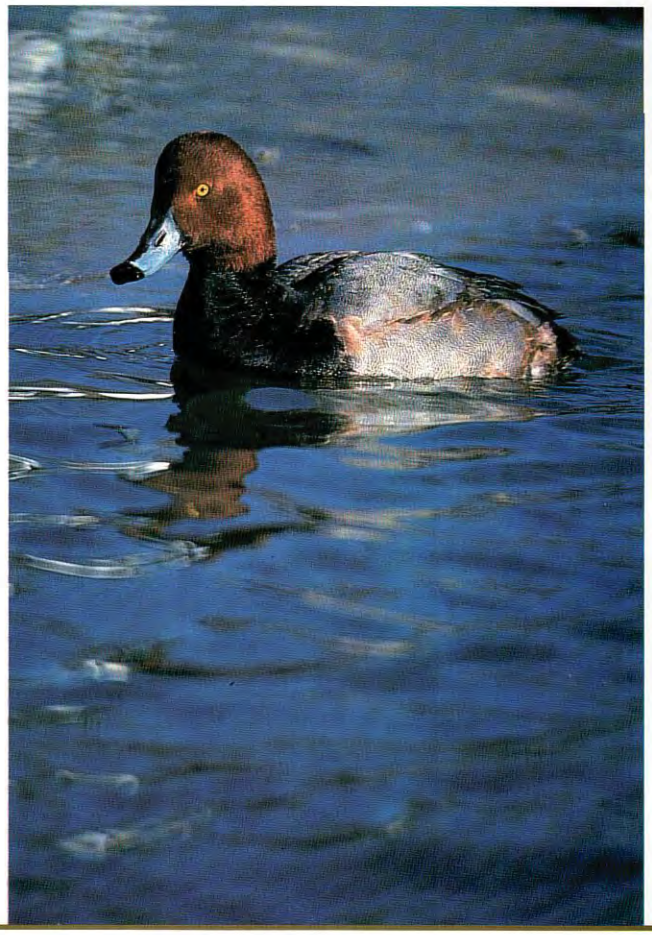
Design, Placement, and Maintenance of Duck Nesting Structures

Habitat Extension Bulletin No. 6b

An abundance and diversity of nesting ducks will enhance the beauty and value of any stream, pond, or marsh. Recently, however, intensive land use practices such as wetland draining and water-line grazing have destroyed duck habitat and reduced their nesting populations. The limited remaining habitat is often inadequate to provide protection from predation and flooding. One method of increasing the productivity of ducks on your wetland is to provide artificial nesting structures given that suitable surrounding habitat already exists.

The purpose of these elevated sites is to insure protection from flooding and exclusion of predators which may destroy nests and eggs. However, these structures must be located in suitable habitat which meets the specific breeding requirements of the desired duck species. Ducks select breeding habitat that provides nesting cover, abundant food, and brood-rearing and resting areas. Some ducks nest on the ground or in supportive vegetation; other ducks nest in tree cavities. Breeding throughout Wyoming, the puddle ducks (mallard, pintail, shoveler, and teal) and diving ducks (redhead and canvasback) nest in upland areas, along marsh shorelines, or in emergent vegetation. These nests are particularly vulnerable to attack by ground predators. Although not abundant in Wyoming, wood ducks naturally nest in tree cavities of river bottomlands. However, these nests are particularly susceptible to predation by raccoons and squirrels.



Artificial nesting structures are designed to meet specific nesting requirements of ducks. Puddle ducks nest successfully on elevated nest baskets. Diving ducks do not adapt readily to nest baskets and the most appropriate management technique to promote local breeding populations is preservation of rivers and large reservoirs. By simulating natural tree cavities, nest boxes will attract cavity nesting waterfowl, especially wood ducks.

The following artificial nesting structures have been used successfully in Wyoming to attract nesting ducks if erected in suitable habitat. Materials for their construction range from those you already have on hand to preconstructed fiberglass structures.

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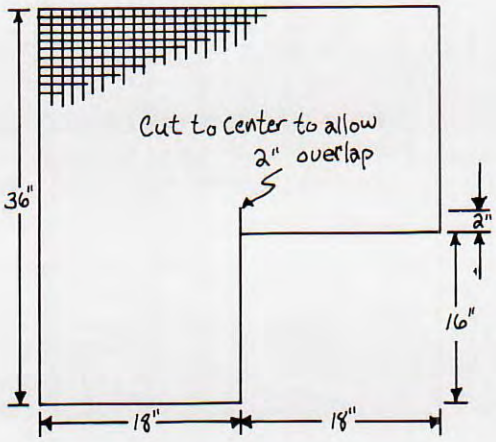


Figure 1

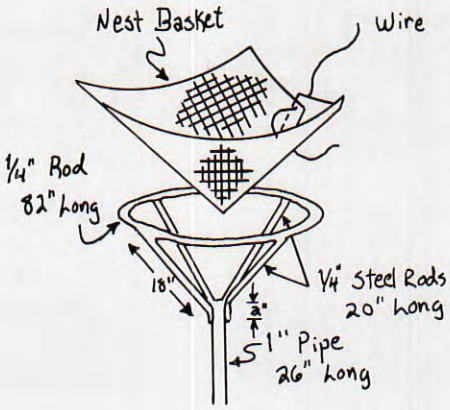


Figure 2

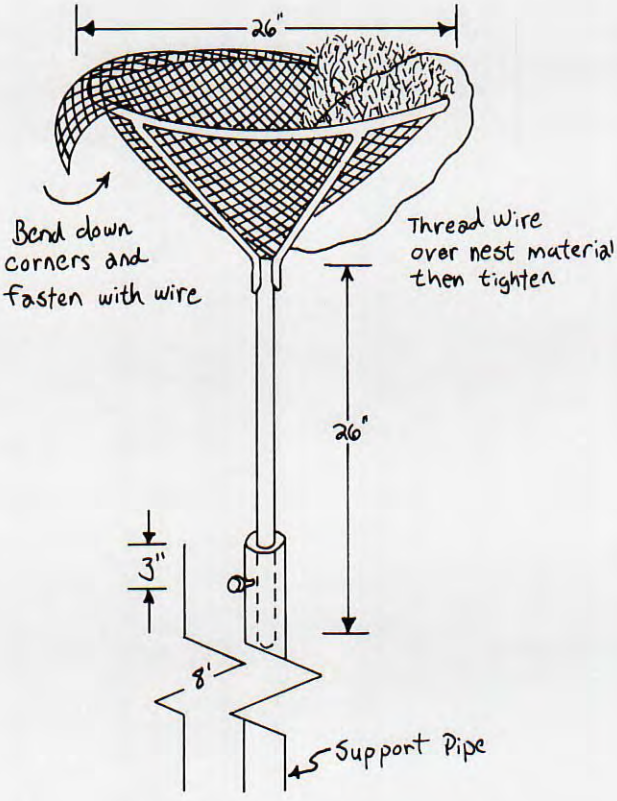


Figure 3

Nesting Baskets

Durable and economical nest baskets can be constructed for puddle ducks such as mallard, pintail, shoveler, and teal. A basket is a hardware cloth cone, 12 inches deep with a 26-inch-diameter open top, that is mounted to a pipe erected along a marsh shoreline.

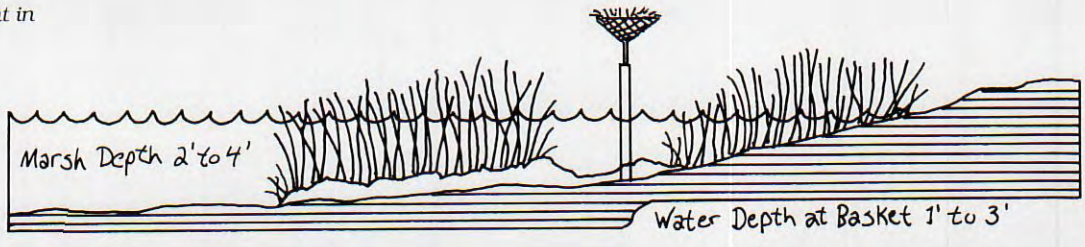
Materials Needed:

- 4 - 20-inch X 1/4-inch black metal rods
- 1 - 82-inch X 1/4-inch black metal rod
- 1 - 36-inch X 36-inch sheet of 1/4 or 1/2-inch mesh hardware cloth
- 1 - 26-inch X 1-inch (inside diameter) galvanized pipe
- 1 - 3/8-inch X 1-inch machine bolt and nut
- 4 - sticks welding rod
- 1 - 8-foot galvanized pipe (inside diameter greater than 1-inch)
- 1 - roll of soft wire

Construction Procedure

1. Cut the hardware cloth according to pattern in (figure 1), remove the 16- X 18-inch square, bend to form a cone, and secure with wire (figure 2).
2. To construct basket rim, form a hoop from 82- inch rod and weld ends together.
3. For basket frame, weld the bottom two inches of the 20-inch rods to end of 26-inch

Figure 4
Nesting basket placement in typical marsh habitat.



pipe. Bend braces to accommodate rim and weld rim to braces (figure 2).

4. Insert hardware cloth cone into basket frame. Bend hardware cloth over basket rim and secure with wire (figure 3).

5. Spray basket with light brown or olive paint to reduce reflection.

6. Drill a 7/16-inch hole in the eight-foot support pipe three inches from the end. Weld nut over hole and insert 3/8-inch machine bolt as set screw. Alternatively, tap a threaded hole for set screw. The set screw permits raising or lowering the basket for changing water levels.

7. Constructed nest basket and frame pipe are placed inside the eight-foot support pipe when structure is erected.

Nest Material

1. After constructing the nest basket, line interior with two- to three-inch thick layer of straw, hay, or marsh vegetation. Flax straw is considered the best nest material. Alfalfa should not be used for nesting material because it easily crumbles.

2. Place nesting material into basket such that it extends slightly above the rim of basket (figure 3). Secure layer of material to sides of cone with four equally spaced lengths of wire threaded from top to bottom of basket.

3. Fill center of basket with loose nesting material so center cavity is about four inches deep.

Commercial structures

Preconstructed fiberglass baskets for duck nesting may be purchased for $ 20.00 - $ 35.00 each, excluding mount fittings and support pipe. Among the companies offering these products are Hanson Manufacturing, Inc., 120 Putnam St., P.O. Box 536, Turtle Lake, North Dakota 58575; Pleasure Products Manufacturing Co., 2421 16th Ave. South, Moorhead, Minnesota 56560; and Raven Industries, Inc., Plastics Division, P.O. Box 1007, Sioux Falls, South Dakota 57117.

Placement

Nest baskets should be placed in marshes two to four feet deep which attract ducks in the spring (figure 4). They are erected in shallow, open water at edges or within stands of emergent marsh vegetation, such as cattails or bulrushes, as far as possible from the shore. Location in sheltered areas that are close to emergent vegetation will reduce damage to the structures by wind, wave, and ice action. The structures should be erected in water that is one to three feet deep, and will remain that deep at least through midsummer. A single structure works best in small ponds, but up to six may be erected, as far apart as possible, in wetlands that are 25 acres or larger.

Installation

Nesting baskets should be attached to the

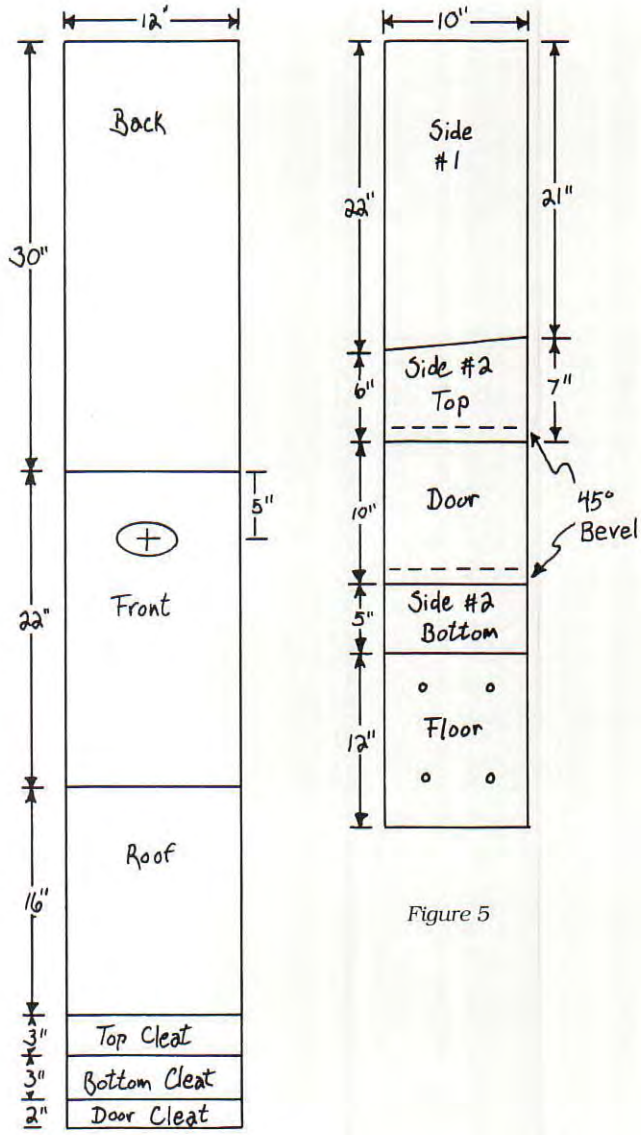


Figure 5

eight-foot support pipe by April 1. The best time to install the support pipe is during the late fall or early winter when thick ice facilitates travel to suitable locations and the marsh bottom remains unfrozen. The support pipe should be firmly driven at least one foot into the marsh bottom after holes are cut in the ice. During other seasons, structures may be installed in the water after access by foot or boat. The top of the nest basket should be as high as nearby plants, and at least three and one-half feet above the water surface. Therefore, fluctuating water levels in the marsh must be considered.

Maintenance

Duck nesting baskets should be inspected annually during the late winter or early spring, and they should be repaired and refurnished with fresh nesting material. If tilted, the support pipe should be returned to an upright position and driven deeper into the marsh bottom, or be

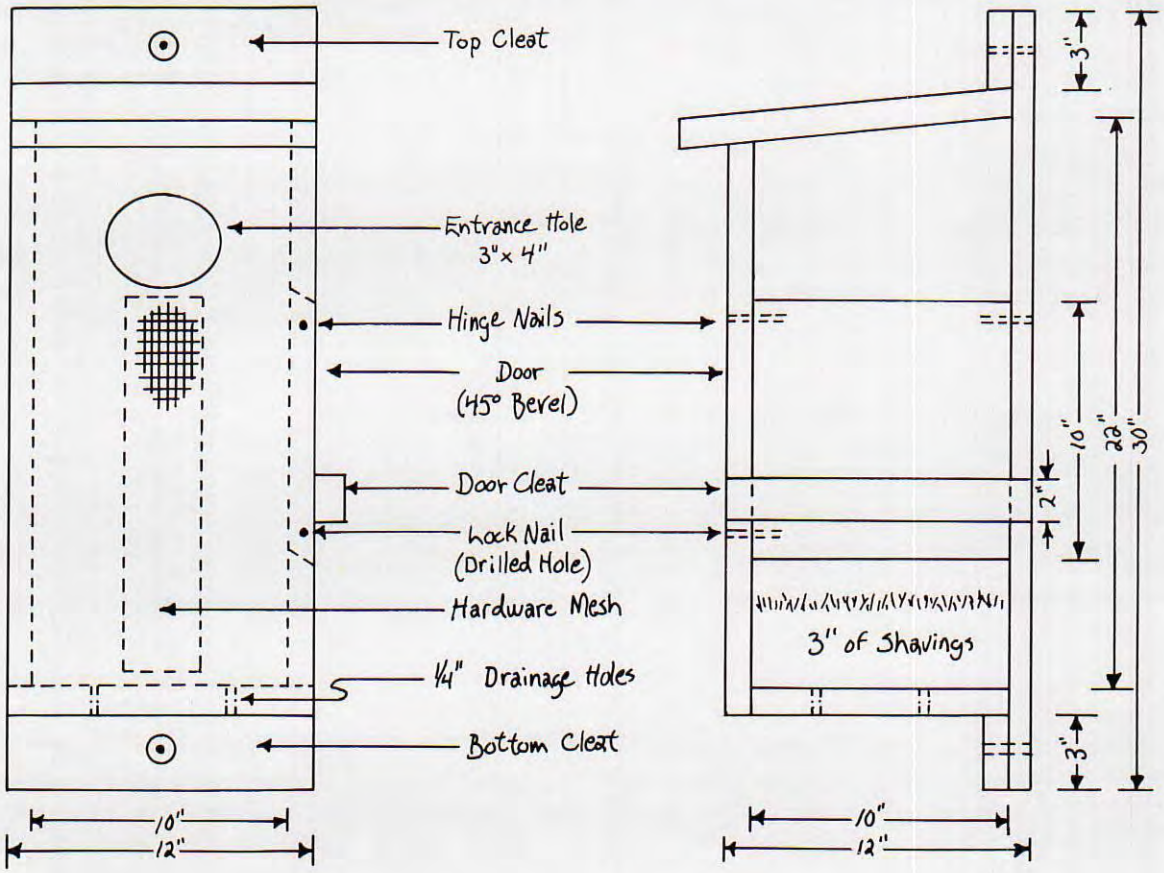


Figure 6

moved to more firm terrain. To reduce damage, nest baskets may be removed at the end of the breeding season, serviced indoors during the winter, and reinstalled before April 1. Avoid creating trails to the structure that may be used as travel lanes by predators.

Wood Duck Nest Boxes

Homemade nest boxes for wood ducks have been erected throughout the United States and are responsible for increasing their abundance in many areas. These boxes which simulate natural cavities should be durable, weather-tight, and economical. They should also be predator proof because wood duck eggs are highly vulnerable to consumption by raccoons. The following design meets these criteria and may attract wood ducks to bottomland cottonwood habitat that has limited numbers of natural cavities. Because wood ducks are not plentiful in Wyoming, contact the Game and Fish Department concerning their local distribution before undertaking a large-scale project in nest box installation.

Materials Needed:

11 linear feet of 1-inch X 12-inch rough-sawed lumber (pine is satisfactory if treated)

40 - 10-penny galvanized nails

8 - 2-inch wood screws for box corners

1 - 14-inch X 3-inch strip of 1/4-inch mesh hardware cloth

2 - 3/8-inch X 4-inch lag screws and washers

Construction Procedure:

1. Cut the lumber according to specifications in (figures 5 and 6). Make sure that door is bevelled at 45 degrees.

2. Drill four one-quarter-inch drainage holes in box floor.

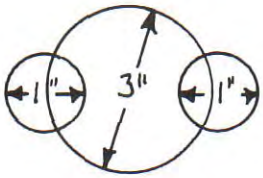


Figure 7

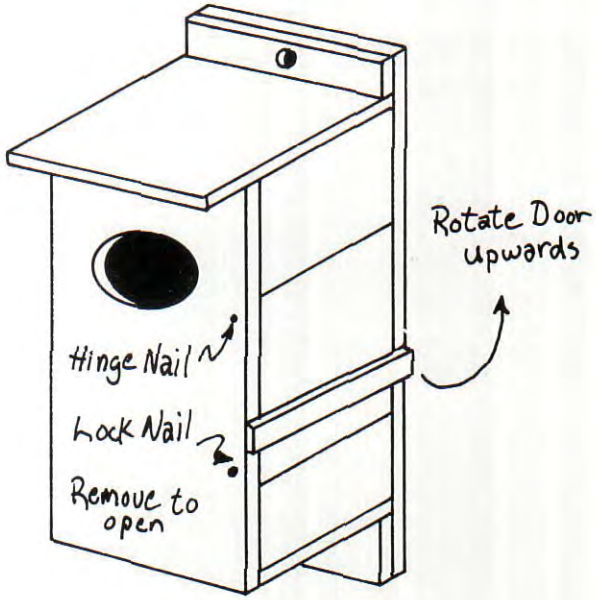


Figure 8

3. Drill elliptical entrance hole (four inches wide by three inches high) centered five inches down from the top of front and six inches from sides (figure 7). The elliptical hole helps prevent access by raccoons.

4. Tack strip of one-quarter-inch mesh hardware cloth to inside of front between entrance hole and floor. This "ladder" allows the ducklings to climb out of box.

5. Use galvanized nails, toe-nailed into boards, to construct the box, and strengthen box corners with galvanized screws.

6. Use a clear water-seal preservative to treat pine and other less durable woods. Insure that treated boxes are dry before erecting. Do not treat outside of box with creosote or other dark coating.

7. Caulk all cracks, except door, to make box weather-tight.

8. To open box, pull out lock nail and rotate door upwards on hinge nails (figure 8).

9. Place three inches of clean sawdust, wood chips, or shavings in floor of box for nesting material.

Placement

Nest boxes are most suitable and least prone to predation when located in at least two feet of water near open stands of cottonwood (figure 9). These nest boxes should be located in areas sheltered from wave action and shifting ice. If erected on land, the nearer the water the better. These boxes should be placed in cottonwood stands where the vegetation is relatively open and branches do not overhang the entrance hole. All boxes should be located in areas away from extensive human activity. They should be placed in groups of two to four per acre because of the homing behavior of successful breeders and their associated young.

Installation

Nest boxes are securely attached to a tree trunk, wooden post, or two-inch pipe that is driven at least one foot into the marsh bottom. The box should be erected at least five feet above the high water mark, or ten to 20 feet above the ground. Attach the back of box at the top and bottom to a wooden post or tree trunk with 3/8- X four-inch lag screws and one-inch washers under the heads. U-bolts through the top and bottom of the back of box should be used for attachment

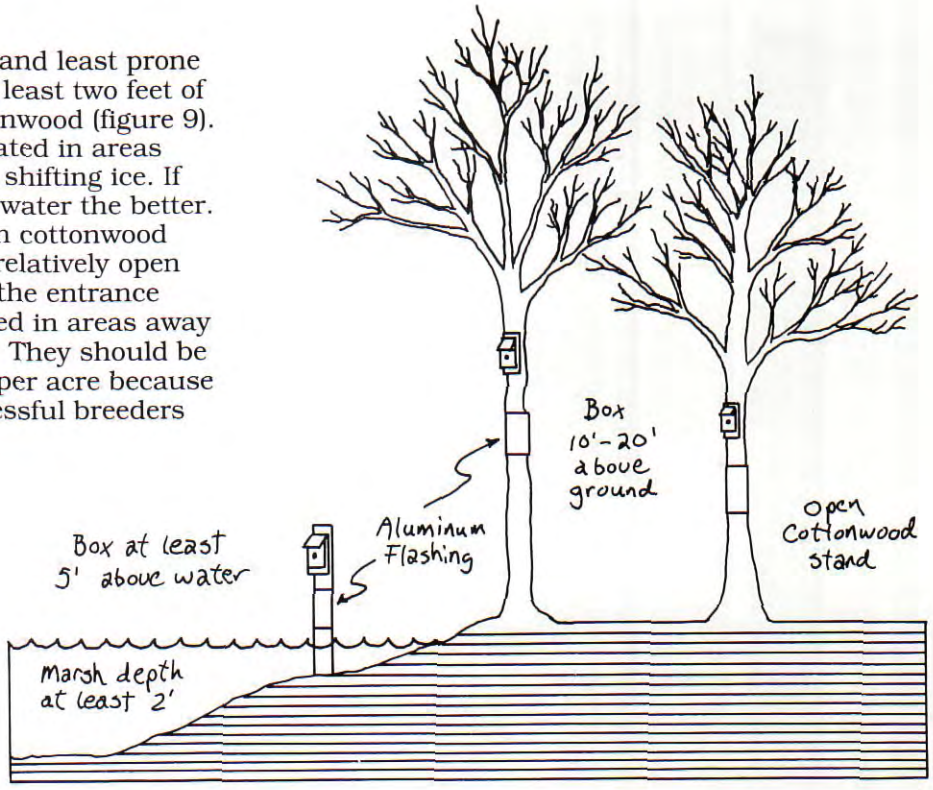


Figure 9
Placement of nesting boxes in open water and on shoreline trees.

to a pipe. The entrance hole should face open water. To deter predators from climbing wooden posts or trees, aluminum flashing that is 36 inches high or an inverted metal cone should be nailed below the box. Paint these predator guards light brown or olive to reduce reflection and improve appearance. If erected over water, boxes and support posts or pipe are most easily installed during the late fall or early winter through holes cut in the ice.

Maintenance

Wood duck boxes should be checked annually in the late winter or early spring. The boxes should be repaired, caulked, cleaned of all debris, and provided with fresh nesting material. The support posts or poles should be maintained in an upright position, and if necessary, moved to more firm ground.

Attracting Other Species

Nest boxes designed for wood ducks may also be used by buffleheads for nesting. To attract other hole-nesting ducks such as common goldeneye, Barrow's goldeneye, and common merganser, the size of the entrance hole should be increased to five inches in diameter and the nest box should be placed at least 20 feet above the ground.

Conclusion

Further information on the design, placement, and maintenance of duck nesting structures may be found in *Wildlife Management Techniques Manual*, edited by Sanford D. Schemnitz and *Home Made Nest Sites for Mallards* by Terry A. Messmer, Michael A. Johnson, and Forrest B. Lee of the Cooperative Extension Service, North Dakota State University, Fargo, North Dakota 58105. Decades of destruction and degradation of wetland habitat have caused a dramatic reduction in populations of nesting ducks. However, by properly managing existing wetlands and installing artificial nesting structures in suitable habitat, landowners can meet the challenge of stemming this regional decline. Insuring diverse and abundant duck populations for future generations will be well worth the effort.

Further information on the nesting requirements of ducks can be found in the Wyoming Game and Fish Department habitat extension bulletin number 4, "Duck habitat needs and development."

Written by Rich Greer through the Wyoming Cooperative Fishery and Wildlife Research Unit.

This publication is one in a series of habitat extension bulletins produced by the Wyoming Game and Fish Department. Call 1-800-842-1934 for additional information or assistance.