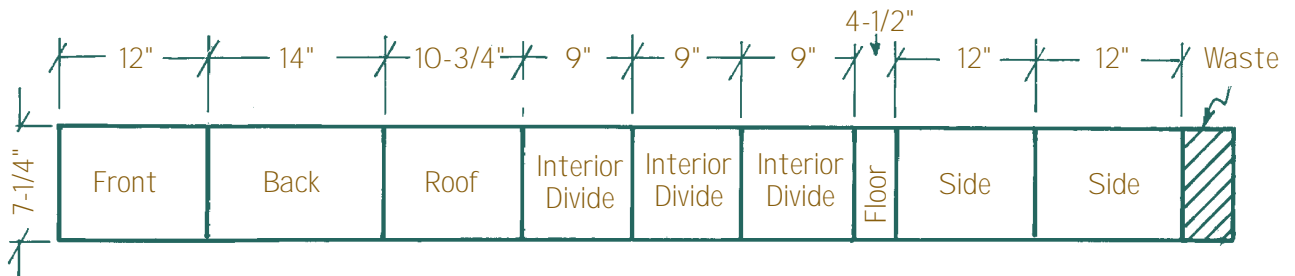
Bats are insect eaters and may eat over 1,000 insects each evening. They require a warm, moist environment which reaches 80-90° during the daytime. This can be achieved by covering part of the house with tarpaper. Painting black may also help.



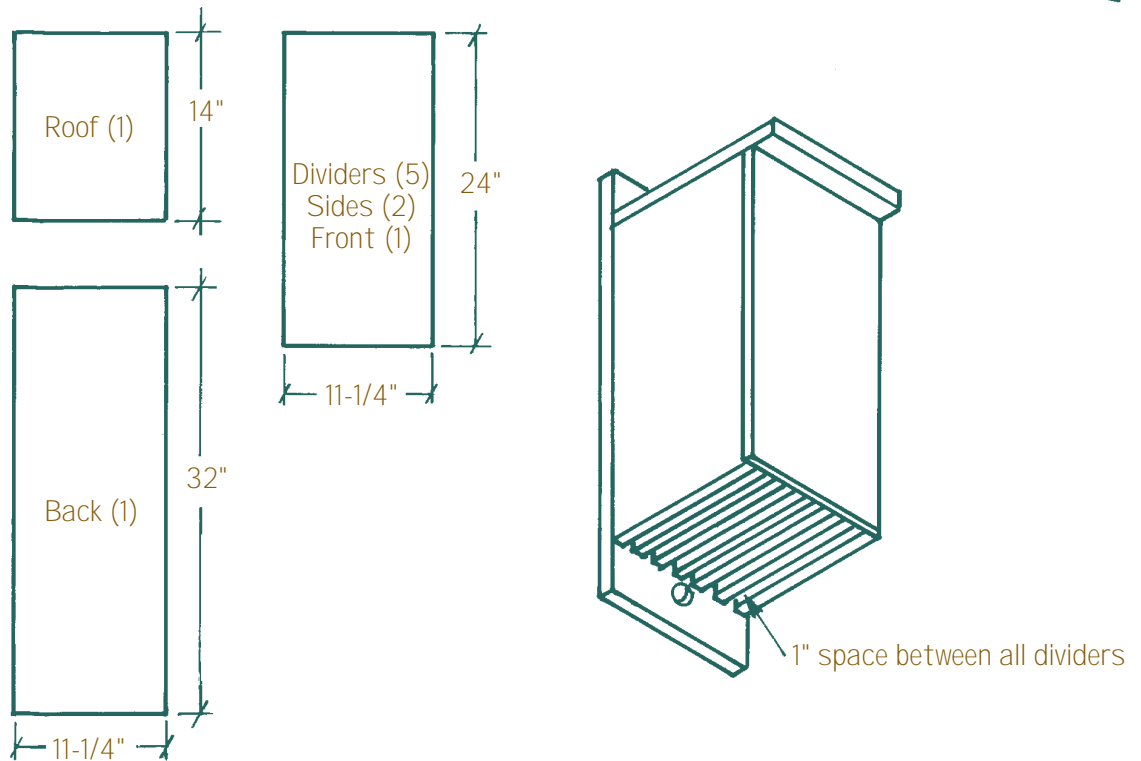
Houses should be hung on trees, poles, or the sides of buildings which have a good open area on at least one side for bats to maneuver while flying. The best habitat is close to rivers, lakes, or marshy areas where insect populations are high. Nest boxes should be mounted 12-15 ft. above the ground.



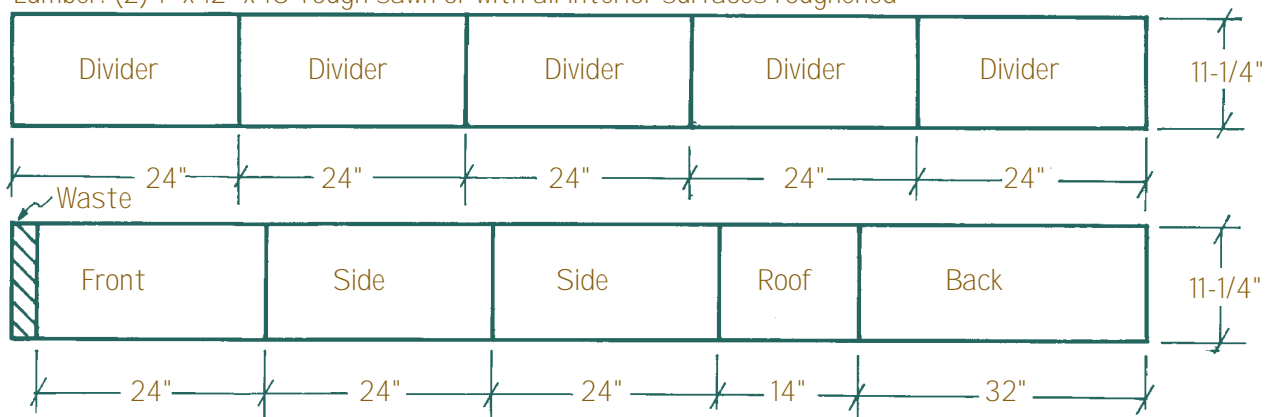
Lumber: (1) 1" x 8" x 8'



Johnson Bat House



Lumber: (2) 1" x 12" x 10' rough sawn or with all interior surfaces roughened



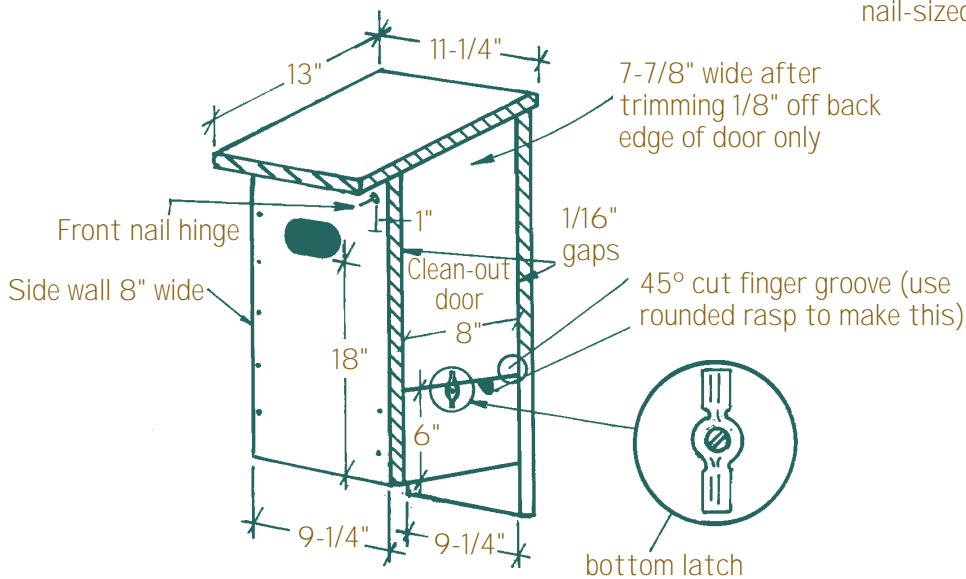
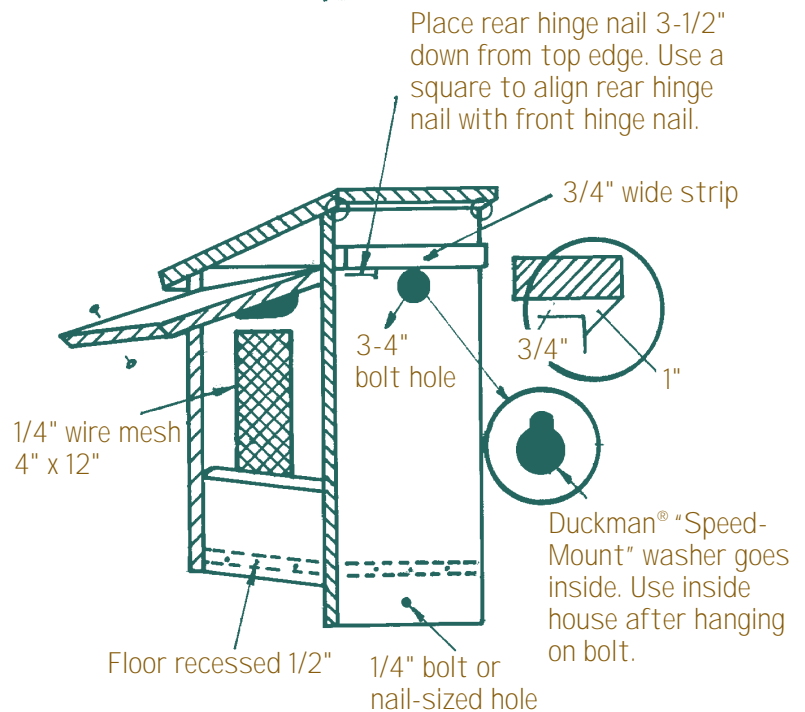
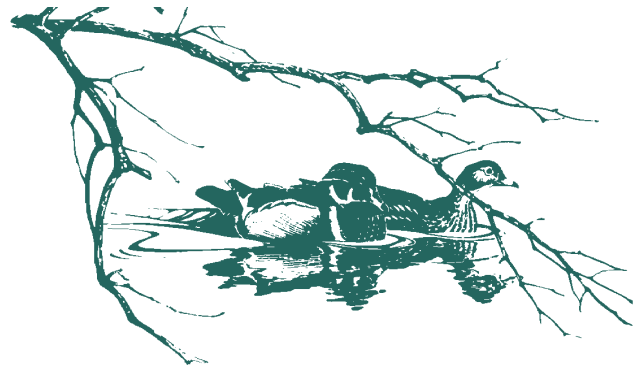
Note: All external seams and joints should be caulked if not tight fitting.
 Divider boards are spaced 1" apart.

Wood Duck and Hooded Merganser Nest Box

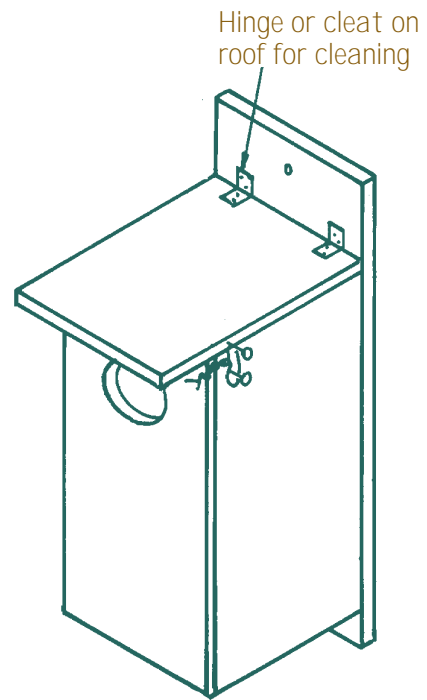
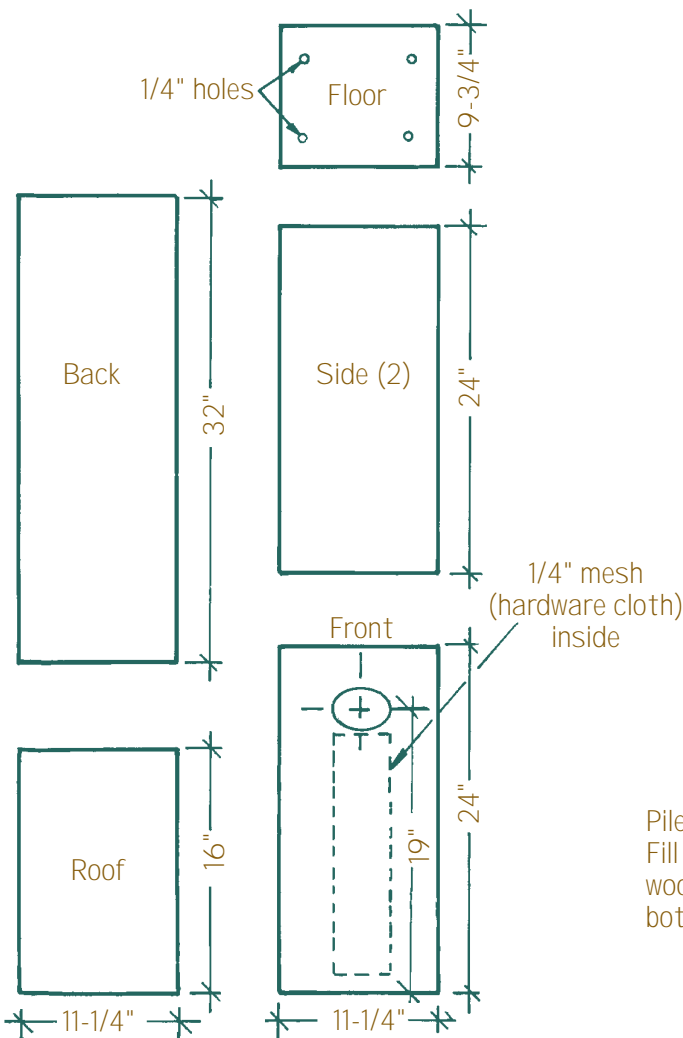
Wood duck populations have made a significant comeback during the past 20 years, in part because of adding additional cavity nesting habitat in the form of boxes such as the one described below. Boxes should be placed over water or in woodland habitat within 1/2 mile of a wetland.

Since a female wood duck must lead her newborn young from the house to water, the path should be free of major man-made obstacles like street curbs, highways, or tightly woven wire fences. Boxes placed on posts over water should be 6-8 ft. above the water's surface. Boxes placed in woodland habitat should be at least 20 ft. high.

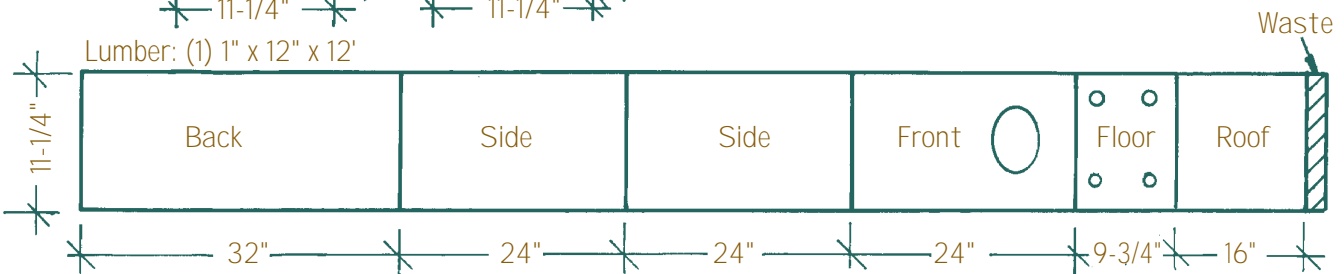
At least 3" of mixed sawdust and wood chips should be put into the bottom of the box. The top of the box should be wired down to prevent raccoons from entering. It is important to attach a 1/4" wire mesh inside the box and below the hole so young ducklings are able to crawl out upon hatching. Entrance holes should be 3" high and 4" wide.



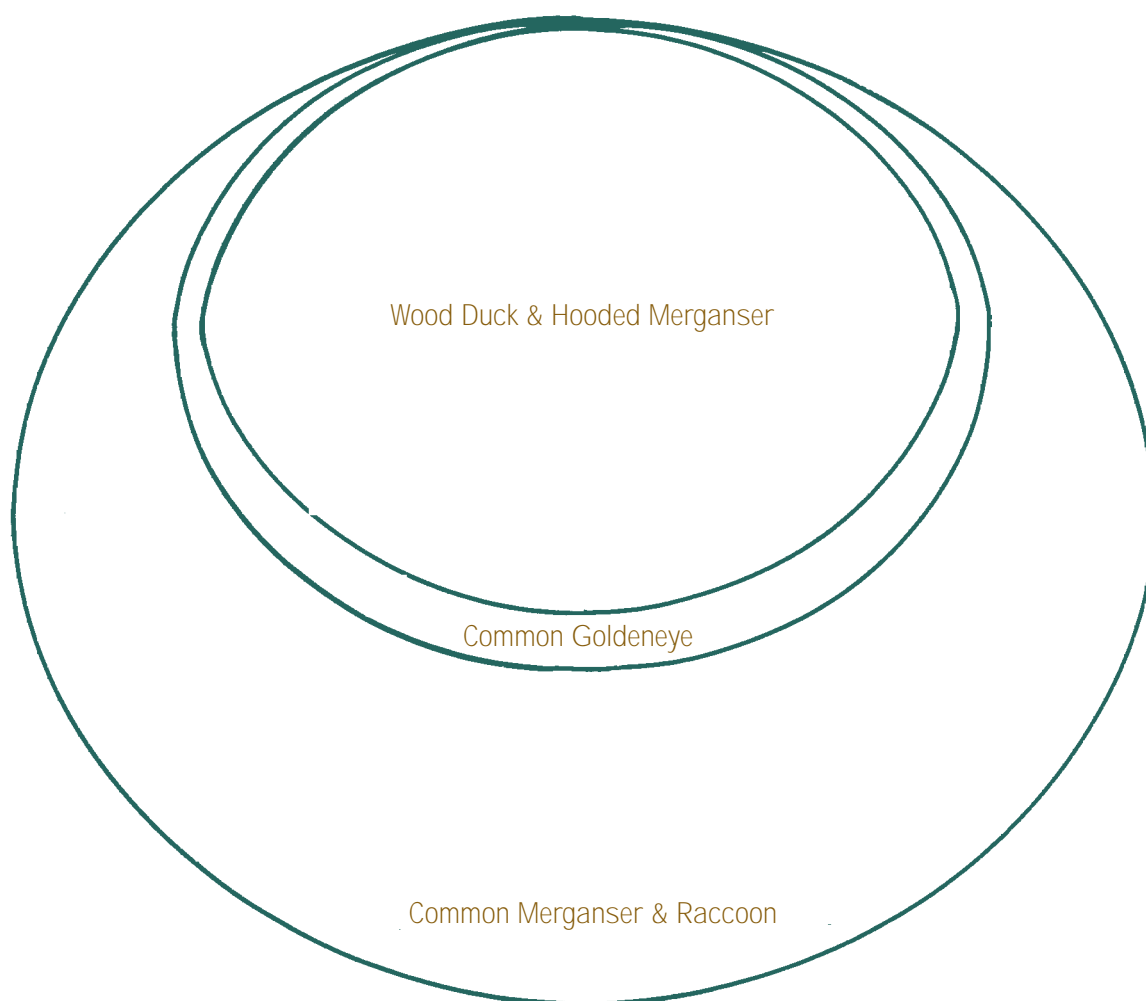
Raccoon and Common Merganser Nest Box



Pileated woodpecker 4" diameter round hole. Fill box to top with sawdust for pileated woodpeckers. For common mergansers, fill bottom of box with 3-4" of sawdust.



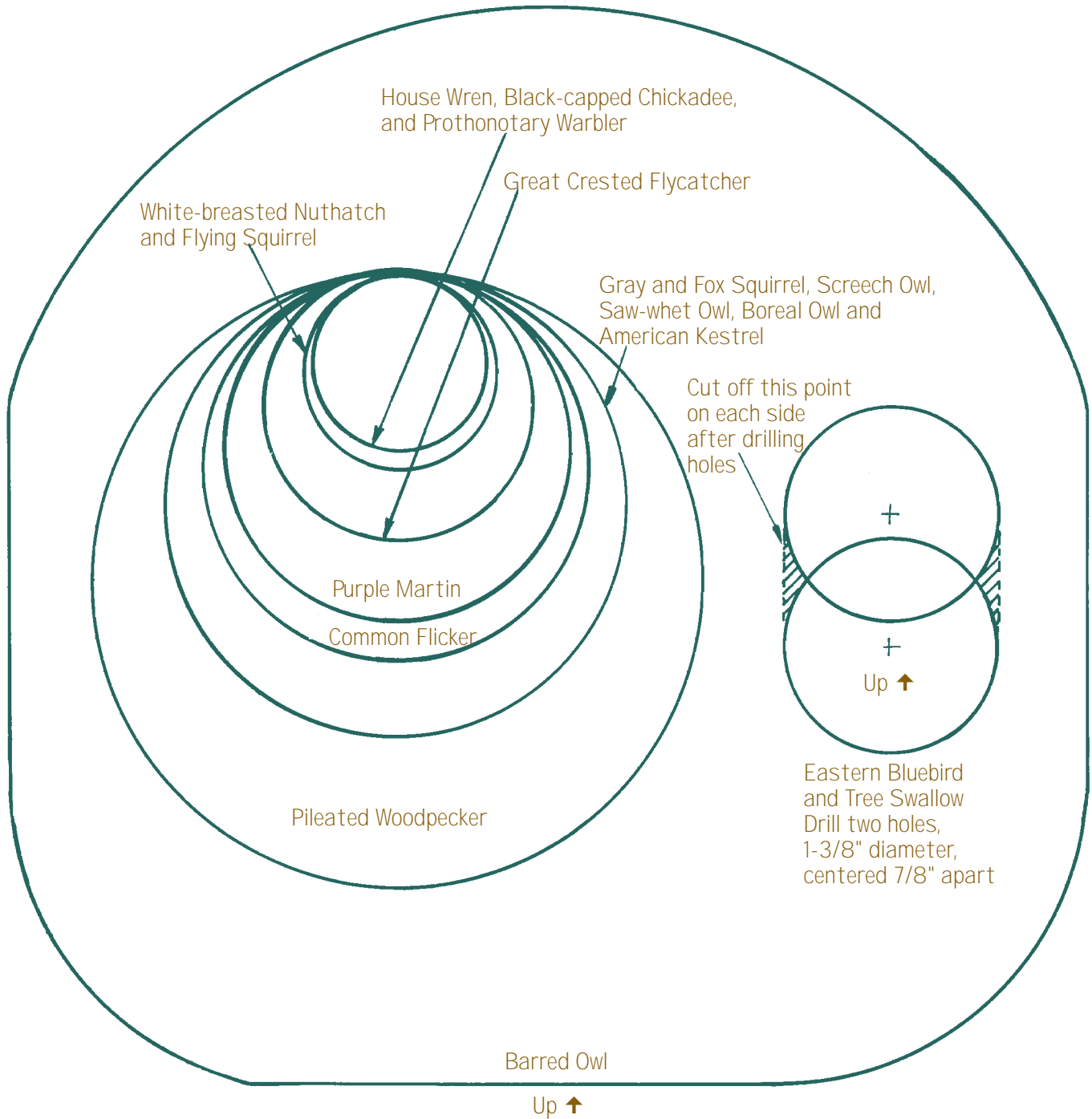
Entrance Hole Sizes for Duck, Merganser, and Raccoon Nest Boxes



ACTUAL SIZE
(trace onto wood with carbon paper)

Wood Duck & Hooded Merganser (3" x 4")
Common Goldeneye (3-1/4" x 4-1/4")
Common Merganser & Raccoon (5" x 6")

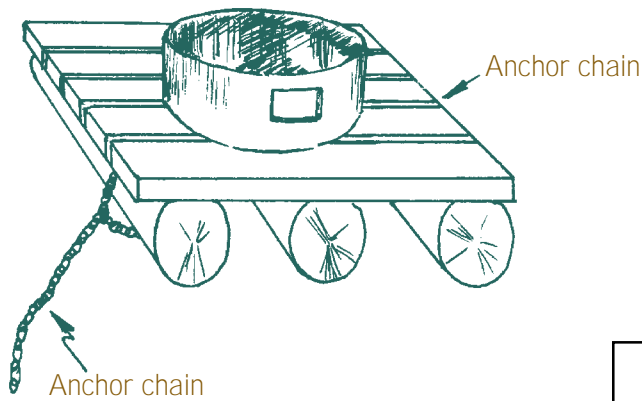
Entrance Hole Sizes for Songbird, Woodpecker, and Squirrel Nest Boxes



ACTUAL SIZE
(trace onto wood with carbon paper)

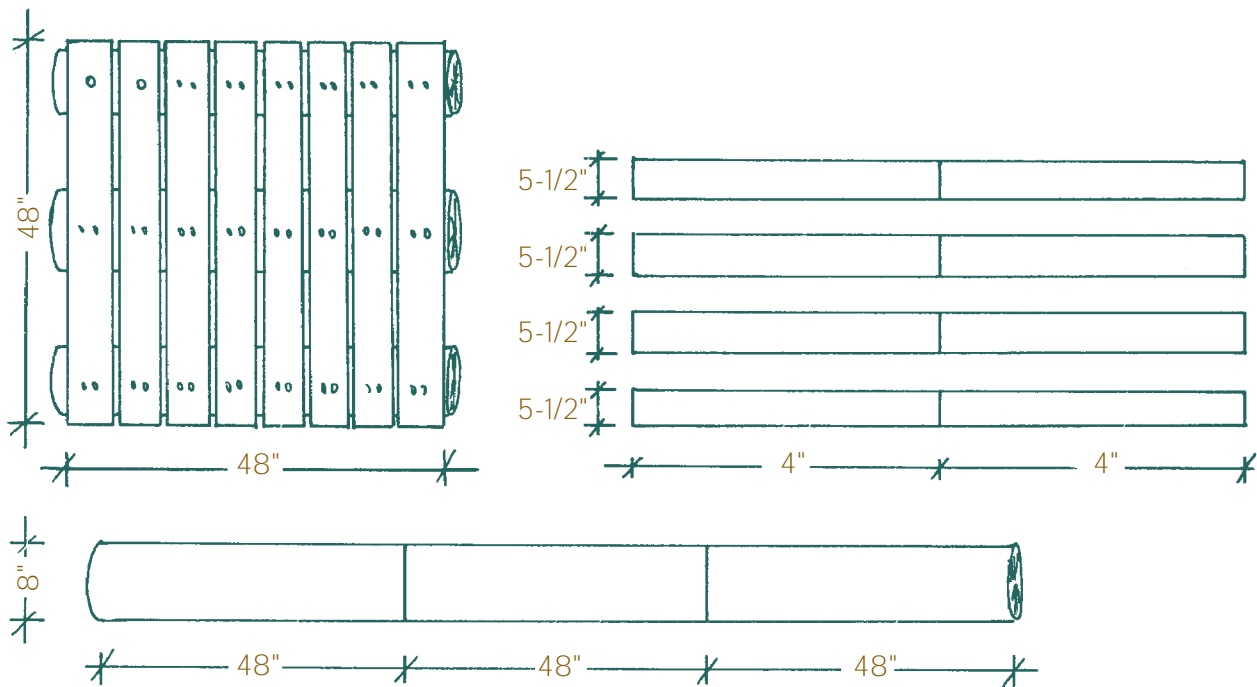
Canada Goose Nest Platform

There are various types of nesting structures that will attract Canada geese including a floating structure as described below. Cut the material as shown and nail boards onto pole sections. Attach a washtub or 10" high section of 55 gallon drum to the platform. Drill drain holes through bottom of tub and cut an escape hatch 6" wide and 4" high just under the top of the tub. This is for young geese to exit the tub. Paint the tub an earth tone color and fill 1/3 full with nesting materials such as grass or hay. Anchor the platform in 2-4 ft. of water. Nesting structures should be at least 200 yards apart if they are in view of one another. This will prevent territorial conflicts.



Materials

- (1) 8" diameter cedar pole 12' long
- (4) 2" x 6" x 8' boards
- (1) 22" diameter round metal washtub

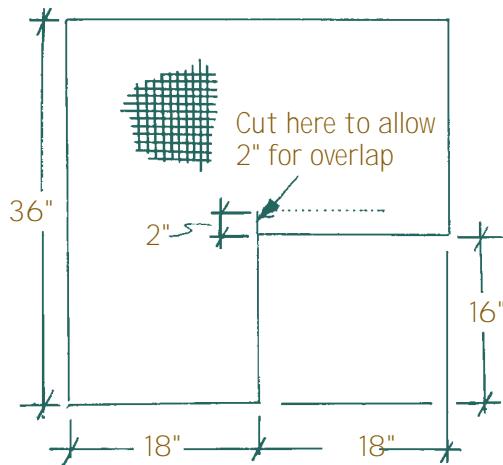
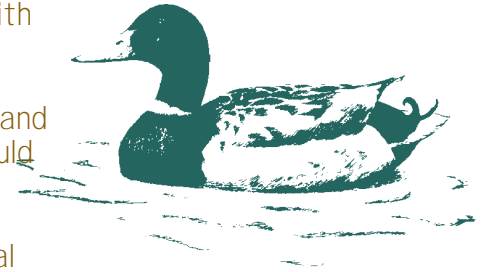


Mallard Nest Basket

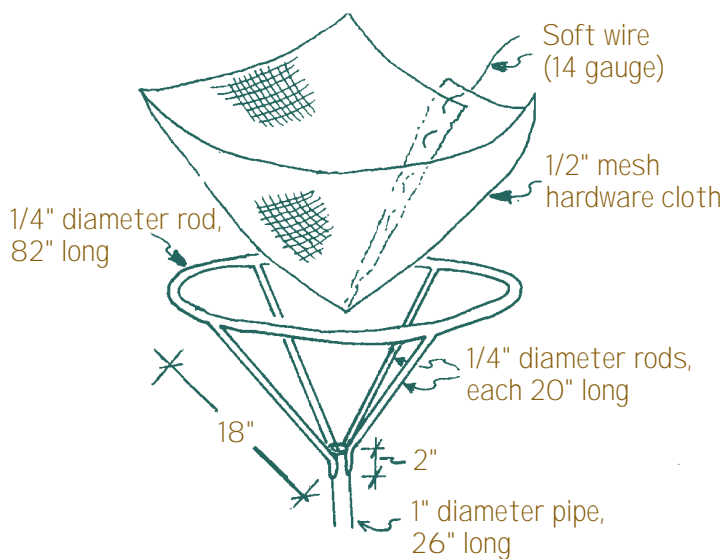
This nest basket can be constructed to attract nesting mallards. The frame is made of 1/4" diameter steel rod mounted on 1" diameter steel support pipe. This pipe telescopes inside a 1-1/2" steel pipe with a set screw to establish the designed height.

Basket should be placed in wetlands where water is 2-4 ft. deep and where water will remain until at least mid-summer. The basket should be at least 10 ft. from shore and 3-5 ft. above the water line.

Baskets should be filled with flax straw or other suitable material and placed within areas containing some cattails or bulrush. It is easiest to place these nests during the winter, through the ice. They will need to be maintained annually before the nesting season.



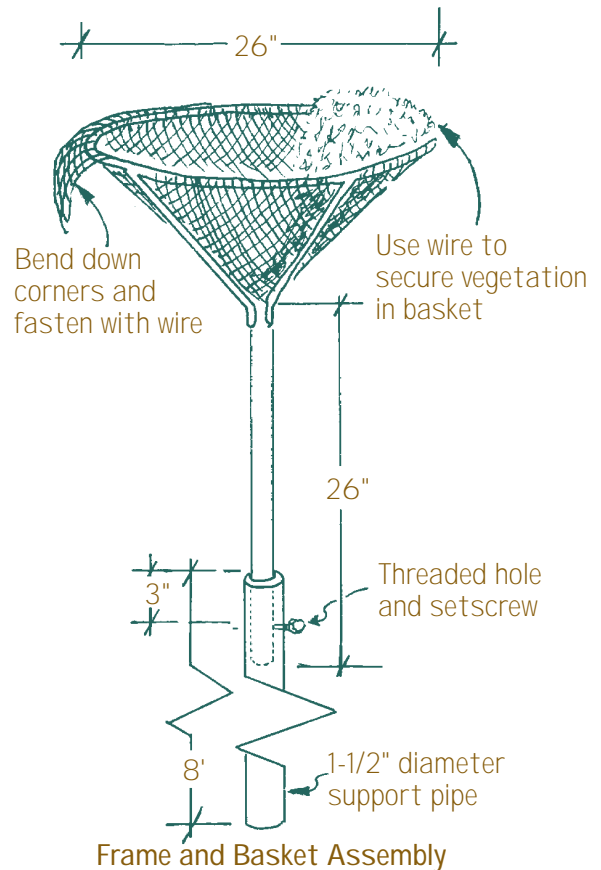
Basket Pattern



Nest Basket

Materials

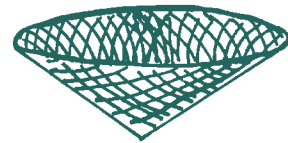
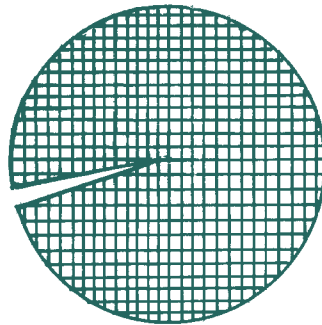
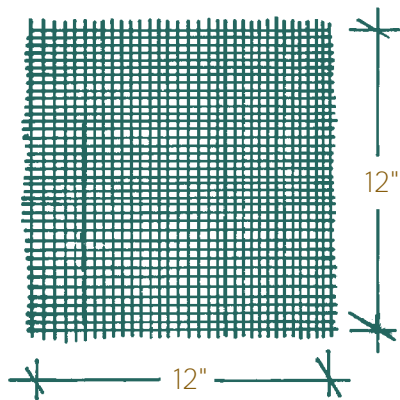
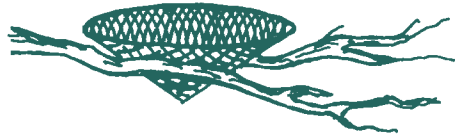
- 8' support pipe, 1-1/2" diameter
- 2' x 2" basket pipe, 1" diameter
- 13' x 6" steel rod, 1/4" diameter
- 3' x 3' hardware cloth, 1/2" mesh



Mourning Dove Nest Basket

Materials

(1) 12" x 12" piece of hardware cloth



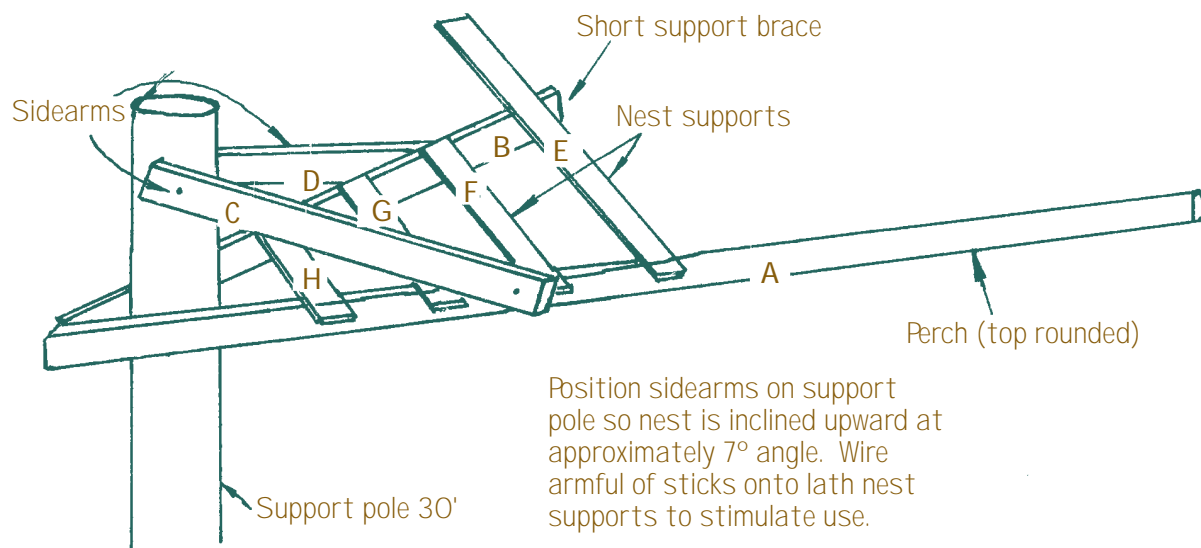
Cut with tin snips to form a 12" diameter circle. Then cut to center of circle. Pull cut edges together so they overlap by 2-1/2" and wire them together to create a shallow cone.

Wire and/or staple cone into the crotch of a tree limb.

Great Blue Heron Nest Platform

The great blue heron is an elegant water bird most commonly found nesting near rivers, lakes, or other water bodies that contain live mature or dead trees. Here, herons construct a nest of sticks at least 20 ft. high. They nest in colonies, meaning there are many heron nests within one small area. Nest platforms should be used in the vicinity of a present colony or to enhance an existing one where trees are deteriorating.

Support poles should be 30 ft. high and 3-8" in diameter. Three nest platforms can be placed on each pole. The first is at the top and the other two staggered at 180° and 4 ft. intervals. Placement of heron platforms is best conducted through the ice from January through March.



Materials

Lumber:

- A. 2" x 2" x 7'
- B. 2" x 2" x 30"
- C. 1" x 2" x 26-1/2"
- D. 1" x 2" x 26-1/2"
- E. 1" x 2" x 39"
- F. 1" x 2" x 19-1/2"
- G. 1" x 2" x 19-1/4"
- H. 1" x 2" x 17-7/8"

(1) 30' cedar support pole/three platforms