LOUISIANA FOREST STEWARDSHIP NEWSLETTER

Winter 2012 Vol. 7 Issue 1 2012

Photo by Ken Thomas, *kenthomas.us*

FOREST MANAGEMENT FOR WILDLIFE DIVERSITY AND ABUNDANCE

Story by Donald "Duck" Locascio Jr., LDWF Biologist Manager

It is generally accepted that to manage any wildlife species, management must be directed towards manipulation of the habitat in which the species is found. Unfortunately, the mode of manipulation is far from black and white and has probably been debated in this country since the first Native American tribe set a prescribed fire contrary to his neighboring tribe's wildlife management plan. Today, forestland is managed for a multitude of resources including pure timber revenue, land investment, aesthetics, hunting, and other recreational endeavors. When attempting to manage for a combination of these goals, it can be difficult to find harmony between these sometimes contrary objectives. A primary management objective must be identified before management can be planned. Here we will discuss management recommendations when wildlife habitat is the primary goal.

The most economical way to manage habitat for wildlife is through commercial timber harvest, and for decades wildlife managers have used traditional forestry harvesting techniques to manipulate habitat for wildlife. Traditional forestry techniques have been modified at times in an attempt to provide more desirable wildlife habitat, but generally, wildlife habitat has been merely a result and not the primary focus of timber management. Due to the increased value of recreational pursuits, land management on some properties has begun to focus on wildlife management as well. For those of us that manage bottomland hardwood properties with wildlife as the primary objective, a document has been written to guide us.

Restoration, Management, and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat is the culmination of work done by the members of the Lower Mississippi Valley Joint Venture (LMVJV). LMVJV is a self-directed, non-regulatory, private, state and federal conservation partnership that exists for the purpose of implementing the goals and objectives of national and international bird conservation plans within the Lower Mississippi Valley region. The LMVJV Forest Resource Conservation Working Group, composed of many private, state and federal foresters, biologists and researchers, developed and published bottomland hardwood management recommendations designed to achieve and maintain habitat conditions in mixed species bottomland hardwood forest communities suitable for forest dependent wildlife.

During the development of these recommendations, the basic life requirements and biology of various wildlife species, including black bear, American woodcock, wild turkey, white-tailed deer, songbirds, waterfowl, rabbits, squirrels, reptiles, and amphibians, were reviewed and became the basis of the recommended forest conditions. In short, the recommendations detailed within the guidelines of "desired forest conditions" encompass habitat needs for most forest dependent species found in the Mississippi Alluvial Valley. It is no surprise that the recommendations for the management of these species deal with the forested habitat in which they live. The recommendations were developed to clearly describe desired forest conditions that meet the wildlife habitat requirements of priority species, as well as ensure long-term forest sustainability.

For landowners and land managers with properties in other habitats throughout our state, be on the lookout because your book is being written now.

RECOMMENDATIONS

Habitat requirements of a diverse array of wildlife species, as well as the individual needs of a single wildlife species, cannot be provided on every acre; therefore, a land manager must be cognizant of both landscape management as well as stand level management. At the landscape level, managers will attempt to provide the habitat needs for a wide variety of species, providing a mosaic of forest stand conditions across a property by utilizing various silvicultural treatments at various intensities. At the stand level, the goal is to develop and maintain a multi-canopy, multi-age forest with a diversity of structure, species and diameters. The timing, size and arrangement of the stand level management will create diversity at the landscape level.

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Louisiana Forest Stewardship Newsletter
Winter 2012
Volume 7 Issue 1 2012

Editor: Cody Cedotal, FSP Biologist
Layout: Becky Chapman, Public Information

This public document was published at an average cost of $600.40. Approximately 1250 copies of this document were published at an average printing cost of $600.40. The total cost of all printing of this document averages $600.40. This document was published for Department of Wildlife and Fisheries, 2000 Quail Drive, Baton Rouge, Louisiana, 70808, by LSU Printing Services, to provide information on the Louisiana Forest Stewardship Program. This material was printed in accordance with the standards for printing by state agencies established pursuant to R.S. 43:31. Printing of this material was purchased in accordance with the provisions of Title 43 of the Louisiana Revised Statutes.

LANDSCAPE LEVEL MANAGEMENT

Landscape level management deals with the "big picture." A property greater than 10,000 acres may make up the "big picture," but most land owners and land managers manage much smaller properties. However, by determining the role a small property contributes to the larger landscape, management plans can be directed to provide quality habitat for the wildlife using the entire landscape in the area. For instance, if your property happens to be the only wooded habitat within a larger landscape of pastureland, it is obvious how important the property is to the wildlife using the entire landscape. However, if your property is surrounded by similar habitat, the importance of the property may not be so clear. The proper habitat manipulation through timber management which follows "desired forest condition" recommendations on a small property can improve wildlife populations on the surrounding larger landscape. By determining the type, condition and management practices of habitat on neighboring properties, a landowner can develop a management plan which not only enhances the property directly but will contribute to the improvement of an entire landscape. When habitat is improved at landscape scale, wildlife diversity and densities are increased and maintained on a much larger scale, resulting in higher wildlife usage of even very small properties.

At the landscape level, wildlife populations will benefit most when the desired forest conditions are sustained over time. This is achieved by providing some habitat that is within the desired condition, other portions growing into the desired condition, and areas growing out of the desired condition. It is recommended to provide approximately 30 percent in each of these habitat categories within a landscape, with the remaining 10 percent consisting of passively managed forest. Passively managed forest can be used as experimental controls to measure the success of treated acreage or simply be a favorite spot within a property that a landowner wishes to preserve and never cut. These landscape goals are sustained with well-planned forest treatments over time. The table below details desired landscape conditions

DESIRED LANDSCAPE CONDITIONS

Habitat Type	Percent of Area	Description
Forest Cover	70-100%	Large (>10,000 acres) contiguous forested areas are desired. At any point in time 35% and optimum 50% of the forest should meet the desired stand conditions.
Actively Managed Forest	70-95%	Forests that are managed via prescribed silvicultural treatments to meet desired stand conditions.
Regenerating Forest	< 10%	Forest regeneration areas > 7 acres. Areas < 7 acres are not considered regenerating forest.
Shrub/Scrub	< 5%	Includes early successional habitat and wood-land shrub habitat.
Passively Managed Forest	5-30%	Forest areas that are not subject to silvicul-tural manipulation such as natural areas, set-asides, no-cuts.

STAND LEVEL MANAGEMENT

Habitat at the stand level is manipulated by managing the amount of light filtered through the forest canopy. By carefully selecting which trees will be removed and which will remain, timber harvesting can be used to create understory vegetation, increase tree species diversity, enhance structural diversity, develop regeneration, and improve health and vigor of residual trees.

A combination of individual-tree selection and group selection harvests are found to be the most preferred silvicultural treatment to develop and maintain desired forest conditions necessary for sustaining and enhancing wildlife populations in bottomland hardwood forests. As the name implies, individual-tree selection is the removal of individual trees throughout a stand to decrease stem density, canopy closure, and competition for nutrients and light. Depending on the trees that are selected for removal, individual selection can also increase species diversity and enhance diameter distribution. This is accomplished by targeting the most abundant species while protecting the less abundant species, along with retaining stems of all diameter classes. By varying the intensity of tree removal across a stand, differing amounts of light are allowed through the canopy, resulting in a more diverse midstory and understory in both species and structure. Individual selection is the first step used to establish regeneration of shade-intolerant species such as oak, while group selection is used to release pockets of advanced reproduction. Group selection harvest is the removal of several trees in a group or cluster. This can be done by removing as few as three large crowned stems or by removing all trees within several acres. When used to release advanced regeneration, the maturity of the regeneration and the area in which the regeneration is found will determine the size of the group. Group selection harvests greatly improve horizontal and vertical structure within a stand, which increases habitat and wildlife diversity. Group selection harvests allow direct sunlight through the canopy gap while allowing filtered light in various amounts into areas of the forest surrounding each group. This results in structurally diverse understory and midstory.

When the canopy cover is greater than 70 percent light is restricted from reaching the forest floor resulting in very little vegetative browse and cover in the understory. These trees are marked for removal. By opening the canopy this bare ground will become a lush layer of understory vegetation.

Individual selection harvests result in the establishment of midstory and understory vegetation, which is important for most forest dependent wildlife.

Group selection harvests promote vegetative growth which provides escape cover and nesting habitat for wild turkey while improving forest structure for all forest dependent wildlife.

Depending on forest conditions and management objectives, the use of other harvesting techniques may be employed. Modified shelterwood, clearcutting and various combinations of techniques are frequently used to reach wildlife habitat objectives for a property. For instance, shelterwood and clearcutting systems are often employed as necessary when managing stands of limited species composition, to release advanced regeneration, or as required to improve habitat conditions of specific wildlife species.

Any and all silvicultural techniques can be used which allows for the creation of a highly complex forest diverse in tree species, tree density, tree diameter, tree age, tree canopy and stand structure. This wide range of habitat conditions found within stands and across a landscape will provide habitat characteristics necessary for most forest dwelling wildlife. The table below details desired stand level conditions.

DESIRED STAND LEVEL CONDITIONS		
Forest Variables	**Desired Structure**	**Conditions That May Warrant Management**
Primary Management Factors		
Overstory Canopy Cover	60-70%	> 80%
Midstory Cover	25-40%	< 20% or > 50%
Basal Area	60-70 ft^2/acre	> 90 ft^2/acre
Secondary Management Factors		
Dominant Trees	> 2/acre	< 1/acre
Understory Cover	25-40%	< 20%
Regeneration	30-40% of area	< 20% of area
Small Cavities	> 4 holes/acre	< 2 holes/acre
Large Cavities	1 hole/10 acres	0 holes/ 10 acres

WILDLIFE AND RECREATION OPPORTUNITIES

Implementing "desired forest condition" recommendations benefits most forest-dependent wildlife species as well as overall forest health. Timber harvesting that creates these desired forest conditions will result in improved habitat for a vast array of wildlife species even on a small property. Through overstory removal, light is allowed to reach the forest floor which promotes the growth of understory plant communities, providing food and cover for herbivores like white-tailed deer and brood habitat for wild turkeys. Forest canopy gaps scattered throughout a stand created by group selection harvest provide nesting cover for wild turkey, diurnal habitat for woodcock, and nesting habitat for songbirds such as Kentucky and hooded warblers. Improved diversity of various seed-producing tree species results in more consistent annual mast crops, which benefits squirrels and other wildlife that rely on mast production. A diverse and well developed midstory is important to many species of non-game birds and provides young turkeys protection from avian predators. In summary, structurally diverse forests will provide many habitat niches which are important to a multitude of wildlife species.

The implementation of "desired forest condition" recommendations not only benefits the wildlife inhabiting a property but also allows full use of a property for recreational pursuits. When forests are managed under an uneven-aged management system, harvests are implemented frequently but at a lower intensity compared to patch clearcutting that results in even-aged stands. Properties that are solely treated by clearcutting can have negative impacts on both wildlife and those who pursue wildlife. Following a clearcut, vegetation responds rapidly providing quality habitat for some wildlife but becomes impenetrable for humans. However, this thick lush habitat is rather short lived as advancing saplings develop large enough crowns to shade-out the understory. When the structure of the stand reaches a point where humans can reenter the stand for recreational pursuits, wildlife habitat quality is at very low levels. Habitat quality will remain at a low level until the stand is treated again to allow light to reach the forest floor. This boom and bust cycle repeats itself, with short-term quality wildlife habitat followed by long-term poor quality habitat. Although clearcuts are beneficial to many wildlife species and an important silvicultural tool when managing a forest, they should not represent a large portion of a property. If clearcuts represent a large portion of a property, then a large portion of the property is either impenetrable vegetation or a forest of low wildlife habitat quality at any

When light is allowed to reach the forest floor, species such as peppervine will flourish which provides both soft mast and cover for a diverse group of wildlife species.

Kentucky warbler feeding its chicks.

Photo by Cody Cedotal, LDWF

given time. When desired forest condition recommendations are carried out on a property using uneven-age management, wildlife habitat is sustained at higher levels over time, and the entire property can be entered for recreational pursuits.

CONCLUSION

Upon the eve of having completed a second revision of the management document for the Mississippi Alluvial Valley, biologists, foresters and researchers are presently focusing efforts in other ecoregions in the southeast. Recommendations for wildlife habitat management for the remainder of Louisiana's forested habitat will be found in two manuscripts which are in the developmental stage. The East Gulf Coastal Plains Joint Venture and West Gulf Coastal Plains Joint Venture are developing recommendations for upland hardwood, pine and mixed pine/hardwood forest that will guide landowners and land managers who are managing property with wildlife as the primary objective. For now, landowners with bottomland hardwood properties who are interested in providing optimum wildlife habitat should strive to develop multi-canopy, multi-age timber stands with a diversity of structure, species and diameters. Properties which offer the desired forest conditions described here will produce sustained, healthy and diverse wildlife populations to be enjoyed now and for generations to come.

To request a copy of *Restoration, Management and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat*, contact Cody Cedotal, FSP Biologist at (225) 765-2354 or ccedotal@wlf.la.gov.

Photo by Patrick Coin, *bugguide.net*

THE MARBLED SALAMANDER:
A Bottomland Hardwood Species

Story by Jeffrey P. Duguay, Ph.D., LDWF Research Program Leader

The marbled salamander (*Ambystoma opacum*) has some life history traits that make it somewhat unique among salamanders. For instance, breeding takes place in the fall and on land. In the fall, marbled salamanders migrate to breeding areas which may be a dried vernal (summer) pond, edges of an oxbow, flood plains, or into swamp regions subject to flooding. Females lay a clutch of 50-200 eggs in depressions that they guard until they are submerged by fall rains. The eggs hatch in the fall or early winter months, and the newly hatched larvae are fully capable of swimming.

Declines of amphibian populations have been documented due to various causes, with habitat destruction being of primary importance. Loss of bottomland hardwood forests results in loss of species that rely on this unique habitat, such as the marbled salamander. In order to properly manage for any species, an understanding of its habitat requirements is essential.

To get a better understanding of the habitat needs of the marbled salamander, the author conducted a study on marbled salamander microhabitat use. Microhabitat is the habitat in the immediate vicinity an organism is found. During this study, bottomland hardwood forests were searched for marbled salamanders. When a salamander was found, a 1-m^2 plot was centered directly over the location, and variables, such as percent vegetation cover, percent leaf litter, percent overhead cover, and percent log cover were measured. In addition, vegetation within a 5-m radius of the capture site was measured. This included things such as number of trees and logs within this area. In order to determine if there were certain variables that the salamanders were selecting, we also measured these same variables at nearby random sites and then compared the sites. Preliminary analysis has revealed that marbled salamanders prefer areas that have lots of logs, preferably logs beginning to rot, less leaf litter, and larger trees.

What this means from a management perspective is that salamanders prefer sites within a bottomland hardwood forest that have an older structure. Large trees provide shade that makes for a cool moist microclimate. Also, as these large trees reach their maximum age they will eventually die, fall to the ground, and begin to rot, providing habitat for the marbled salamander. If someone is interested in promoting marbled salamanders, they should maintain uneven-aged bottomland hardwood forests. Allowing these forests to mature will provide the older structure these salamanders prefer. Secondly, if there are few logs on the ground, cutting single trees throughout an area and leaving these fallen trees on the ground to eventually decay will provide habitat for the salamander. Do not cut so many trees in an area as to open up the canopy, resulting in sunlight reaching the forest floor. While sunlight on the forest floor is great for other species of wildlife, it dries the soil too much for salamanders to use an area.

LDWF File Photo

Example of sites commonly selected by marbled salamanders.

Photo by Rebecca Richardson, Wikimedia Commons

LIVING WITH COYOTES

Story by Travis Dufour, LDWF Wildlife Biologist

Believe it or not, many of us live around coyotes on a daily basis. Secretive and elusive, these animals have learned to exist right next to us without detection. In fact, coyotes thrive in both urban and rural areas with great success. Once found largely in the arid regions of the western United States, they have expanded their range in the last 100 years throughout every state (except Hawaii), every Canadian province, throughout Mexico, and into Central America.

Three factors greatly helped the coyote expand its range: removal of timber wolves; expansion of human development; and fragmentation of the once vast woodland areas of the eastern and southeastern United States. Another minor factor producing local range expansions is the practice of transporting and releasing live-trapped coyotes into "chase pens." Coyotes often escape these pens, and may even be released as the pens are abandoned.

COYOTE BIOLOGY

Unlike domestic dogs, coyotes breed only once per year, usually January or February. After a gestation period of approximately nine weeks, female coyotes give birth to an average litter of five to seven pups. Litter sizes up to 13 pups have been reported, however, it is theorized that litter size may be directly related to food availability and local coyote population density. A mated pair of coyotes becomes very territorial and aggressively defends a range around a den site that the pregnant female has chosen. Pups may be born any time from late March through May. Also unlike domestic dogs, the male coyote is a much more attentive parent. For the first few weeks after birth of his pups, he provides food to both the nursing female and the young pups after they have been weaned. Although they are capable of breeding at 1 year old, it is not uncommon for young female coyotes to remain with their parents for at least one year, and help their mother raise a new litter of pups. After about two months, the pups emerge from the den and are ready to follow their parents on short trips.

Interbreeding between coyotes and domestic dogs is rare, but it has been reported, producing "coydogs." These genetically mixed offspring may or may not be fertile.

COYOTE PREDATION

The degree to which coyotes cause problems varies greatly by location, season and the individual coyote. In rural areas, complaints mainly consist of livestock and agricultural damage. Coyotes are omnivores and typically eat anything. Livestock damage varies from chickens and turkeys up to pigs, goats and calves. In urban areas coyotes regularly prey on small domestic dogs and cats. Although unusual, coyotes may become bold enough to attack young children, and several such incidents have been reported in various states. They may regularly raid neighborhood garbage cans too.

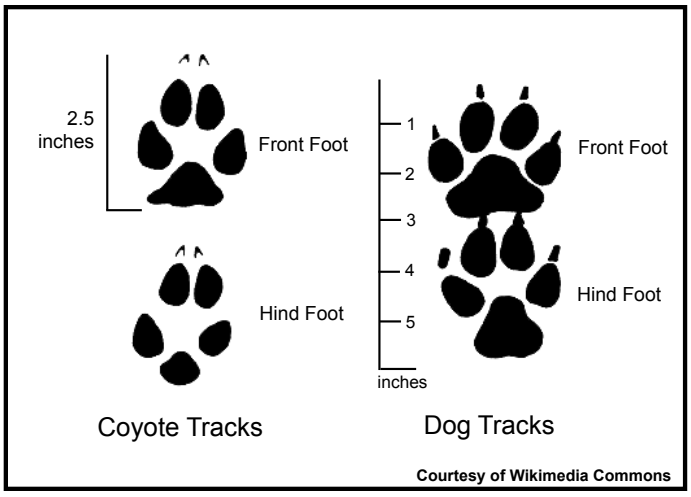
In the wild, coyotes subsist on small mammals, birds, deer fawns, wild turkeys, rabbits and waterfowl. They regularly feed on roadkill, and carrion is a favorite meal. Coyotes also commonly eat agricultural crops such as watermelons, strawberries and sweet corn.

Livestock Predation

Coyotes began appearing in Louisiana in the early 1950s when farmers and loggers undertook large-scale clearing of wooded acreage for mechanized agriculture and timber harvesting. Even then they weren't widely recognized as coyotes, and reports of "wolves" in northern Louisiana were common. Southwestern Louisiana had always been home to the native red wolf, and misidentification of coyotes was common. Invading coyotes and red wolves have interbred for so many generations, that today the pure red wolf gene pool may have disappeared. The expansion of human population also introduced calves, chickens, sheep and other livestock that quickly became easy prey for coyotes. Coyotes thrived on a bountiful plate provided by man.

In areas where livestock is common today, coyotes usually get the blame for the majority of depredation cases. However, domestic free roaming dogs are much more likely to be the culprits, especially in areas of human population. Coyotes typically attack a larger prey animal around the head and neck, generally attempting to crush the skull or crush the windpipe causing asphyxiation. Domestic dogs typically attack around the flank or hindquarters, attempting to drag the prey animal down to the ground. Coyotes leave very obvious identifiable bite and puncture marks on their prey, while domestic and feral dogs tear and slash at the prey animal.

Coyotes and feral dogs are not the only predators of livestock. Bobcats, red and grey foxes, minks and raccoons will also prey on livestock and poultry. An experienced animal depredation specialist should investigate problem areas. The USDA Wildlife Services section will work with landowners and producers who have depredation problems. The Louisiana Department of Wildlife and Fisheries also



Courtesy of Wikimedia Commons

maintains a list of active nuisance animal trappers. Learning the specific signs of coyote predation will help a producer take the appropriate actions to end the problem. Exclusion and electric fencing, guard dogs and trapping can help reduce coyote problems.

There may not be a quick solution to coyote predation on livestock. Certain individual coyotes are more prone to prey on livestock, and removal of the offending animal may stop the problem. Coyotes (and other predators) are also more prone to livestock predation when they have young to feed (springtime) or when they are teaching their young how to hunt (summer). The USDA has spent millions of dollars and decades of trapping, poisoning and even aerial gunning to control coyote predation, yet the coyote population continues to increase throughout North America.

Photo by Kristina, Flickr.com

COYOTES IN THE SUBURBS

As a result of their dramatic range expansion, individual coyotes are now appearing in very unusual places. These adaptable animals are making their homes right next to ours. Urban expansion into wild natural areas will continue to cause coyote-human interaction problems. Disappearing pets and scattered garbage cans are signs that coyotes have found easy meals in our backyards. Some common sense and preventative measures on our part will produce fewer problems: closely watch or kennel small pets when outside; remove leftover pet food after feeding; and keep brush and weeds well controlled. If pet food is stored outside, place it in a sealable container. Keep smaller pets in a fenced area, and never chain or tie up small dogs.

Install a "doggie-door" in the back door of your home so that smaller pets will have an escape route. Check to make sure that perimeter fences are intact with no holes that a coyote could slip through. Coyotes are largely nocturnal when roaming our neighborhoods, so keep pets inside at night. Don't leave trash at the curbside overnight. Coyotes are very smart animals and they are always looking for an easy meal.

Coyote attacks on humans are extremely rare, but have occurred. Never allow very small children to play alone especially at dusk in areas where coyotes are present. As with all wildlife, never intentionally feed coyotes. Interactions between coyotes and humans will increase as both our population numbers expand, and it is up to us to be the smarter one in this interaction.

WILDLIFE CONCERNS

As mentioned earlier, coyotes prey on small mammals such as mice, rats, rabbits and squirrels. But they have also been shown prey on deer and fawns, turkeys and waterfowl. The Quality Deer Management Association has sponsored several research projects that indicate intensive coyote (and other predator) removal just prior to fawning season will dramatically increase fawn survival rates, thus improving annual recruitment into the local deer herd. However, it should be emphasized that coyote control is an extremely labor intensive project, and at least 75 percent of the local coyote population must be removed to have a serious impact on their population. Weekend trapping and shooting a few coyotes during deer season will not control a coyote population.

Many Louisiana hunters are concerned that coyotes are having a negative effect on their deer herd and rabbit populations. In reality, coyotes seem to have filled a niche left over from the removal of wolves and cougars. Despite increasing coyote numbers statewide, the Louisiana deer population is very healthy. There may be localized deer herds whose growth is negatively impacted by coyote predation, but these situations can generally be remedied by habitat improvements, not intensive coyote removal. Hunters should also recognize that deer fawns are regularly killed by bobcats and dogs. Wholesale removal of coyotes is only addressing a portion of the issue.

LDWF File Photo

PLEASE NOTE

The Louisiana Department of Wildlife and Fisheries does NOT provide nuisance animal control or removal services. We do permit individuals (Nuisance Wildlife Control Operators) to provide these services for a fee. NWCOs are permitted to handle most species except deer, bears, migratory birds and alligators. For more information contact a local LDWF office, or a list of NWCOs can be found on LDWF's web site under services/nuisance wildlife.

The previous article was used in one of many brochures that have recently been developed by LDWF Private Lands Staff.

Printed versions of these are available at your local LDWF Field Office or can be mailed at your request. Electronic versions are available on the LDWF website: *www.wlf.la.gov*. For more information, contact Cody Cedotal, FSP Biologist at (225) 765-2354 or ccedotal@wlf.la.gov.

HABITAT CORNER: *Wood Duck Brood Habitat*

Story by Cody Cedotal, LDWF Forest Stewardship Program Biologist

Many readers may remember back to the Fall/Winter 2006 issue of the Louisiana Forest Stewardship Newsletter and recall an article titled "Wood Ducks: Residents and Migrants." In this article, many things were discussed that are important when managing to improve habitat for wood ducks, including the use artificial nest boxes. Nest boxes have been and continue to be quite successful in providing additional nesting opportunity for wood ducks. However, when establishing nest boxes for wood ducks it is extremely important to remember that nesting cavities alone are not good enough. Quality brood habitat located very near nest cavities is equally important. So, what is "quality brood habitat" and how far is "very near"?

Most are aware of the importance of predator guards on nest boxes to protect against common predators such as snakes or raccoons. Other common predators on wood duck young are raptors (hawks and owls) from which conventional predator guards offer no protection. The best defense for ducklings against these threats is easy access to escape cover. Dense layers of aquatic or woody vegetation such as alligatorweed, bulrushes, American lotus, cattail, buttonbush, water elm, swamp privet, ect. can not only provide excellent cover, but structure for foraging as well. Much like turkey poults, young wood ducks require a steady diet of insects and seeds. These food sources are found in the same areas that provide escape cover.

Being "very near" quality brood habitat can easily be put into perspective. Imagine yourself as a young wood duck eagerly climbing out of a safe and secure nest box to mom's subtle calls. You finally reach the daylight at the entrance hole, gather all of your energy, and plummet to the water. As you break the surface of the water, you realize there is no cover in sight. You watch as the ripples from your splash down slowly crest the horizon. Now, if you were a wood duck, that would not be the definition of "very near."

At right are two photos of wood duck nest boxes. Which do you think has successfully produced more wood ducks? "B" is the correct answer. This box is situated directly over good quality brood habitat with ample foraging habitat and escape cover provided by the dense grasses and nearby cypress/tupelo forest. Unfortunately, I have noticed a trend of nest boxes being placed on open water and recreational or neighborhood ponds such as that in photo A (this pond is lacking aquatic vegetation and located in an upland area at the edge of a pasture). In this instance, the effort could be considered counter productive since any wood ducks that expend time and energy nesting here are subjecting their broods to potentially extreme predation rates.

Photo by Ben Mancini
The Ottowa Club
ottowaduckclub.com

Photo by Rick Leche, *Flickr.com*

Photo by Cody Cedotal, LDWF

Photo A

Photo by Cody Cedotal, LDWF

Photo B

Louisiana Department of Agriculture & Forestry
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