

I.11 Enhancing Biological Control of Grasshoppers by Construction and Placement of Bird Nest Boxes

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Wildlife can play a significant role in the regulation of grasshopper population dynamics (see chapter I.10). Placement of nest boxes for American kestrels (also known as sparrow hawks), bluebirds, and other insect-eating bird species can provide a strong and stabilizing factor to help control grasshopper populations and prevent outbreaks (fig. I.11–1). Kestrels take large numbers of grasshoppers and in some areas are called “grasshopper hawks.” Many other bird species that nest in cavities and nest boxes also feed on grasshoppers during the breeding season and feed them to their young. These insects are a very important source of protein and other nutrients for young birds during growth and development.

Because the birds listed in table I.11–1 are limited by the number of natural cavities available, their abundance can be increased significantly by the construction and placement of nest boxes. Each cavity-nesting bird species prefers nest boxes of a particular size but frequently will nest in larger boxes when smaller ones are not available. Placement of nest boxes on a large scale by land managers might reduce the need for, and cost of, chemical spraying and could be important in a grasshopper integrated pest management system.

Kestrels and bluebirds (eastern, western, and mountain bluebirds) are among the most common species attracted to properly placed nest boxes. Plans and directions for construction are shown in figures I.11–2 and I.11–3. Because most cavity-nesting species are territorial, placement of boxes should not be too close together so that birds avoid using them. Defended territories vary with the species of birds, food availability, and their other needs.

American kestrels have the largest territories compared to other cavity-nesting species. In open country, where the boxes are within direct line of sight, the distance between them should be at least 2,460 ft (750 m). When trees intervene, such as along a meandering river or irregular woodland edges, the boxes can be as close as 656 ft (200 m). Entrance holes should face south to southeast, away from prevailing winds and storms. Preferred height of boxes should be a minimum of 10 ft (3 m) but lower posts (7–9 ft) (2–2.7 m) also may be used. Boxes can be wired at top and bottom to posts, poles, or smaller trees

or nailed through the holes to large-diameter trees. Add 1 inch of wood chips or dried grass for nest material as kestrels do not bring in their own nesting material. Boxes should be cleaned out and fresh chips or grass added before each nesting season.

The three species of bluebirds defend smaller areas surrounding their nests than do kestrels; therefore, greater numbers of nest boxes can be provided per unit area. In open country, where bluebird boxes are within direct line



Figure I.11–1—Nest boxes placed on poles or trees bordering open rangeland readily attract birds, such as kestrels, that require cavities for nesting. Cavity-nesting birds are highly insectivorous and contribute to biological control of grasshopper populations. A young kestrel can be seen peeking out of the entrance hole. (Photograph by B. E. Petersen; used by permission.)

of sight, the distance between can be as short as 300 ft (92 m). Entrance holes also should face south to south-east, away from prevailing winds and storms. Boxes can be wired at top and bottom to posts, poles, or smaller trees or nailed through the holes to large-diameter trees at a height of about 5 ft (1.5 m) for ease in checking. No nesting material need be added to boxes because bluebirds bring in their own nesting material; but boxes should be cleaned out each year after the nesting season by removing debris and old material.

Information on construction and optimum placement of the various kinds of nest boxes can be obtained from State wildlife agencies or conservation organizations, such as the Bluebird Recovery Program, Box 566, Minneapolis, MN 55458; the North American Bluebird Society, Box 6295, Silver Spring, MD 20906-0295; or a local chapter of the Audubon Society.

Table I.11-1—Dimensions (in inches) of nest boxes for several avian species

Species	Diameter of entrance	Entrance height above bottom	Depth of cavity	Bottom of cavity
American kestrel	3.0	12 – 14	14 – 18	8 × 8
Downy woodpecker	1.25	6 – 8	8 – 10	4 × 4
Northern flicker	2.5	14 – 16	16 – 18	7 × 7
Red-headed woodpecker	2.0	9 – 12	12 – 15	6 × 6
House wren	1.0	5 – 6	6 – 8	4 × 4
Bluebird	1.5	7 – 8	8 – 10	5 × 5
Tree swallow	1.5	4 – 5	6	5 × 5
Chickadee	1.25	6 – 8	8 – 10	4 × 4

Note: Entrance should face south to southeast. Height of box is variable: larger birds prefer greater heights (about 10 feet or more), and smaller birds use lower boxes (about 5 feet or more above the ground).

KESTREL NEST BOX

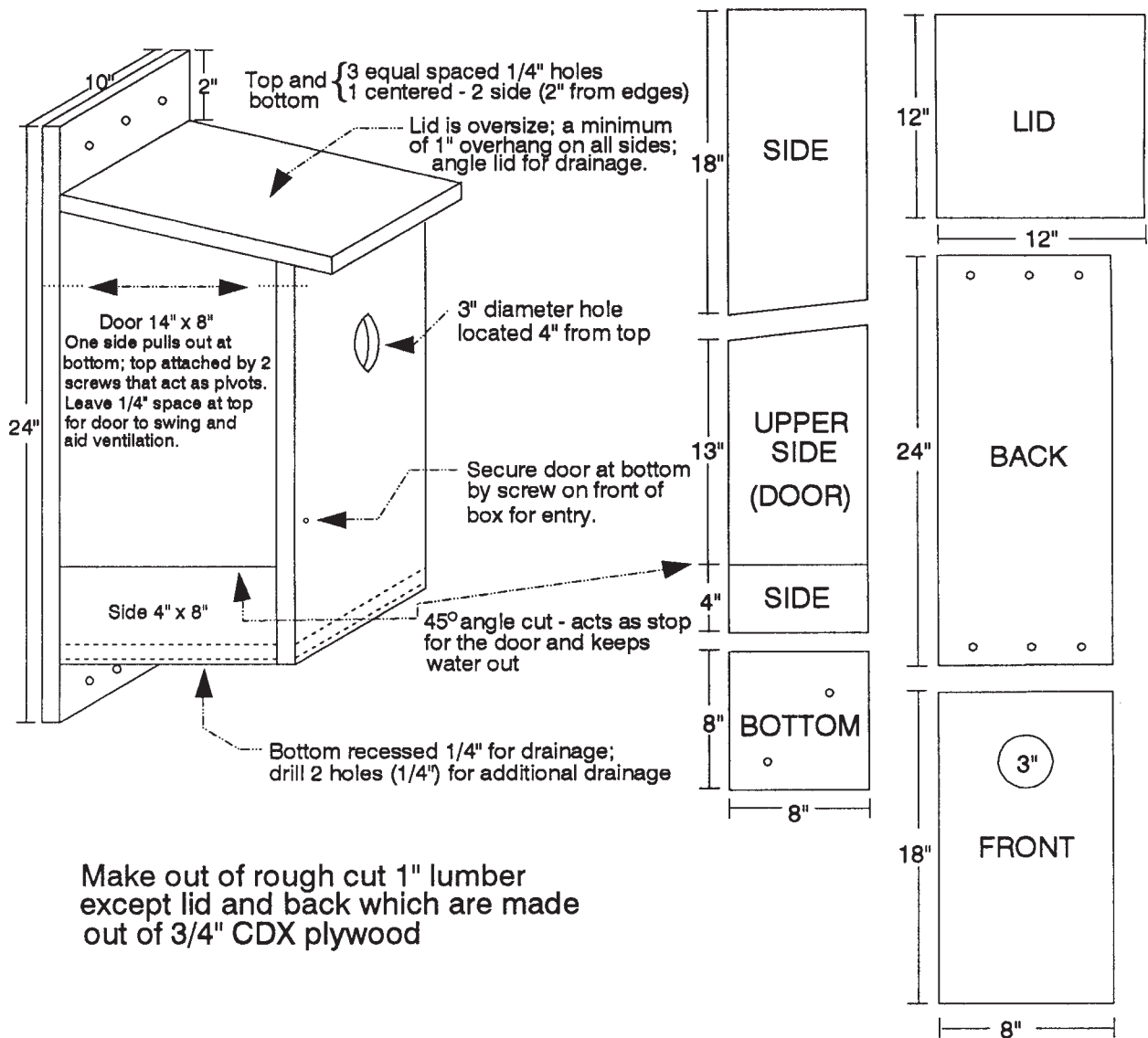


Figure I.11-2—American kestrel nesting box construction plan with dimensions and description of door mechanism. Entrance should face south to southeast, away from prevailing winds and storms. Boxes can be attached to trees, poles, or posts. Optimum height of boxes is a minimum of 10 ft (3 m), but lower attachments can sometimes be successfully used if taller ones are not available.

BLUEBIRD NEST BOX

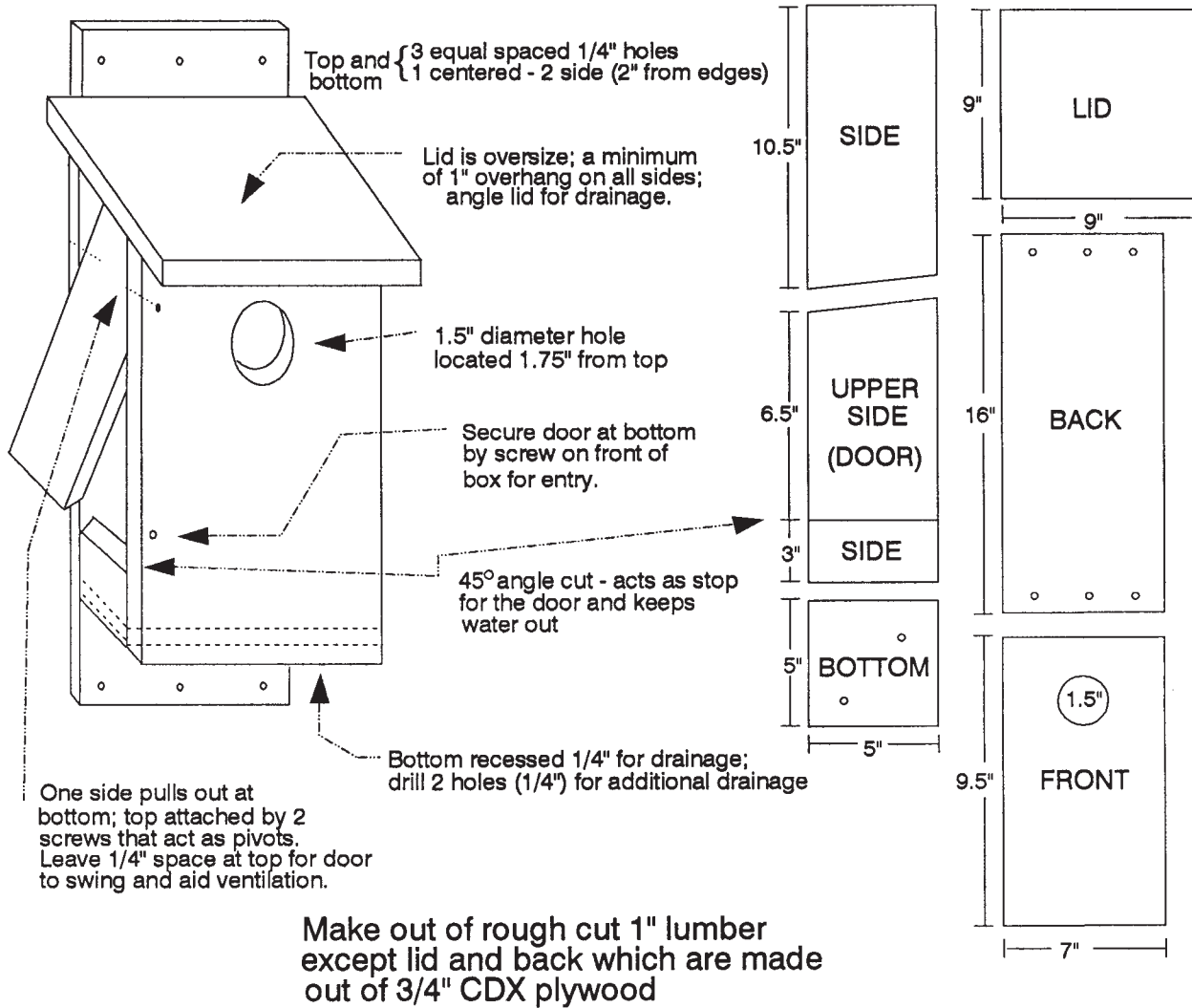


Figure I.11-3—Bluebird nesting box construction plan with dimensions and description of door mechanism. Entrance should face south to southeast, away from prevailing winds and storms. Boxes can be attached to fenceposts, small trees, or poles at preferred heights of 5 ft (1.5 m) or higher.

