

Management of Wood Ducks on Private Lands and Waters

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Introduction

Of the many wildlife management practices the private landowner can do, few are as rewarding as those which favor wood ducks. Wood ducks and a multitude of other wildlife species respond readily to managed wetlands. If new wetlands are constructed with duck production in mind, wood ducks will use them for nesting, brood rearing, and roosting. Even where wood ducks already live, their numbers can be increased through management. Nationally, as more and more natural wetlands are drained and converted to agricultural, industrial, and residential uses, the remaining waterfowl production areas will be increasingly important. Conservation practices on existing wetlands and creation of new wetlands on private lands are keys to sustaining valuable wildlife resources.

Wetlands and other water bodies managed for wood ducks and other wildlife are important parts of a larger picture. Historically, wood ducks prospered along waterways because surrounding forests provided food and nest sites. Cutting timber along streams and rivers devastated habitat for ducks, raccoons, songbirds, and many other kinds of wildlife. Beaver became rare, further reducing wood duck breeding areas. Meanwhile, hunting bag limits and seasons were liberal, resulting in overharvests and consequential declines in wood duck populations.

In the 1930s, wildlife conservationists and sportsmen strongly supported limitations on hunting. Wildlife biologists determined that wood ducks would use manmade nesting boxes. Thousands were put up across the range of the wood duck. At about the same time, farmlands abandoned in the early decades of this century became forest land. Also, beaver populations expanded, creat-

ing ideal habitat for wood ducks. This combination of responsible actions by man and the increase in suitable habitat has resulted in the current healthy population of several million wood ducks.

However, new problems for the wood duck are becoming evident. Bottomlands are being logged off, drained, and converted to farmlands. Other forests are maturing, inviting timber harvesting. Regretably, some logging operations are done without regard for streambank protection, water quality, wood ducks, and other wildlife. Progressive foresters encourage landowners to leave bands of hardwoods at least 55 yards wide on each bank along all streams and rivers. Maintaining streamside stands of hardwoods secures habitat for wood ducks, other forest wildlife, plants, and aquatic life.

Natural Wood Duck Habitat

Imagine a 10-acre beaver swamp with standing live and dead timber, islands of grass and weeds, tangles of brush, patches of aquatic plants, and plenty of dragonflies and damselflies. Surrounded by extensive stands of mature, acorn-bearing oaks, this wetland is ideal wood duck habitat. Some of its properties are freedom from human disturbance, water depth averaging 18 inches or less, a mix of 75 percent vegetative cover and 25 percent open water, and lots of nesting cavities in old trees. The kinds of plants found in wood duck habitat vary from north to south across the range of the wood duck. In the South, buttonbush is prevalent, along with cattails and bullrushes; in the North, alders are common shrubs in wood duck habitat. In addition to swamps, productive natural habitats are found along wooded streams, rivers, and lakes in areas not exposed to strong currents or waves.

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Produced by Communications and Marketing, College of Agriculture and Life Sciences,
Virginia Polytechnic Institute and State University, 2009

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Designing Ponds for Waterfowl

New ponds or wetlands developed in wooded drainages will attract and hold waterfowl. Wood duck habitat can be created by diverting water from streams into impoundments or by catching runoff and spring water behind earthen dams. Owners or managers should not use standard farm or fish pond construction guidelines, which call for average depths in excess of three feet, steeply sloping sides, brush-free banks, and bulldozed, uniform bottoms (figure 1). Ponds built for ducks should be shallow (not more than 2.5 feet deep) and contain one or more small islands. Although woodies do not use islands for nesting, other desirable waterfowl such as mallards and black ducks do use islands. Where feasible, the banks of the pond and the islands should be sloped gently (not more than 20 percent or a 1 to 5 slope) to permit ducks to walk up on shore. A convenient drainage system is needed to lower water levels and expose the bottom of the pond (figure 2).

Gently sloping banks encourage emergent aquatic plants to grow. Trees and shrubs at the upper end and sides of the pond and emergent, marshy vegetation should be

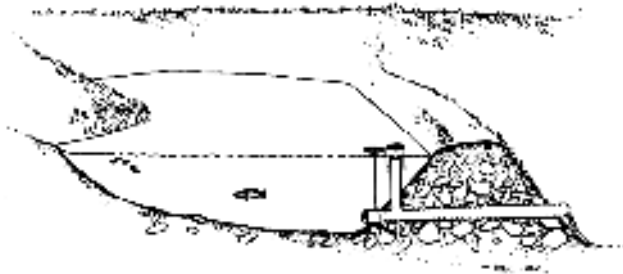


Figure 1. Standard farm pond construction features steeply sloping grassy banks. Such ponds are good for fish, but they have little brood habitat for wood ducks.

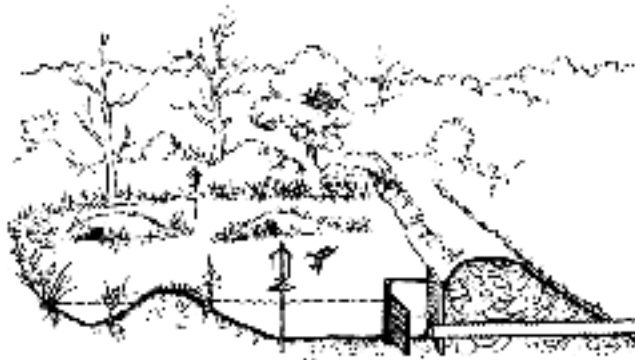


Figure 2 Ponds designed specifically for waterfowl are shallow, have abundant aquatic vegetation, contain islands, and have a drainage system, such as the flashboard drain illustrated. Ponds located in forested areas are particularly attractive to wood ducks.

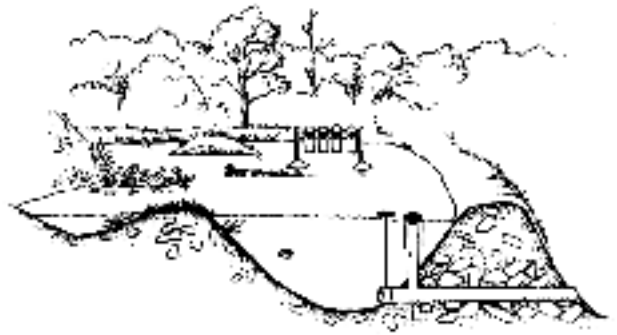


Figure 3 Ponds of several acres or more can be designed to produce both waterfowl and fish by creating a deep area near the dam while retaining the gently sloping banks, shallow water areas, and islands over most of the pond area.

allowed to grow. Besides providing food, aquatic vegetation supplies cover and protection for ducklings.

The USDA Soil Conservation Service provides landowners with free engineering advice on pond construction through its local offices. The landowner must specify the objective is duck production and not fish. And the owner should emphasize the need for shallow areas and a water-level regulation system, otherwise a conventional pond will be designed. Ponds of several acres or more can be constructed to support waterfowl and fish by creating a deep area near the dam and making the upper reaches shallow (figure 3).

Raising Foods for Wood Ducks

Many people interested in enhancing their ponds for waterfowl are unaware of the attractiveness, availability, and importance of naturally occurring plants. Draining the pond in the summer to expose its mudflats encourages smartweeds and other favorite duck foods to grow. The pond should be drained in mid-June in mid-Atlantic and southeastern states. In more northern areas drainage should wait a few weeks longer, until the young ducks can fly. Seeds from annual plants that live in wet areas remain viable in the soil for years. These seeds will germinate in moist, exposed soil free of dense vegetation. If vegetation in the shallows is too thick, space available for new growth can be exposed by cutting, mowing, burning, or disking. When flooded in the fall, these shallow areas may support food in greater variety and amount than if they were planted with millets and other cereal grains. This practice, called moist-soil management, saves the owner money and time.

Moist-soil management of waterfowl impoundments is not recommended for the Northeast and other areas where purple loosestrife grows. This exotic plant devel-

ops dense stands in shallow wetlands, choking out habitat for waterfowl and other wildlife. Landowners concerned with purple loosestrife control should contact state or federal wildlife agencies for advice.

Newly flooded ponds are free of aquatic vegetation and therefore may not attract and hold ducks, even if the ponds have been designed for waterfowl. It usually takes several years for this vegetation to develop naturally. Anticipating a need to quickly establish water plants for food and cover, the landowner should have the soils in the shallow reaches of the pond analyzed. Wet or dry soil samples can be used. The local Cooperative Extension Service Agent can help the landowner get the soil samples analyzed and interpret the laboratory report. Japanese millet is a good choice for planting. Some managers wait for the mudflats to dry out enough to permit disking, liming, fertilization, and seeding (figure 4). Managers who are certain that the mudflats are sufficiently fertile walk through the damp flats and seed the millet with a cyclone seeder. Ponds are reflooded in the fall, after the millet develops seed heads (figure 5).



Figure 4. This pond was drained in mid-June, disked, fertilized, and planted with Japanese millet. Note the stovepipe predator guards on the two poles supporting the four wood duck nest boxes.

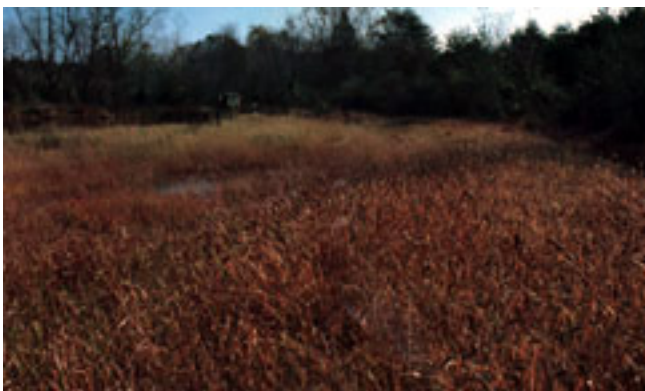


Figure 5. The same pond as shown in figure 4 photographed in September. The mature millet has heads heavy with seed. The owner has closed the drain and the pond is slowly filling with water.

Providing Nest Boxes

Wood ducks nest in cavities in trees unlike mallards, black ducks, and most other ducks. The cavities that wood ducks choose for nesting occur naturally in trees over 11 inches in diameter; they are typically 5x5 inches in crosssection, 22 inches deep, have entrance holes that are 4 inches in diameter, and are located 25 feet above ground. However, cavities suitable as wood duck nests take a long time to develop in nature. In young forests, such cavities are often in short supply, limiting not only the numbers of wood ducks, but also the abundance of squirrels, raccoons, owls, and other forest wildlife. Fortunately, landowners do not have to wait decades for natural cavities to form, because wood ducks will use artificial nest boxes.

Placement of wood duck nesting boxes over or near water that has abundant brood habitat can produce dramatic results. At first, wood ducks may not occupy many houses, but after a few years half or more of the nest boxes may be occupied. One reason for slow acceptance is that ducks reared in natural cavities search first for similar natural structures for nesting. However, birds hatched in nest boxes tend to choose nest boxes rather than cavities in trees for nesting. A beneficial consequence of this imprinting behavior is that the landowner with a successful nest box program will develop a breeding flock of ducks that return along with their young each year. Once the pattern is established, more nest boxes can be erected.

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Dump nesting, the placement of eggs in the nest of other hens by hens that do not incubate their own eggs, has been observed in multiple nests. For these reasons, it is probably best to start out with single nest boxes. Once a flock is established, the number of nest boxes can be increased about 10 percent each year. One man in the northern piedmont of Virginia started with a few wood duck nest boxes 25 years ago and one pond. Now he has developed five additional ponds and has set out 30 nest boxes. Each year about half of the nest boxes prove successful, and over 125 wood ducks are produced on not more than 20 acres of managed wetland. An additional benefit is that he sees flocks of hundreds of migrating wood ducks on his ponds, which are managed for Japanese millet production.

Building Your Own Nest Boxes

Plans for construction of nest boxes from wood and plastic buckets are provided in figure 7 and figure 8. Pickle bucket nest boxes can be sprayed with gray or red autobody primer paint to make them look less artificial. Wood duck nest boxes are available commercially too, and your state game agency or state wildlife extension specialist should be able to recommend sources.

Controlling Predation

Protecting the incubating hen and her eggs from predation is extremely important. Raccoons and snakes will raid nest boxes if the boxes are not placed properly and fitted with predator guards. Raccoons learn quickly, and once they start raiding unprotected nest boxes, they will soon all but eliminate a local nesting population. Wherever feasible, it is better to install nests on poles out in the water rather than on trees on land. A pole that needs no special predator guard is 4" PVC pipe, because the plastic is too slick for predators to climb. Wooden poles can be fitted with cones made of sheet metal (figure 6) or the pole can be wrapped with a 2-foot-wide band of shiny, rust resistant metal. An inexpensive source of metal sheets could be a local offset printer. Sections of galvanized stove pipe can be installed around poles after they are driven into the pond bottom. The stove pipe should be nailed to the post above the high water level (figure 4). To prevent snakes from crawling up between the post and the stove pipe, crimp the bottom of the stovepipe so that it fits snugly against the post. Predator control devices must be maintained. The extra effort and modest additional expense required to protect wood duck nests from predators can make the difference between success and failure in a wood duck nesting program.

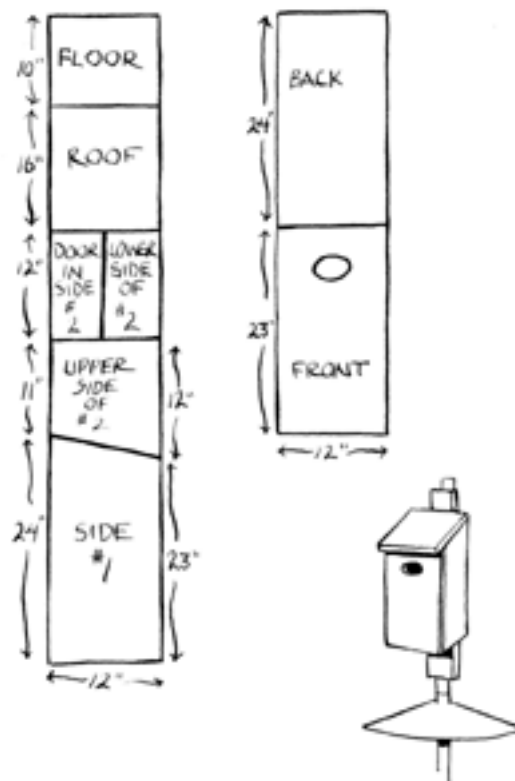


Figure 7. This plan for building a wood duck nest box calls for 10 linear feet of 1-inch by 12-inch rough sawn lumber. Use cedar, cypress, or other weather-resistant lumber. Drill several drain holes in the bottom. Attach a mesh strip of one-quarter-inch hardware cloth from the inside of the hole to the bottom to allow the ducklings to escape the box. The hole should be four inches wide and three inches high. The door should be placed above the lower side of side No. 2 and mounted with a rustproof, bras hinge and a hook and eye to permit replacement of sawdust each winter.

Locating Nest Boxes

Nest boxes located in the open are used more frequently than boxes located in heavily wooded areas. Situate boxes over or near water that has a good mixture of aquatic vegetation (figure 9). Drive the post for the nest box down several feet into the pond bottom. The practical question is, how does one accomplish that? Driving posts from a rocking boat is not a good idea, although it can be done by standing on the rear seat of the boat. A better way is to have everything ready before mid-winter. When the ice is thick enough (about 3 or 4 inches), walk out to the selected spot with a step ladder, post, nest box, predator guard, and tools and set the pole through the ice (figure 10). Then mount the box on the pole so that it faces open water and is not obstructed by branches. Mount the nest box securely so that it will not sway in the wind. The box should be 3 feet or more above water level, and the predator guard must be at least 2 feet above the high water level.

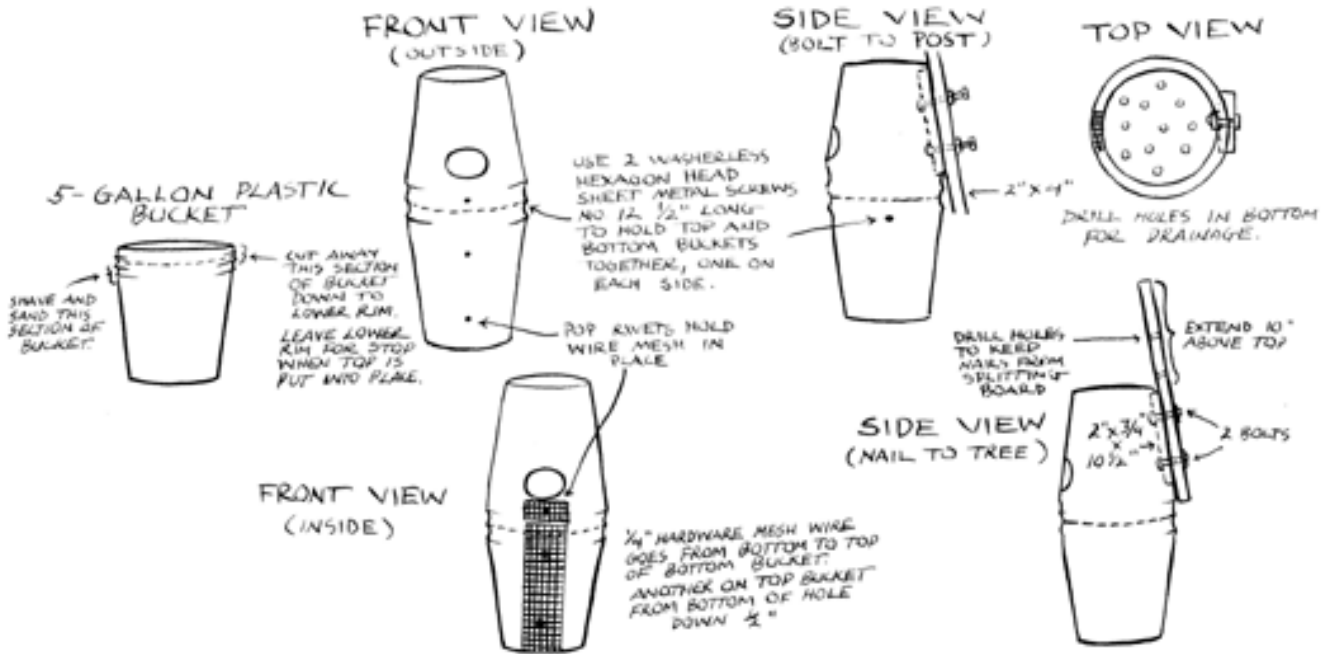


Figure 8. Two plastic pickle buckets can be modified and joined together to make a nest box. A predator guard should be installed to protect each nest (see figure 7).

Providing Nesting Material

For the first year and every year after, provide fresh sawdust or wood shavings in the nest box. A 3-inch layer will do. Do not use hay or straw, which can mold or carry diseases. The time to do this is in midwinter, when ice permits easy access to the nest boxes. In more southern areas, this must be done before February, ice or no ice, to avoid scaring off ducks. When the old material is removed, check to see if the nest was used by wood ducks the previous season. During this check you can spray the inside of the box with a strong disinfectant to repel wasps.



Figure 9. Wood duck nest boxes are more effective when they are situated out in a pond than when fastened to trees on shore or in the woods. The holder should be plainly visible. A rich mixture of aquatic vegetation and some open water near the nest provide necessary brood range.



Figure 10. Winter is the time to install new nest boxes, repair old boxes, and replace sawdust in the nest boxes.

Competing with Starlings

Researchers have tried varying shapes of nest boxes and even yellow, translucent tops to keep starlings from nesting in wood duck boxes. Although these efforts do reduce competition between wood ducks and starlings, no nest box design or repellent that works well enough for general use has been discovered. The best way to beat the problem is to remove nesting materials when starlings are first noticed using the box, and to keep

it up until they leave. Wood ducks bring no materials to the nest, so when you find straw and other nesting materials, you know a nest competitor is at work. Checking nest boxes for competitors should be done in the afternoon rather than the morning to avoid frightening off hen wood ducks.

Keeping a Diary

A lot of planning and work goes into a successful wood duck nesting program. Jotting down management activities and recording uses of the nests not only stimulates thoughts about how to do it better next year, but these diary entries become a permanent record of your contribution to wildlife. A diary keeps those facts straight, adding authenticity to your stories of success.

The Wood Duck in Brief

Plumage: The wood duck is regarded as the most beautiful North American duck. The male's breeding plumage of maroon, white, blue, green, red, brown and black is truly captivating. The hen has grayish-brown feathers, a white chin and throat, and white eye rings. The wood duck is the only native duck with a smoothed down crest.

Classification: The wood duck is a member of the duck and goose family, Anatidae. Its scientific name is *Aix sponsa*.

Body Characteristics: Wood ducks are medium-sized ducks, usually weighing about 1.5 pounds. Body length is 17-20 inches. Wings are broad and short, with a span of 30 inches; such wings aid flight through woods and other tight cover. The flight speed of wood ducks is 39-55 miles per hour.

Range and Habitat: Wood ducks live in hardwood swamps, beaver ponds, meandering streams, and rivers and artificial ponds surrounded by mature timber. During the breeding season, they are distributed across the eastern United States and southern Ontario to Florida and west to Minnesota and Texas. Breeding populations are found on the west coast in California, Oregon, and Washington. Eastern wood ducks winter in the southeast, and western ducks winter in California.

Reproduction: The drakes and hens form pairbonds by late winter. The hen nests in a cavity in a tree or nesting box. The average clutch size is 9-12 dull white eggs. Eggs are laid one per day until clutch is completed. The incubation period is 28-37 days. Pairbonds last until just before the eggs hatch. Ducklings remain in the nest

for 24 hours before their mother calls them out, whereupon they jump to the ground or water surface. The hen stays with her brood until the young can fly at 8-10 weeks of age. Some first-year nesting females will lay their eggs in the nests of other females. Called 'dump resting,' this behavior is more common when suitable nesting sites are in short supply.

Preferred Foods: Adults favor acorns, beech nuts, berries, bald cypress cones, duckweed, sedges, wild grapes, and wild rice. Ducklings depend upon small invertebrates for the first 2 weeks. These invertebrates, including mayfly and dragon fly nymphs, are abundant in masses of aquatic plants.

Survival: Up to 90% of the ducklings will die in the first 2 weeks. For ducklings from 2 to 6 weeks old, the mortality rate is about 50%. After gaining flight and up to 1 year, the mortality rate is about 75%.

Predators and Competitors: Starlings, common goldeneyes, hooded mergansers, American kestrels, squirrels, screech owls, and wasps will compete for the nest cavities and boxes. Nesting hens, eggs, and ducklings are preyed upon by raccoons, fox squirrels, gray squirrels, mink, opossums, rat snakes, snapping turtles, fish, and predatory birds.

Acknowledgements

Richen Brame, Robert H. Giles, Jr., W. Carter Johnson, Fant Martin, Frank McGilivery, LeRoy Sowl, and Dick Winter for comments on the manuscript. Appreciation is due to V. Daniel Stiles for his support.

Reviewed by James Parkhurst, Extension specialist, Fisheries and Wildlife Science