

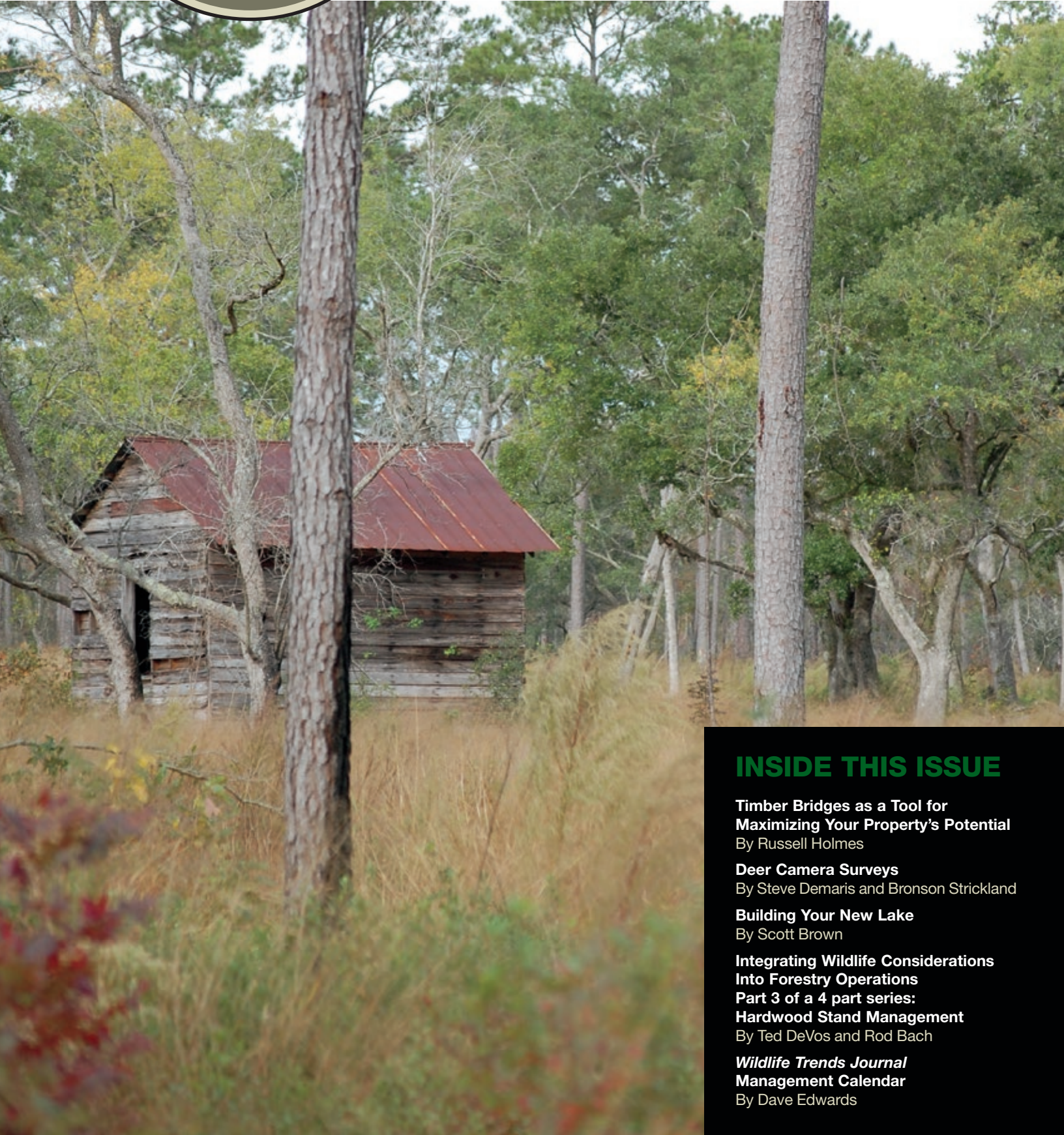


# Wildlife Trends

## JOURNAL

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## Earl Says...

Last month while attending the International Wild Pig Conference in Montgomery, Alabama, I was amazed at all the hard work and attention that goes into managing and researching our problems with wild pigs in this country.

You've read a number of articles in this publication over the years on the problems associated with wild pigs as well as methods to trap, control and manage them. Please know we will stay on top of the latest research and control methods to help you and your property. The most glaring conclusion I came away with from the Conference was that this is a growing problem and we all need to cooperate with each other to maximize our efforts.

In areas such as the mid-West, wild pigs are only a minor problem, but state agencies are aggressively working to keep them out or under control. It is believed that wild hogs have become such a problem because some well-meaning landowners and hunters have released "just a few" pigs to hunt and the problems exploded, spilling over to their neighbor's properties. And now there's even talk of doing away with wild pig hunting in some states to keep folks from releasing them. In the meantime, there are plenty of products out there to help us with pig problems. From night vision scopes and suppressed rifles to corral fences with remote gates, you can spend as much as you want to work on your problems. There's even a new type of feeder which dispenses a species specific poison for wild pigs. We hope to bring you more information on this in the future.

Lastly, we'll be on the road again this summer exhibiting at several Outdoor Shows throughout the South. Here's a list of shows we'll be doing so please come see us if you get the chance.

June 13-15 - Rick & Bubba Outdoor Expo – Birmingham, AL

July 25-27 - GON Blast – Duluth, GA

August 1-3 – Wildlife Extravaganza – Jackson, MS

August 15-17 – Buckmasters Expo – Montgomery, AL

Andy Whitaker  
Publisher/Editor



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Cover photo by Andy Whitaker

# Timber Bridges as a Tool for Maximizing Your Property's Potential

By Russell Holmes

Russell Holmes lives in central Mississippi and attended Mississippi State University where he earned a degree in Landscape Architecture. He is an Environmental Specialist with New South Access and Environmental Solutions where he also manages All Terrain Bridge, a subsidiary of New South. Russell is also a Certified Natural Resources Professional. Contact him at [rholmes@allterrain-bridge.com](mailto:rholmes@allterrain-bridge.com) or 877-448-4282.



Land and wildlife management is rapidly evolving and reaching new heights in popularity, due in part to the availability of reliable information from sources like *Wildlife Trends Journal*. As hunters and land managers, we eagerly devour the latest information on how to improve the properties we manage – from food plot strategies to prescribed burning to harvest criteria. But one easily overlooked aspect of an effective management plan is the importance of an efficient access system of roads, trails, and bridges. In fact, an effective access system can be considered a foundation that facilitates many of your management practices.

Bridges are a critical component because creeks, canals, and ditches can make portions of a property inaccessible to the equipment needed to improve the habitat. How can we effectively manage a property, and maximize its potential, if we can't access large portions of it? Planting and maintaining food plots, mowing, timber

stand improvement, prescribed burning – nearly all habitat improvement measures periodically require access for people and equipment. A well-planned access system must take into account several design considerations and environmental factors, and offers many advantages both to land managers and to the game we manage.

### **Designing an Access System**

There are numerous factors to consider when siting roads and bridges on a property – and each property has its own challenges and opportunities. Topography, climate, land use, and your management goals are among the most important elements to take into consideration. After assessing your needs and

defining your management goals, topography is a good place to start when designing a new access plan. You can acquire topographic data on nearly any property through a variety of digital sources or by using the U.S. Geological Survey quadrangle maps (<http://topo-maps.usgs.gov>). Of course, there is still no substitute for spending time riding and walking the property. Topographic features often constrain the location of a new road, but can also offer opportunities. If the property has substantial elevation changes, try to work with the lay of the land rather than imposing a rigid, grid-like layout.

In addition to using topography as an advantage, climate and environmental conditions can also be harnessed to

maximize the benefits of a new road or trail. For example, a road oriented east and west will receive sun for a much longer period during the day than a road running in a more north and south orientation. This extra sunlight will facilitate the growth of grasses and forbs and create a valuable “edge” habitat as a transition between timber and the open space of the road. Couple this with periodic mowing or burning to set back succession and maintain favorable conditions for grasses, and you’ve created a road corridor that also helps meet the needs of wild turkeys, quail, deer, and more.

Additionally, a road that receives more sunlight will dry out faster after a rainfall. This can be advantageous during timber harvests, as it increases the





This makes it advantageous to plan your approach to a food plot or other hunting area from the south, so as not to disrupt the area with scent on your way in and out. Keep in mind other key habitat features (e.g. travel corridors and bedding areas) and work to create an access plan that will keep you downwind of these areas during hunting season. Roads and trails are often designed to connect two or more elements, such as an entry point into the property, a wildlife opening, a hunting location, or an existing bridge or suitable bridge location. Don't make the mistake of assuming that a straight line is the best way of connecting two areas just because it is the shortest distance. Take topography, environmental conditions, and the existing features of your property into account before finalizing a new route.

number of days available for harvesting and helps the road hold up better to the heavy trucks and equipment of a logging operation. Since many properties are being managed for both timber production and wildlife, it is always an advantage when we can implement practices that are of benefit to both. In addition to directional orientation, other

environmental factors such as soil types, seasonal flooding, and prevailing winds can also influence the locations of roads and bridges.

Prevailing winds become an important factor if a road or trail will be used for hunting access into an area. For example, in the Southeast, fall and winter winds are primarily out of the north.

### **Selecting a Bridge Location**

Bridges have their own set of requirements and factors to consider. Once a bridge is in place, it is a relatively permanent structure and becomes a fixed point that influences other parts of an



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access plan, so it is wise to carefully determine the best location. Creeks, ditches, canals, and sloughs vary drastically but there are some guidelines that hold true in most situations. It is generally best to avoid installing a bridge near sharp turns and bends in a creek. The banks are often more unstable in a creek bend due to the cutting action of moving water. Over time, the eroding banks cause creek bends to be the widest spans of a creek. The wider spans drive up the cost of the bridge, while the eroding banks can cause structural problems and shorten the bridge's lifespan. Try to identify a relatively straight, stable stretch of creek for a bridge location. If the streambanks in your area are prone to erosion, you may need to consider some method of stabilization to ensure your bridge remains on solid ground. Stabilization methods may include rip-rap, cement slurry, pre-cast

retaining wall blocks, or, preferably, vegetative control using species such as wood oats, sweetspire, and river cane.

It is also important to consider the approach to the bridge and how accessible a potential bridge site is from other portions of the property. Is the location isolated by wetlands, steep ridges, or other drainage features that will restrict access to the bridge? How are the ground conditions on either side of the creek? Soft or unstable soil conditions may limit the type of bridge that is feasible, as well as the types of equipment that can access the bridge. Be mindful of your objectives when deciding upon a new bridge location to ensure that you maximize the benefits to your overall management plan.

As an example, let's consider a property in central Mississippi where we installed two clear-span, timber bridges in 2013. The landowner had clearly-

defined goals and needed to access the back portion of his property with his 75 hp tractor for road maintenance, summer and fall food plot planting, and UTV access during hunting season. The property is bisected by a small drainage, eight to ten feet in width and six feet deep, with really nice hardwood ridges sloping down on either side. He had previously built a make-shift bridge from some non-pressure treated timbers which had quickly rotted and become unsafe. Fortunately, his trails leading to the bridge locations intersected the creek at prime locations – narrow straight-aways with stable banks. After removing the remnants of the rotten bridges, we placed new bridges in the same locations. Much to the delight of the landowner, these bridges have a twenty-five to thirty year life expectancy and, most importantly, an engineered load rating so they are guaranteed to



safely support his tractor. This entire project cost the landowner approximately \$9,000 – and his problem is solved for the next three decades.

### **Bridge Costs**

Solving your access headache with a professionally designed and constructed bridge may be more affordable than you have imagined. Our standard bridges range from \$2,000 to \$13,000 – with our most common sizes falling in the \$3,500 to \$7,000 range. Think of it this way: “I can drive my 55 hp tractor across my twenty foot wide creek, safely, for the next 30 years.” I’ve found that perspective to help many landowners more properly assess the value a bridge provides. Of course, like most things, you can spend as much or as little as you’d like. We’ve built \$500 bridges and \$75,000 bridges. And there will always be adverse situations – such as really wide spans with very challenging access – that require a lot of money to address properly. In these cases, it may be best to look for another way around, such as







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an easement through an adjoining property. However, in most situations, a brief cost-benefit analysis will point you in the direction of a bridge.

### **Bridge Construction**

There are many options for bridge designs, materials, and construction. Different combinations of designs and materials serve to accommodate different needs and different budgets. The proper bridge for your situation depends primarily on the length of the span and the maximum load you intend for the bridge to safely carry. Always remember that, regardless of material or size, bridges should be designed by an engineer or other qualified person. While steel and concrete bridges are a possibility, timber bridges accommodate the needs of most land and wildlife

managers and offer many advantages.

Timber is a versatile material and allows for abundant options for bridge designs. Whether the goal is a simple span to accommodate foot traffic or a complex structure capable of carrying heavy equipment, wood can be configured to meet either need. In addition to traditional lumber and beams, there is an abundance of engineered wood products on the market today that have broadened the capabilities of timber bridges. Wood is generally a cost-effective option as compared to other materials and it's also a renewable resource. It is a natural fit to use bridging as an opportunity to support the forest products industry, since timber is a valuable natural resource and a key component of integrated land and wildlife management.

In addition to the benefit of using a

renewable resource, wooden bridges offer other advantages that make them an environmentally responsible decision. In many locations a permit is required to construct a bridge, and regulators often prefer timber bridges for several reasons. In general, there will be less disruption to the streambanks for the construction of a timber bridge than for other materials. In many cases, a timber bridge can rest directly on the soil of the creek bank. This eliminates the need to excavate and construct a concrete abutment or other permanent structure for the ends of the bridge. Limiting the amount of disturbance along the banks means less chance for sediment to enter the waterway and also reduces the potential for erosion problems to develop beneath the bridge in the future.

## **Bridge Benefits**

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Many land managers are attracted to culverts as an alternative to a bridge. From an ecological perspective, they are generally more disruptive to the flow of the waterway and can have a negative impact on the ecosystem by creating a barrier during low water situations. Culverts often require periodic maintenance and may not be a practical long-term solution. Creek crossings with culverts wash out easily during storms when the water is high and moving swiftly. The upstream end of a culvert is susceptible to blockage. This occurs either from limbs and debris that become trapped, or from beavers, which have a propensity for identifying easy locations to build a dam. This blockage further increases the likelihood of a wash out when water is unable to pass through and begins to swirl and erode the crossing. Anyone who has used culverts for creek crossings in the past can likely attest to the maintenance issues I've described. I receive multiple calls almost every week from landowners who are fed up with spending time and money to repair culverts, only to have them wash out again with the next storm. A bridge minimizes these issues by not restricting the volume of water the creek channel can carry.

Minimizing the effects of a bridge on the waterway should always be a goal; and another important factor that is both practical and environmentally responsible is the use of a clear-span bridge design. In other words, when possible, it is best to use a bridge that spans from bank to bank with no posts or piles driven into the streambed. Bridge piles alter the flow of water, potentially causing the streambed and banks to erode and lose stability. These structures also tend to trap logs, limbs, and other debris, which creates a maintenance issue and can eventually compromise the integrity of the structure if left unaddressed. Don't neglect to consider potential maintenance as part of the equation when planning your bridge

design. A clear-span design may not be practical, depending on the length of the span and the intended weight capacity of the bridge, but the use of a clear-span bridge when possible will result in less maintenance in the future.

Among these long-term benefits is an enhanced ability to access all portions of the property you are managing. The advantages of a well-designed access system reach far beyond habitat improvements and healthy wildlife populations. Joseph Presley, a real estate professional and waterfowl specialist with 4 Corner Properties, explains why investing in the access system on your property makes sense: "The economic value of a recreational tract of land is much higher when the property is accessible throughout. Inability to access a tract of land is very discouraging to a buyer who is considering one of the largest investments of his or her life. The presence of well-maintained roads, trails, and bridges on a property increases the monetary value as well as the desirability to potential buyers."

Consider the following scenario from a buyer's perspective: a 320-acre tract fulfills all of the buyer's criteria for a potential property to purchase. However, a large creek that crosses the north and west property lines isolates approximately sixty acres. With no bridge in place, this creek effectively eliminates almost 20% of the opportunity for habitat improvements and will likely restrict hunting and other recreational activities. A bridge reclaims this otherwise lost opportunity and instantly makes the property more desirable to the buyer.

Keep in mind that a water source is a critical habitat component and an invaluable asset to your property. However, your water source becomes a "double-edged sword" in regards to property value if your access system does not address it. Try to avoid the error of allowing one of your property's most valuable assets to restrict your habitat improvements, recreational use, and economic value.

## **Wildlife Benefits**

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Aside from the economic value that quality roads and bridges add to a property, there is a wealth of recreational value as well. As I've already described, roads and trails can be designed in a manner that makes them more than just a tool for improving habitat – they can actually be a valuable component of the habitat. This – along with the other habitat improvements that a good access system facilitates – ultimately results in a property that will grow and hold bigger bucks, sustain more turkeys and game birds, or attract more waterfowl. Investing in access improvements can pay big dividends during hunting season. A well-designed trail or bridge can save a lot of time when you're placing trail cameras, putting up deer stands, or making your way to a gobbling turkey at daylight.

Remember, there is no magic formula for creating a successful access plan. Every property is different, with unique challenges and opportunities. These suggestions by no means presents a comprehensive list of the elements to be considered. It is difficult to achieve every benefit I've mentioned in any given road or bridge. The objective is to consider all of these factors and create a solution that offers the most benefits. To put it simply, think through these issues before you begin construction. The best management plans are detail oriented and intentional – and an access plan is no different.

Whether you are a professional land and wildlife manager responsible for thousands of acres or you're managing a small property with spare time and limited resources, we all share a passion for the art and science of wildlife management. A passion for conserving natural resources and improving habitats. A passion for healthier wildlife populations. And a passion for the long days full of dirt and sweat that are necessary to achieve success. A quality access system can help you break through the barriers on your property and take your management – and your results – to the next level.

# Deer Camera Surveys



By Steve Demaris and  
Bronson Strickland

Steve Demaris is a Dale Arner Distinguished Professor in the Department of Wildlife, Fisheries and Aquaculture and the Co-Director of the Deer Ecology and Management Lab at Mississippi State University.

Bronson Strickland is an Associate Extension Professor in the Department of Wildlife, Fisheries & Aquaculture at Mississippi State University. He is co-director of the MSU Deer Ecology and Management Laboratory and an Associate Director for Extension and Outreach in the Center for Resolving Human-Wildlife Conflicts.

*Photo quality is generally much better with incandescent “flash” cameras as compared to LED cameras. Because detail is needed to identify individual bucks when calculating population density estimates, many professionals rely on flash cameras when conducting a survey.*

**M**aking sound management decisions for your white-tailed deer population requires high quality data about that population, and trail cameras are the best way in the Southeast to collect those data. Population characteristics of most importance that can be estimated from a properly conducted camera survey include age structure, adult sex ratio, fawn recruitment (often called fawn crop), and population density.

Trail camera technology has advanced a lot since they were first used by MSU Deer Lab research professor Harry Jacobson and others to estimate deer population size. Building on this information, Steve Demaris and others at the Deer Lab verified the effectiveness of camera surveys at determining adult sex ratio, fawn crop, and density on other deer populations. We proved that a camera operating every 100 or 200 acres can estimate adult sex ratio and fawn crop within 3 days and deer density within 7 - 10 consecutive days. Having pictures of most of the bucks on a prop-

erty is of great interest to hunters, and provides the basis for density estimates.

Efficiency of these early deer surveys was limited by the use of photographic film, because each camera could take no more than 36 photos without changing the film cartridge. Such limitations required daily camera checks to replace film when deer were abundant. The added delay and cost of film development are not missed by any of the older practitioners of deer surveys.

### **Important Deer Population Characteristics**

Sex ratio, fawn crop, and age structure provide insight into the demographics and productivity of the population. A sex ratio that is skewed toward females, with 3-4 females for every buck indicates that the buck harvest has been too heavy and doe harvest has been too light. In most areas, a female-skewed sex ratio also indicates the population may have too many deer and individual deer quality may be compromised by lack of food resources. Most hunters now appreciate the need for adequate doe harvest to balance population numbers with the habitat's forage supplies. A properly conducted camera survey allows a biologist to accurately estimate the total number of does needing removal so that sex ratio and density are optimized relative to the landowner's goals.

The doe harvest depends primarily on fawn recruitment, or the addition of young animals into the population. The number of fawns produced each year (i.e., fawn crop) forms the basis of harvest recommendations. For example, if you want a population to remain stable you would only harvest the number of deer that approximately matches the fawn crop estimate after adjustment for natural mortality. So, if the fawn crop is determined to be 100, then a harvest of about 90 adults would keep the population stable (biologists typically assume about 10% may either die of natural causes or are otherwise lost from the population). However, to calculate the



*Identifying does from fawns is easy during fall but research has shown that many fawns do not accompany their mother during this time of year, resulting in an underestimate of fawn recruitment. Winter is the best time of year for determining fawn recruitment; however, identifying fawns can be problematic for the untrained.*



*Can you identify the fawn in this photo?*



*How about in this photo?*

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absolute number of fawns that are produced requires calculation of population density and the average number of fawns per doe. If you don't have enough cameras to conduct a survey then only fawns per doe can be estimated.

Another informative population characteristic that can be estimated from camera surveys is buck age structure. Buck age structure is simply the proportion of bucks in each age class. For example, if most of the bucks photographed were determined to be 1.5-years-old or 2.5-years-old and very few bucks were classified as 3.5-years-old or greater we would infer this population had a young buck age structure, which would indicate that most bucks are being harvested when they are relatively young. What most deer biologists would like to see is called an "even" buck age structure, which is a buck population with relatively equal numbers of young and older bucks. An even buck age structure tells the biologist that young bucks are being produced (i.e., deer herd is productive) and many of them are surviving until they are 3.5-years-old or greater, which is important if you are managing a deer herd to increase antler size.

One of the most exciting uses of a camera survey is seeing what bucks are available for harvest. Many people want to know if that buck that got away last year is around this year—and is he bigger? Biologists use these pictures to help hunters target certain bucks for harvest, and certain bucks for protection. Biologists point out to hunters which bucks have good antler characteristics, but are young and should be protected for a year or two. Harvesting only older bucks is the best formula for harvesting bigger bucks!

### Tips on conducting a camera survey

Commercially available infrared-triggered camera units are readily available from many sources at reasonable costs. Depending on features and quality, retail prices can range from less than \$100 to as much as \$600. The adage of "you get what you pay for" is very applicable here. Our recommendation is to spend according to the importance of the information you are collecting and the time you are investing. Manufacturers specializing in trail cameras with good track records and internet reviews are the best bet for satisfaction.

Now we're going to review some general guidelines for conducting a camera survey. Please download MSU Extension publication 2788, *Conducting Camera Surveys to Estimate Population Characteristics of White-tailed Deer*, from *MSUDeerLab.com* for additional information. Obviously, the opportunity to photograph more deer increases each additional day the cameras are operating. In the research population, about 90% of deer were eventually photographed; unfortu-

nately, it required 14 consecutive days of survey and a camera per 100 acres to obtain this level of accuracy. Using a camera per 200 acres for 14 days will decrease the level of accuracy down to about 68% during winter and 55% during fall (see Figure 1). Time of year the survey is conducted is important and will affect the percentage of the deer population eventually photographed. With a camera per 100 acres, the number of consecutive days required for a stable estimate of the buck population in the fall was about 11 days, but during winter the estimate stabilized after only 6-8 days. Another significant finding from the research deer population was that only 3-4 days are required for the sex ratio estimate to stabilize at the 100- or 200-acre camera density during fall and winter. In other words, if the objective of the survey were primarily



*If you want to capture photos of different bucks on your property, consider placing trail cameras on different scrapes throughout the property.*

to estimate the sex ratio of a population, that could be accomplished in as little as 3 survey days in fall or winter.

There is a big difference in the fawn crop estimates between fall and winter surveys. Camera surveys provided much higher estimates of fawn crop during winter. During September and October many fawns may not accompany the does to bait sites, because peak fawning occurs in July and August in Mississippi. Therefore, if an estimate of fawn crop is required, the survey is best conducted in winter.

*One of the most important considerations in conducting a camera survey is the understanding that the probability of photographically capturing deer is a function of the ability to attract animals to the camera site.* MSU Deer Lab researchers have shown the importance of bait attractiveness; survey accuracy varied from 92% on two study areas in Mississippi dominated by pines to 22% on a study area in Oklahoma where an abundant acorn crop competed with the bait for the deer's attention. Camera surveys should be timed to avoid periods with highly attractive native foods like acorns. If the animals cannot be successfully attracted to bait, then the camera survey method has significant limitations. Therefore, it is important to schedule camera monitoring prior to or after acorn or crop availability. Obviously, locations where deer are accustomed to feeding make ideal camera survey sites; but feeders should be shut down during the survey and bait placed nearby. If deer are not using pre-baited camera sites, then sites should be relocated.

Please note that in some states it is illegal to hunt wild animals with the aid of bait, and improper use of baits could present health risks to deer and other wildlife. You should consult with your state wildlife agency biologist or conservation officer for more information prior to using corn or any other bait during a camera survey.

How best to implement a camera survey depends on your information needs (See Table 1 for a summary). If pre-season photographs of bucks potentially

available for harvest is a primary objective of the survey, then fall would obviously be the appropriate time for the survey. Accurate estimates of deer density and sex ratio can be obtained in either pre- or post-season. However, for the very best estimates of population characteristics that include fawn recruitment, camera surveys should be conducted in winter at a camera density of 1 camera per 100 acres. Fawn crop is greatly underestimated during pre-season surveys in areas with late breeding seasons, such as in much of the Lower Coastal Plain of the Southeast (for example, the southern third of Mississippi and Alabama.

Camera stations should be selected carefully and pre-baited for 4-6 days. Cameras should be set on a 5- to 10-minute delay and run for no less than 5 consecutive days. Running cameras for up to 10 days can significantly improve results, especially if individual buck photographs are an important objective. If camera numbers are limited, each camera may be rotated to a new station after each census period for up to 4 stations per camera. However, it is best to disperse cameras over the entire area for each survey period.

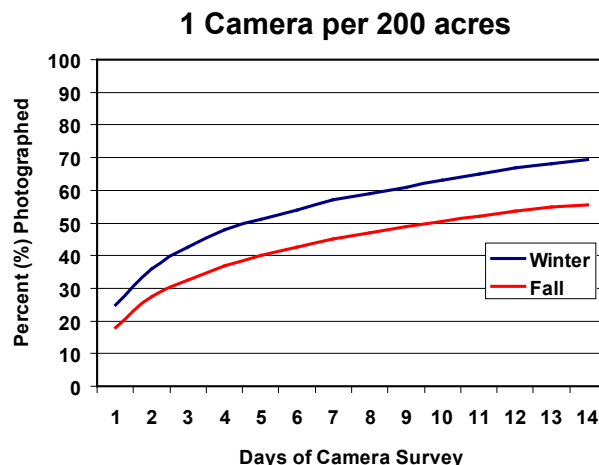
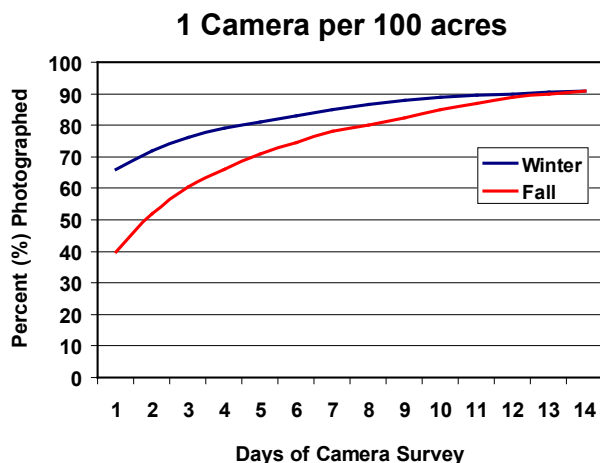
If obtaining individual buck photos is your only objective, an effective method is to place cameras at scrapes. Most bucks, along with many does and even fawns, will visit scrapes within their home range. It is common to photograph as many as 3 or 4 bucks in one night and as many as 10 or more during a two-week period at a single scrape. Depending on location and other factors, scrape activity will usually start by early November and continue through most of the deer season.

The infrared camera survey method offers an exciting and practical option for deer managers and hunters. It may not provide all the answers needed, but it is an effective tool that can be used in conjunction with other deer data collection techniques. It is guaranteed to add a new level of knowledge and element of excitement in the experiences associated with deer management and hunting.

## **How to conduct a camera survey of white-tailed deer:**

1. Depending on desired accuracy, grid the property into 100- or 200-acre compartments. Locate a bait site with high deer use near the center of each compartment and clear any vegetation at the bait site or between the camera and bait site. Vegetation, including grass and small branches, can interfere with the camera view and flash effectiveness.
2. Select a tree or install a post 15-20' (varies depending on individual camera focal length) from the center of the bait site and set the camera facing either North or South to avoid sun glare. Pay special attention to the view of the camera, including clutter or obstructions that could interfere with photo-capture of deer. A solid background of vegetation 40-50 feet away from the camera limits wasted photos of deer too far away for adequate identification. A reference point or numbered sign in the view can serve to identify the site. Most cameras utilize a "test mode" to evaluate proper placement.
3. Pre-bait each site for 5 days by placing 30-40 pounds of corn in the center of the circle and check bait sites at least every other day.
4. Set the camera to record date and time with 5-minute delay between photographs. If your camera allows a 2-3 photo burst, this is a good option that will improve the chance of getting just the right view. However, only include the best photo in the survey tally.
5. Operate cameras 5-14 days depending on your budget for bait and the desired accuracy of estimation and check often enough to insure bait remains available. Make sure the camera is taking quality photos the very first time you check it, to avoid wasting time and resources. Depending on system used, storage cards can be replaced





The seasonal relationship between percent of the deer population photographed over time with varying camera densities. The longer you run the survey, the more unique deer you will eventually photograph.

- or images downloaded as needed.
- Organize your digital images by station number. All images must be kept separated by site to properly evaluate a survey.
  - Analyze the photos to determine total number of photos each of bucks, does, and fawns attending each station. If you cannot identify sex and age with confidence, then don't use that photo for data collection. As you find antlered bucks, place a copy of those photos into separate folders organized by number of antler points.
  - After you've tallied all bucks, does and fawns, enter your antler-point folders. Correctly identifying individual bucks is the key to

an accurate survey, so make a careful comparison of antler and body characteristics, paying attention to subtle differences in angle of the deer when the photo was taken. Small variations in perspective can alter visibility of points and bumps that may be key identifying characteristics. Create a new folder for each unique buck with a name indicative of some feature of the buck's antlers (for example – "9 Point hooked right brow"). After you complete this process, go back and review all photos within each of the unique buck folders and look for errors. Assume you made errors, because almost everyone does during their

first assignment of unique bucks.

- The ratio between the number of unique, individual bucks photographed and the total number of buck photographs is used to calculate a *population factor*. This factor is applied to the total doe and fawn photographs to estimate their numbers. These calculations can then be used to provide estimates of the population characteristics.

#### For further information:

*Conducting Camera Surveys to Estimate Population Characteristics of White-tailed Deer*  
<http://www.msudeerlab.com/publications.asp>

*Managing White-tailed Deer: Camera Surveys* <http://www.aces.edu/pubs/docs/A/ANR-1395/ANR-1395.pdf>

<b>Greatest Intensity</b>	1 camera for every 100 to 200 acres used to conduct controlled surveys	<ul style="list-style-type: none"> <li>- Estimate population size</li> <li>- Estimate fawn crop</li> <li>- Estimate sex ratio</li> <li>- Estimate # of bucks to harvest</li> <li>- Estimate # of does to harvest</li> <li>- Age structure of bucks</li> <li>- Identify bucks to harvest and bucks to protect from harvest</li> </ul>
<b>Moderate Intensity</b>	1 camera for every 300-500 acres (or more) used to approximate general deer population characteristics	<ul style="list-style-type: none"> <li>- Estimate average fawns per doe</li> <li>- Estimate sex ratio</li> <li>- Age structure of bucks</li> <li>- Identify examples of bucks to harvest and types of bucks to protect from harvest</li> </ul>
<b>Least Intensity</b>	1 or 2 cameras strategically placed	<ul style="list-style-type: none"> <li>- Identify examples of bucks to harvest and bucks to protect from harvest</li> </ul>

*Continuum of camera survey intensity. The number of cameras you have available to use will directly impact the precision of your population estimate. The best case scenario is running all the cameras simultaneously with a camera for every 100 acres of property. We acknowledge that for large properties this requires many cameras, and the expense can be cost prohibitive.*

# Building Your New Lake

By Scott Brown

Scott Brown is a biologist and regular contributor to Wildlife Trends Journal with over 30 years experience in research and managing natural resources throughout the southeast. Scott founded Southern Sportsman Aquatics & Land Management in 2007 and now has clients from Texas to Florida, and into the Carolinas. Scott can be reached at [scott@southernsportsmanaquatic-sandland.com](mailto:scott@southernsportsmanaquatic-sandland.com) or (336) 941-9056.



*When this embankment lake was built over 15 years ago, the cypress trees were left standing and are still alive today providing habitat for fish and wood ducks.*

**W**e get several calls a year regarding how to build a new lake or pond. Careful planning on the front end makes for an easier to manage and longer lasting waterbody later. There are many things to consider when building a lake, from location to the type of fish you want, and everything in between.

We recommend inviting a professional lake manager to meet with you on-site to look first hand at your property to determine the best location. Many times we have gotten involved after construction of a lake and many things completed could have been done differently that would have made the waterbody more productive for fish and wildlife, more aesthetically pleasing and more functional for alternative uses such as irrigation or storm water retention. It is advised to use both a local lake digging company and a fisheries consultant from the start to achieve the best possible outcome. Both have knowledge and expertise beneficial to achieve the best outcome fea-

sible for your waterbody and objectives.

If possible, even before you purchase your property, have a professional fisheries consultant tour the property with you. I recently toured two properties with a new client who is considering buying one of them and he wanted me to provide technical advice on which property would be better suited for a lake and areas to attract waterfowl for hunting. We like to meet and even create a Management Strategy prior to the waterbody being dug so the landowner and construction company doing the work have guidelines to follow to assist in making the best possible waterbody to fit the needs of the landowner. A fisheries biologist and lake construction company compliment each other (may not always agree on every detail), but usually turn out a better product than if

one is working alone without the other.

The first step is identifying a location. Don't force a lake into an area that is not suitable for one. If your cabin is at the top of a hill, your waterbody probably cannot be located there due to no water coming in. The location you desire may dictate depth and size, which need to be considered to achieve your goals and the physical needs to create a productive fishery. What is the primary reason for the waterbody – fishing, waterfowl hunting, livestock watering, irrigation of crops, flood control or a combination? Will the waterbody be an embankment pond (where a dam is built across a stream, creek or drainage ditch) or excavated pond (a depression dug out and water sheet flows in from surrounding areas). I have seen lakes constructed at the high-

est point on the property that once went dry, never refilled. Check the acreage of drainage your location will receive. Enough volume of runoff must flow in to keep water levels acceptable, while the outflow must be large enough to safely discharge what excess flows in. Check up and downstream for potential flooding issues from either backed up water or a dam failure. What are the surrounding activities? A lake that receives 100% of its runoff from certain industrial, agricultural or residential activities may not be the best location and flooding or water chemistry problems may arise from those influences once the lake is complete and full. If a duck marsh is desired, place it downstream of the lake if possible, as marsh water is filtered but can be low in dissolved oxygen initially during a flood



*This farm in Georgia uses its three lakes, ranging from 13 – 18 acres, for irrigation of crops and quality fishing. It is not easy to create and maintain a quality fishery as a secondary objective but with planning and sound management, it is feasible. These lakes have rendered double-digit largemouth bass, one pound bluegill and crappie over 14 inches the past six years.*

event. Identify the soil types to assure that once it fills, it will stay that way and if there is enough clay present to construct a dam, if needed. Some areas where lakes are built require clay to be brought in or an artificial liner be installed, both of which increase costs. Digging a few test holes prior to starting construction is advised to identify soil types and clay presence. We suggest, **Ponds - Planning, Design, Construction**, Agriculture Handbook 590 by the USDA as a reference for landowners to use when constructing a new lake or pond. It goes into great detail on much that I will touch on in this article. Obviously the internet is also another endless source of information, but identifying good information from hobby lake managers and builders can be difficult, so be careful.

Locating a qualified company to construct the lake is sometimes easy and other times hard. We recommend using a local company that is familiar with the area soils and permitting requirements while not requiring long distance

travel, which increases costs. Start by talking with neighbors who have had lakes constructed. The County or State may have a list of permit requests in your area to help you identify who has recently built lakes. Were those landowners happy with their company? Have there been any problems with leaks, excessive weed growth and how is the fish population? Was the price reasonable? Another place to find quality construction companies is by interviewing local heavy equipment dealers and repair shops. They know a lot about their customers and who is reliable and not. Another source to locate pond builders is the local Agriculture Extension Office, the State Game and Fish Fisheries Staff or the nearest Natural Resource Conservation Service (NRCS) office

Another thing to consider is funding. How will you pay for the new lake? In some instances the dirt is a valuable commodity either to be sold or used as a pad site for your home, cabin or lodge. We have several clients (espe-

cially in the South and low lying areas) that have had lakes dug for free in return for the dirt to be used in home or commercial property construction or City, County or Interstate Highway construction. This doesn't always work out, but it is an option to explore prior to starting. Otherwise a location for the removed dirt to be deposited is required, and it cannot be used to alter wetlands into uplands or agricultural lands. There are also government programs; County, State and Federal cost share programs available for new lake construction. Contact your County Ag Extension and NRCS offices for any available types of programs in your area that may assist with funding. It will take you a few hours of time, but may be worth it in the long run.

Prior to construction, someone (you, your fisheries professional or your construction company) needs to check if any County, State or Federal permits are required for construction. Asking an Ag Extension or County Permitting Officer would be a good place to start. They will

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*It is much easier to spread lime in a lake bottom before refilling than using a boat after water is present.*

know if any other agencies need to be contacted prior to construction. Each state and some counties within states are different in regards to new lake construction. Permit prices can range from free to several hundred dollars depending on location and lake size being constructed.

The final step prior to construction is determining the physical aspects of the waterbody such as size, shape, depth, bottom contour, shoreline slope, out-flow and consider amenities such as dock, fish feeders, fish attractors and aeration system or fountain. We recommend building nothing smaller than one acre for a quality catfish and bream/panfish pond, not smaller than three acres for a pond with a few quality largemouth bass in it, and no less than 10 acres for a black crappie fishery.

Most desired species such as bream and bass are edge species, so the more

irregular the shoreline the more edge and habitat available for those species. Those species spend most of their time hiding, feeding and reproducing in the Literal Zone (area between land and deep water where aquatic vegetation is located). There is a lot more shoreline where it zigzags in and out than a rectangular or circle shaped lake.

Depth is usually under or over done for various reasons such as cost, poor estimation of depth after completion or lack of knowledge on how important depth is during summer and winter (depending on where you are located). During a drought, some of the water needs to be eight feet deep, while no area (unless an aeration system is installed) needs to be greater than 15 feet. Water less than eight feet deep during the hottest part of the year can foster poor water quality with elevated

temperatures and low Dissolved Oxygen (DO) either stressing or killing fish. This same scenario can happen with excessively cold water and low DO during winter in northern areas. Water over 15 feet deep in warmer climates becomes stratified, where low DO water is at the bottom and can be for more than half the water column, rendering no fish using these areas when DO is low to a point where it stresses fish or would kill them.

Bottom contour should not be smooth nor should there be isolated deep holes not connected by deepwater trenches. Adding “catfish holes” is acceptable as long as they do not exceed recommended depths and are not just deep holes randomly dug. The water in these areas without connecting trenches to mix with higher oxygenated water becomes unusable areas by fish due to lack of



*These artificial fish attractors went in just weeks after the lake reached full pool. By placing three to five in each group, newly stocked bream/panfish and catfish have instant habitat, and in the future largemouth bass will use to feed.*

oxygen. If these areas have connecting trenches and/or bottom aeration, they become additional usable areas by all fish during different times of the year, increasing your lake's carrying capacity.

Shoreline slope needs to be 4:1 or greater. The reason is that anything less encourages vegetation growth farther out into the lake and can cause problems in the future that requires constant herbicide use or scraping. Some shoreline vegetation is good, but too much too far out from shore can hinder angling and navigation, or create an aesthetic problem of undesirable weeds at or above the water surface. This slope discourages weed growth out from shore, but still promotes fish spawning by bass and bream/panfish. Many new lake owners feel the need to create large shallow shelves or whole lake ends for spawning, but these areas inevitably become problems in ponds with aquatic vegetation and are not necessary unless your waterbody is large and can afford

such areas of space.

The type of outflow you have is usually decided on by the type of lake you have and costs. For an excavated pond, a low depression with gravel is sufficient. The use of gravel is advised to reduce erosion and any erosion at the outflow results in a lower lake level. For an embankment lake the ideal situation is a standpipe with a gate valve and emergency overflow. The standpipe allows water to flow out when it becomes full and normal rains are present. The emergency overflow is a slightly lowered area at one end of the dam covered in concrete or gravel for flood control that allows large amounts of water out during flooding without eroding the dam. The gate valve is a nice addition, but does increase costs for lowering lake levels as needed. Reasons for lowering water levels include working on the dam, drying up organics (muck) along the edges, drying out weeds, and spraying excessive submerged vegeta-

tion reducing the acreage needing to be treated and lowering herbicide costs.

Most extras such as docks, fish attractors, fish feeders, adding lime and aeration systems or fountains can be installed either with the lake empty or full. A dock is easier to install while water is down. We recommend installing the posts only (leaving extra at the top) prior to filling and installing the decking and cutting off posts after the water has risen to full pool. This way you can place the dock as high or low as you want above the water at full pool. If you know the waterbody will fluctuate a lot, placing the top of the dock as close to the water line when full is advised, because most of the time it will be lower than full pool. If water will stay fairly steady despite rainfall amounts it can be placed higher knowing the water level will never be much lower than it currently is. If fish attractors will be made from natural materials such as brush, stumps, gravel (spawning



*This aeration system went in the same day fish attractors were installed before the fish were stocked. The water level was at full pool flowing out the standpipe and the emergency overflow was about three feet higher; hence the aeration pump motor was installed up about six feet above the current water level.*



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beds) or concrete culverts, install them prior to filling so material can be driven to the spot and weighted down or spread with a tractor or dozer. If artificial materials are used, they can be easily thrown overboard and sunk from a boat once the lake is full and exact depths will be known. Shoreline or dock feeders can be temporarily installed closer to water if fish are stocked early, and permanently installed once water levels stabilize at full pool. They should be placed high enough not to get flooded should an excessive rainfall event occur. Installing a small gravel boat ramp is easiest before the lake is at full pool. Extend the gravel several feet down into the lake bed to assure a safe launch site even during low water. Check the soil pH around the lake site as you would for a food plot. Have your samples tested and whatever the pH is, that is what it will be in the lake. If the pH is below 6.5, add agricultural limestone as directed by the testing company to get your pH in the desirable range. It is much easier to add lime to an empty lake than a full one. Aeration and fountains can be installed prior to filling, but are easier to install once the lake has filled. This way there is no mistake of installing electrical outlets or pump motors at a level where they become vulnerable to water damage during a flood. They need to be placed approximately three-to-four feet above the emergency outflow to assure they are protected.

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*Any lake owner would be very pleased with 12 inch redear sunfish present like this one.*

The final tasks are checking water chemistry, adding desirable plants and stocking fish. Have water chemistry checked prior to stocking to assure the fish will survive when they go in. On rare occasions we have seen elevated Ammonia or lower than normal pH upon filling that took a short time to stabilize and then fish were stocked. Plants need to be transplanted in specific times of the year. Trees in and around your lake should be planted in late winter, just prior to the start of the growing season. Trees to consider are cypress in the water and on edge and others near shore and up the hill for aesthetics, shade and to attract wildlife. Fruit and nut trees around a lake provide shade, food for wildlife and look good, especially when in bloom. Soft tissue plants should be planted in early spring just

after the growing season begins so they have the full growing season to establish a good root system before the following winter and they become dormant and die back. Only choose native, non-invasive plant species to ensure low maintenance in the future. Fish can go in anytime, but the hatchery has to have them to do it. Usually bream/panfish are stocked in the fall or spring and bass 6-12 months later. Catfish can be stocked whenever the hatchery has them available but are cheaper when they bring other fish. For new lake stockings we also add either fathead minnows or mosquitofish for small bass and large bream/panfish forage to start, knowing eventually these species will probably disappear later from being consumed. Once bream, minnows or catfish go in, turn feeders on immediately dispensing

small pellet size, high protein feed to expedite growth and encourage reproduction prior to predators (largemouth bass, Morone Hybrids or crappie) being stocked. Stocking a predator with no forage size present that is consumable is a waste of money and you are not gaining anything, just losing time. Also, bringing in fish from outside waterbodies usually doesn't expedite anything, it just slows things down and may require additional stocking later to regain a balanced population. It does take a little time before you will see large bluegills, redear sunfish, largemouth bass, catfish, crappie or whatever your desired species are, but following proven guidelines and performing management tasks to upkeep the waterbody once complete will ensure a long successful time to enjoy your lake.

# Integrating Wildlife Considerations Into Forestry Operations

## Part 3 of a 4 part series: Hardwood Stand Management



By Ted DeVos and Rod Bach

Ted DeVos and Rod Bach are co-owners of Bach and DeVos Forestry and Wildlife Services in Montgomery, Alabama. Ted is a Certified Wildlife Biologist and Registered Forester and Rod is a Registered Forester. They specialize in timber and wildlife management and recreational property development and sales. They can be reached at 334-269-2224.

*While pretty, hardwood stands are often food deficient for much of the year*

**I**n the previous issue of this series, we discussed the role of pine stands and techniques to integrate timber and wildlife habitat management. Hardwood stands present unique opportunities as well as challenges to actively manage both timber and wildlife. Hardwood stands seem to be what every deer and turkey hunter wants to own and are often seen as a wildlife panacea providing acorns for all critters, from deer to quail, to eat and get fat on. Hardwoods are also seen as the prettiest woods to hunt in and enjoy. While there is a lot of truth to these statements, hardwoods present some unique management problems and they should not comprise the majority of your timber stands if wildlife management is a priority.

From a wildlife perspective, hardwood mast is highly selected by nearly all wildlife species. Hardwood mast includes both soft and hard mast types and includes oaks, (both red and white), persimmon, beech, hickory, elm, hackberry, sweetgum, poplar,

blackgum, magnolia, and some mid-story species of “lesser” stature like mulberry, dogwood, catalpa, sourwood, holly, locust, redbud, cherry and sassafras among others. The most valuable timber species group as a whole is the oaks. From a wildlife standpoint also, the oaks are probably most important, however most other species have food and cover value, and at certain seasons are the “most important” food sources.

Managing for the most valuable food species in hardwood stands is an important consideration because, in reality, hardwood stands are often strongly lacking in food sources. Most of the species mentioned produce food in the fall of the year and are dropping throughout the winter. By spring, most of the acorns, nuts, and fruits are eaten, rotten, or buried. Because of this, mature hardwood forests can provide poor wildlife habitat until they begin producing food again in the fall. While open understory hardwood stands are beautiful to hunt in and have a lot of wildlife in the fall and winter, the lack

of understory vegetation within the stand throughout the summer often limits its wildlife value. This is why, for optimal wildlife habitat, hardwoods should not compose the majority of the timber stands on your property.

The problem is how to create conditions which promote understory vegetation within hardwood stands while not affecting the economic potential of the crop trees because of some of the characteristics that affect hardwoods such as shade tolerance and epicormic branching. If nice, mature hardwoods are thinned too much, the quality of the stand suffers from epicormic branching. Epicormic branching is the sprouting of dormant buds located along the main stem of hardwood trees that are exposed to sunlight. Even if the understory gets enough light to develop, it is transitional in nature and quickly grows into a midstory/shrub layer that will grow out of reach of deer and other wildlife. The second major consideration in managing hardwoods is the fact that certain trees are shade tolerant while others are

not. Oaks are shade intolerant which means they require full sunlight in order to regenerate assuming there is an oak component present in the stand. Clearcutting is a vital tool in maintaining an oak component but clearcuts will also develop into shrubs and trees fairly quickly. Managing this understory can rarely be done with fire, as hot fires cause basal damage and mortality in hardwoods and it should only be done on a very intermediate time frame by the most experienced burners. Herbicides can be used to some extent, but care must be taken to use only those foliar chemicals that can be sprayed under hardwoods without killing them. The ideal situation for enhancing habitat is to limit the coverage of mature hardwoods (unless your property consists only of bottomland hardwoods) and manage pine stand understories, wildlife openings and fields.

Many landowners are reluctant to “manage” (cutting and thinning) hardwood stands. The problem is that unmanaged stands eventually become



*Letting them grow out a few decades can prove profitable!*

old and exhibit signs of disease and slow growth. Even old oaks can die of old-age! It is also pretty common to see where someone attempted “select” cutting in a hardwood stand only to “high-grade” it by taking out the big mature sawtimber oaks without any consideration for oak regeneration. Do this 2 or 3 times and you may ruin the stand from both a timber and wildlife value perspective. Under this type of scenario the shade tolerant species (sweetgums, hickories, elm, etc.) will dominate the stand. This can also happen in older mature oak stands as older dominant trees die of natural causes and the shade tolerant species living in the understory invade the newly created openings in the canopy which are too small to allow good oak regeneration. This will eventually lead to a stand of shade tolerant species that will not revert to shade intolerant species (oaks) without a major disturbance of the overstory. So what alternatives are available for managing hardwood timber?

### Getting Started

The first step to managing hardwood stands is to perform a timber cruise on the stand under consideration. This is important because it will establish a stand and stock table that will help you to decide what type of cutting if any may be reasonable. Harvesting timber, if done with a defined objective is your best tool for achieving your goals. Thinning, clearcutting or a combination of both all have their merits and are viable management tools if they are performed with a defined objective and set up correctly. If your timber cruise reveals the stand is healthy and has a good distribution of crop trees that are free to grow it may be prudent to do nothing. However, for this article we are going to assume some activity is necessary. If the cruise reveals a good number of desirable oak species with a good diameter distribution is in the stand but in a crowded condition then a selective cut is possible. If oaks are not numerous or are heavily weighted in the larger diameter classes (>24” DBH) then a

clearcut or regeneration cut should be considered. Many times a combination of both is the best course of action if practical due to some of the previously mentioned characteristics of hardwoods and the variations found in the field. A combination of the two will not only enhance wildlife habitat but it can be maintained on a regular rotation. A brief guide to all three harvesting techniques follows:

### Clearcutting:

Clearcutting has a lot of bad connotations with most people but it is often an essential management tool and should be considered when there are few if any oaks present or if the stand is over-mature. In most cases this alone will assure oak regeneration but in some instances there may be a need to plant desirable oaks to ensure their presence in the future stand. This is necessary in stands that have been severely high-graded for many years and don’t have much advanced oak regeneration or in situations where light seeded species



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are dominant in the local area and will impede the development of oaks. Clearcuts in hardwood stands (especially smaller patch clearcuts) have excellent wildlife value for deer browse, cover, turkey nesting habitat and adding diversity to a hardwood stand.

### **Selective Cutting:**

There are several objectives to try and achieve when thinning hardwood, however thinning is a viable alternative if it is done with a defined objective and set up correctly. The main objective is to leave a well stocked, evenly spaced stand of oak trees which are referred to as “Crop Trees”. Poorly formed and suppressed trees as well as unwanted and low-quality midstory trees should be targeted for removal. Secondly, undesirable species should be targeted instead of well formed oaks. Care should always be taken to not remove too much of the canopy as this will lead to epicormic branching. You can often leave undesirable species next to crop trees to provide shade on the bole. Another factor to consider is which side of the crop tree you are removing an undesirable tree, as trees immediately south of a crop tree provide shade to the north. The other target for removal is financially mature oak trees. This is a debatable figure but we feel like oaks greater than 24” at DBH are a good starting point. Both wildlife and timber managers should identify the best individual trees of the best quality species to mark and leave in a stand (crop trees) and remove trees growing in competition with them.

These thinned areas often respond with a flush of low growing understory vegetation that provides accessible summer foods and nesting habitat for wildlife. While shade eventually dominates the ground again, a few years of good understory vegetation is a bonus in thinned hardwood areas. Herbicides can also be used in these areas to kill undesirable species that often colonize a thin area. Species like privet, autumn olive,



*With care, hardwoods can be managed with fire, especially on the uplands. Once burned a few times, they become relatively fire tolerant.*

elm, ironwood, etc. can be killed to allow grasses and other annual weeds as well as oak regeneration to dominate the understory.

### **Combining Thinning and Clearcutting:**

The process of incorporating both cutting strategies takes a lot of time and is more of an art than an exact procedure. However, using both is often necessary to properly manage hardwood timber. We incorporate clearcutting areas of varying sizes and shapes into selective cuts. The goal for picking the clearcut area is to pick areas within the stand that have poor species composition or areas with an over abundance of mature timber. It’s akin to group selection but we feel that the cuts need to be at least an acre and preferably several acres in order to get adequate sunlight on the ground for shade intolerant species and to avoid the potential problem of deer browsing and killing all oak regeneration. Total acres of clearcuts in an area also need to be geared towards making sure that there is enough browse available for the local deer population to avoid them killing all oak regeneration. These clearcuts provide an excellent food source for wildlife for a few years until they grow out of reach

and also provide good cover, bedding and nesting areas. Thinning previously thinned stands can be scheduled on a 10 to 20 year rotation and if there is enough acreage you could break your stands into harvest units so that you could have more regular cuts to keep some habitat in a brushy nature. This style of management works extremely well in that it balances timber production, regeneration and wildlife habitat.

### **Reestablishment of Oak Where Not Previously Present:**

As mentioned previously, it is sometimes necessary to supplement the planting of oak seedlings. We feel that planting 100 trees per acre is acceptable and if possible have planters tie flagging on each seedling so that you can follow the planting with a back-pack application for herbaceous and unwanted hardwood control. In situations where light seeded species are going to be a problem it may be necessary to perform a chemical site preparation prior to planting just to give the planted oaks time to establish themselves. Once the seedlings are established just let nature take over and let whatever takes over grow. Attention should also be paid to tree selection for planting as topography, soil type and soil moisture should be used to deter-



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mine the type of oak to plant. Just a few inches in elevation can be a deciding factor in which variety to plant.

**Premerchantable Hardwood Management:**

Young stands of pre-merchantable hardwood can be selectively thinned just like an older stand. The only difference is that it will cost money to perform this treatment. The main reason to do this is to speed up the growth on the crop trees and thus reduce the rotation length. It should be accomplished by picking the crop trees (best form and species) and cutting at least 3/4 of the surrounding trees that are in contact with the crown of the crop tree to give the crop "free to grow" conditions.

In closing, the main thing to remember about hardwood timber is that it does need to be managed in a prudent manner if you have concerns about high value timber production and wildlife value. Because of the inherent growth, regenerative and species characteristics of hardwoods, just leaving them alone will not get you the results that you are looking for in the long term. In the short term you may never notice the difference but with no action you will be robbing the potential of your forests from future generations. Unmanaged stands exhibit poor growth, often have poor species composition, and often have limited or poor wildlife



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value. Additionally, many people in the past have high-graded their hardwood stands unknowingly by repeated light thinnings which they believed or were advised was good hardwood management. It is worth your money to seek experienced hardwood management advice if you are considering activities. One last thing to consider when planning for the future is that in our opinion we feel that quality hardwood timber will outperform pine economically over the long term. Looking at current prices, that in and of itself is worth actively managing your hardwood stands.



*Thinning a hardwood stand is feasible and can generate some nice understory plants as well as help remaining trees to grow quality sawtimber.*



*A well managed hardwood stand has a good component of oaks. Younger stands can be thinned but care must be taken to not take too many trees.*

# Wildlife Trends Journal Management Calendar

By Dave Edwards

June/July 2014

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*The intake side of the beaver pond drain is designed to prevent beavers from being able to "patch the leak" in their dam.*



## **Initiate management of beaver ponds for creating and attracting waterfowl this winter**

Similar to cultivated duck ponds and green tree reservoirs equipped with water control structures, beaver ponds can be managed to produce duck food to attract waterfowl and provide great hunting opportunities. If quality mast producing trees are still alive in the beaver pond, manage the pond as a green tree reservoir – meaning apply a slow

draw down before spring green up. While most oak species can tolerate being flooded over dormant season, few do well and often die if their feet stay wet well into summer. If few quality trees exist or if trees are already dead (from constant flooding), you have a few options on management strategies. First, you could drain the pond early in the growing season (at spring green up or very early summer) to allow natural wetland/moist soil plants to germinate

and grow throughout the summer. Many moist soil plants produce seeds which are quality duck foods. A slower draw down over several weeks will result in a more diverse species composition of plants providing a variety of seeds/food. Another option would be to hold water on the pond until mid-summer, drain the pond, then broadcast small grains such as millets. I personally like Japanese millet because it easily germinates on mud flats with little or no site



preparation, grows well in wet soils, produces an abundance of seeds, and if water is properly managed it will often re-seed the following year. Planting grain in a beaver pond is relatively easy. Simply broadcast seed at the recommended seeding rate per acre onto exposed mud flats. Although fertilizing is not essential to success, it can help. I have rarely fertilized broadcasted crops in beaver ponds and have had great success without it.

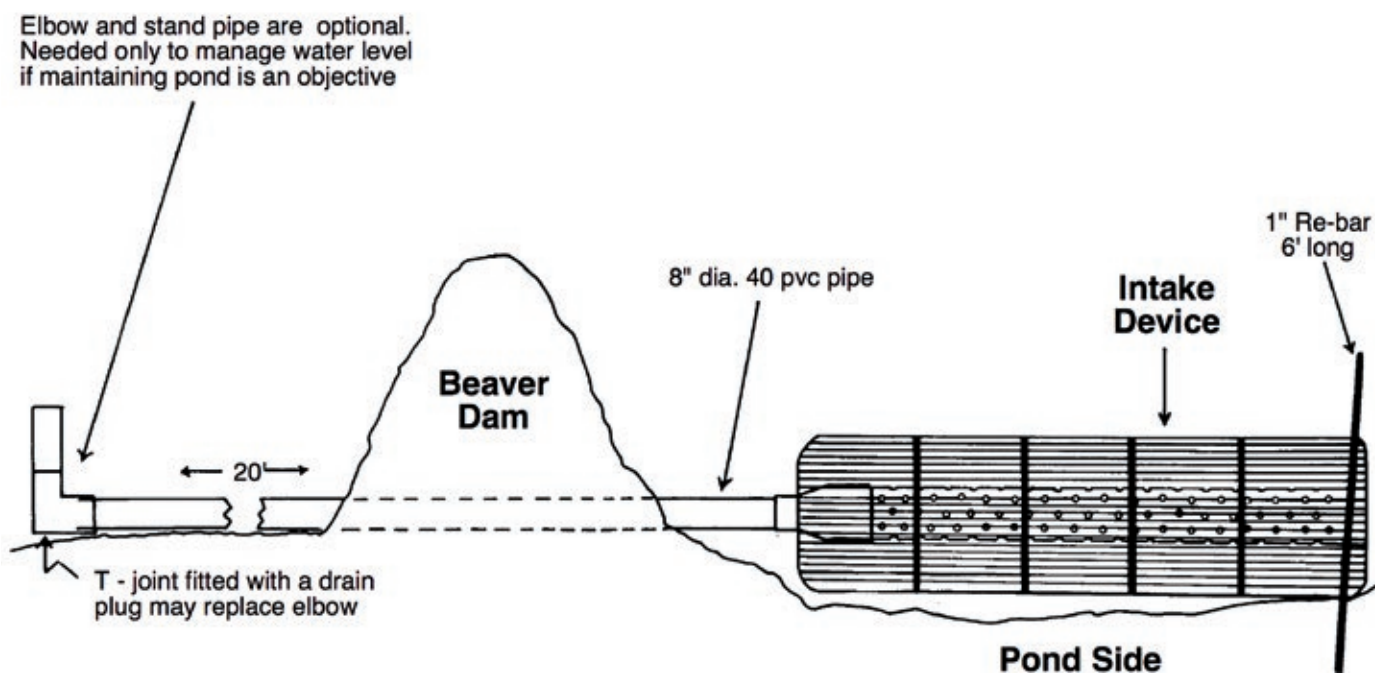
Now to the hard and messy part – water control. To consistently manage a beaver pond successfully for ducks, it is necessary to drain the pond by breaking the dam and installing a drain pipe. Generally speaking, this means a pipe that extends well into the pond with many perforations to prevent beavers from patching the leak. Although it is messy, and certainly watch out for water moccasin/cottonmouth snakes, breaking a beaver dam is often not as difficult as it seems and can normally be done with a fire rake. Break the dam on the downhill side of the existing channel in the form of a narrow, deep “V”. The initial flow of water through the dam will help clear excess dam

materials. Place the drain pipe deep into the break so that at least 10’ of pipe extends into the upstream area. The final level of the pond will be determined by the height of the downstream end of the pipe, or the stand pipe position height. There are many options for beaver pond drain pipes. The key is to install a pipe that is designed to prevent beavers from “patching the hole”, yet does not drain the pond completely so that beavers remain in the pond. Always leave at least 1/3 to 1/2 of the pond area un-drained during drawdown, as over-draining may cause the beavers to seek new areas. There are many homemade and fabricated designs that can be found by doing a little internet research. If you do not use a drain pipe that allows you to adjust the water level, you will need to remove the drain pipe approximately 45 days after natural moist soil plants or your planted crop germinates. This will allow beavers to patch the break in the dam resulting in the pond flooding. Using this method often requires re-breaking the dam and re-installing a drain pipe higher in the dam to maintain the desired water level. I like the Clemson Pond Leveler as it is

a great and relatively permanent design that allows you to control water levels by adjusting a standpipe on the downstream side of the dam.

### Control feral hog populations

“Control” may be the wrong word to use here, but you get the point. Although removing hogs could be on your management calendar throughout the year, summer is a good time to put extra effort into this since it often causes a moderate disturbance on your property. Hog populations are rapidly growing in many areas and are causing significant damage to wildlife habitat, food plots, roads, etc. wherever they live. One reason it is difficult to “control” hog populations is that they are reproductive at 6-8 months old and are very prolific, having up to 3 litters of young per year! Thus, exponential population growth can and does happen if resources are adequate. The most effective way to remove hogs is through aggressive trapping. Be sure to do some research before you simply throw a few traps out. Specific trapping techniques have proven to be more effective than just baiting a trap and catching a hog or two each



*The Clemson Beaver Pond Leveler allows managers to have more control of pond water levels than simply installing a pipe that drains the pond. Leaving water in the pond encourages beavers to remain.*

time. Another effective strategy, but more costly, is hiring professional hog hunters that use either night vision equipment and/or dogs to harvest hogs. Simply shooting hogs when opportunities present themselves helps, but is not an effective strategy to control them.

### **Improve wildlife value of habitat edges**

Most game species of wildlife travel, feed, and thrive along habitat edges. Habitat edges or “ecotones” occur where two habitat types merge or join. The most noticeable are edges created

where woods meet fields, but edges can be as subtle as the transition of a brushy creek to a stand of young hardwoods. Improving the quality of edges and the food they provide will increase the wildlife value of your property. Although “interior” edges are more difficult to manage due to access, improving the quality of edge habitat along roadsides, food plots, and fields is relatively easy. There are many methods used to enhance edge, but applying selective herbicides generally produce the best and longest lasting results. Application of herbicide can be made

with a backpack, 4 wheeler, ATV, or tractor mounted sprayer. Simply apply herbicide along the edge spraying as far into the edge as you can. The goal is to remove undesirable mid-story woody species such as young sweetgum and ash trees to encourage increased growth of plants that will benefit deer, turkey, and quail, like legumes, forbs, and blackberry species. If possible, include these areas in prescribed burns the following year to remove “skeletons” of the trees and underbrush you killed via herbicide and to stimulate additional desirable plant species. Another tip is to



*Herbicide is an excellent tool to improve quality of edge habitat for wildlife*



*Wildflowers attract an abundance of insects which provide excellent food sources for quail and turkey. Allow flowers to seed out before mowing this summer.*

include managed edges when you fertilize food plots or fields. In addition to removing undesirable trees/shrubs that compete for sunlight and nutrients, fertilizing these areas can significantly increase the amount of foliage the remaining desirable plants produce.

### **Monitor and control weeds in summer food plots**

If you planted summer food plots (which I hope you did), it is important to monitor weed encroachment to ensure you get the most benefit out of your food plots. If you are new to planting summer crops, you will soon become an expert at weed identification and herbicides. Just by the nature of warmer weather and excellent growing conditions, food plot managers have a tougher weed battle to fight during the

summer. There are many summer weeds that will take advantage of the lime and fertilizer you applied to the soil for your summer food plot plants. If left unattended, these weeds can, and will, take over your summer food plot resulting in less quality forage for your wildlife.

Make food-plot-specific notes of the weeds you are having problems with so that you can adjust your planting the following year. For example, if you have grass type weed problems (such as Johnson grass), plant a broadleaf crop on that plot so that you can spray grass-selective herbicide to control the problem grasses without harming your crop. Vice versa, if you have broadleaf weeds, plant grass or grain crops so that you can spray broadleaf-selective herbicides. While weeds are persistent, we are smarter!! Anticipating your site-specific

weed problems and planning/planting accordingly will help you make the most of your summer food plots and efforts. It is also less frustrating when you are winning the weed war!

### **Road maintenance – “limb” roads through herbicide applications**

Late summer is a great time to “knock back” vegetation along interior roads of your property. While you can use loppers, saws, and other tools to physically remove overgrown limbs and brush from roads, this method is labor intensive. Applying herbicide along roadsides is a great way to accomplish the same results. When choosing the herbicide method, it is important to make sure you use an herbicide that will kill the intended species you are trying to control and that it is not “soil active” meaning that it



*Time dove field plantings based on how long it will take for seed to mature for the crop you plant, and with adequate soil moisture.*

gets transported to the soil and will kill entire trees or shrubs (unless of course this is your goal). While there are several herbicides that can be used, I often use glyphosate for general “limbing” of roads and right of ways. This herbicide only kills the portion of the tree or shrub you spray. That is, it does not kill the entire tree. Parts that are sprayed generally die within a few weeks or a month after the application and limbs will drop shortly afterwards. This herbicide method generally results in a cleaner roadside because it gets sprayed on all the vegetation within the zone you are trying to control; whereas using the pruning method, only the limbs that are physical-

ly removed are taken out. One disadvantage of using the herbicide method is that its results are not as aesthetic as the pruning method. That is, expect to see dead limbs and shrubs for a couple months after they die. However, it is a more complete method. Again, it is very important to read and understand the label of any herbicide before application. Limbing roads not only removes limbs and brush that scratch your truck and equipment, but it makes traveling roads safer by increasing visibility, allows more sunlight to reach the road to reduce time needed to dry, and it results in better quality wildlife habitat along roads due to the regenerating vegetation.

### **Allow wildflowers to mature and go to seed before mowing**

Managing wildflower areas is a great addition to your property management strategies, particularly if one of your goals is improving habitat for turkeys and quail. They not only add aesthetics which adds to your outdoor experience, but the flowers attract an abundance of bugs and insects that are eaten by turkeys and other birds. If you have planted or are managing wildflowers on your property, avoid mowing these areas until seedpods have matured. Allowing the wildflowers to produce seed before mowing will ensure adequate reseeding for a good crop the following year. If

you are not currently managing wildflowers on your property, but want to do so, do your homework to determine the best wildflower blend for your particular soil and climate, begin preparing seed beds well before planting time (fall) to create a smooth firm seed bed, and plan to plant them this fall. Due to the small seed size of many wildflowers, a smooth seed bed is critical to success. Rough seed beds often result in seeds getting covered too deeply and will result in low germination rates even if broadcast by hand. Once established, and with periodic management such as mowing, wildflower areas can persist for many years.

### **Complete draining duck ponds and prepare for planting**

If you are managing a moist soil area/duck pond, (i.e., native vegetation vs. planting agricultural crops), you should have started the spring drawdown

around 45 days after the last frost. Slow drawdowns, those that take 2-3 weeks, are desired because they result in a more diverse wetland plant community than rapid drawdowns. A diverse community of wetland plants will result in many different types of food sources (seeds and insects). By May or early June, your drawdown should be complete and native moist soil plants are starting to establish. Herbicides can be a useful tool to remove undesirable vegetation if it becomes a problem and is dominating the pond. Button bush and sesbania (wetland shrubs) can be beneficial, but should be kept in check and not allowed to comprise more than 25% of the pond.

If you plan to plant an agricultural crop rather than manage the native vegetation, leave the pond flooded until closer to planting time. That is, drain ponds you plan to “plow and plant” a few weeks before you start plowing and preparing the soil for planting. Leaving the

pond flooded until this time will provide weed control and will reduce tractor time later. Drying time will vary depending on your soils. It is better to drain early than to wait and not be able to work the ground because it is too wet and chance running out of growing season.

### **Start preparing and planting dove fields**

Dove field preparations should begin by June or July. Planting dates will depend on the soil moisture, crops you are planting, and the time required to produce seed. Common dove field crops include a variety of millets (e.g., dove proso, browntop, Japanese, pearl), sunflowers, grain sorghum, corn, and wheat. For best results obtain soil samples and apply required lime and fertilizer before planting. Be sure to allow enough time for your crop to produce seed before dove season arrives. While the seed of planted grains offer attrac-



*Attend wildlife and land management seminars this summer to gain valuable knowledge that will help you be more successful.*

tive food sources for dove, maintaining a clean disked strip or two through the field offers dusting areas for dove. These are strips that you do not plant, rather simply keep plowed through the summer and into dove season. Dove find these bare dirt areas attractive which will keep them in and around your field until grain seed is mature. It also offers landing areas and access to seed once it matures as well. Another trick that I have used many times with great success is to include/spread pea gravel (very small gravel) along roads that are within the dove field area. Dove eat the smallest particles of gravel to assist in digestion (used in their gizzard to break down seeds and other food

parts). This is the reason dove are often seen “feeding” along gravel roads and other roadsides.

### **Learn more - Attend wildlife and land management seminars**

Take advantage of seminars, field days, and other events to further your knowledge and learn how to best manage your land and enhance hunting opportunities and success. Generally speaking, there are many educational type seminars and events offered in the summer. One of the best ways to find out about these events is to contact your local extension office, state wildlife agency, wildlife federation, or a national organization geared towards your

interest (e.g., National Wild Turkey Federation, Ducks Unlimited, Quality Deer Management Association, etc.). For those interested, QDMA’s 2014 National Convention will be held in late July in Athens, Ga. As a land and wildlife manager, you should be constantly learning new ways to improve wildlife and habitat, experimenting with various wildlife and land management practices on your property, and sharing your results. If you attend some of these events, don’t be surprised if you see me there. Even as a veteran wildlife and land manager I continue to seek better ways to do things, and to learn better ways to manage wildlife to achieve desired results.

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