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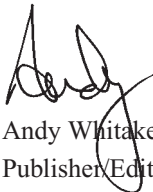


Earl Says...

I was extremely proud and embarrassed all at the same time after all the calls and e-mails I received after our last issue was mailed to subscribers. I was proud because I was reminded how many subscribers carefully read all the articles in each issue while at the same time embarrassed that I didn't let you all know why the second part of an article was not published last month. I can't tell you how many folks wanted to know what happened to Part 2 of Steve Ditchkoff's article on pig control. The second installment of his article is included in this issue and I would like to apologize and explain what happened.

We published, "A New Approach to Pig Control: Part 1", in the May/June issue this year and I had all intentions of running Part 2 in the July/August issue. But with hunting season right around the corner I felt that we needed to publish the two excellent articles on food plots ("Deer Radishes, It's All in Their Genetics" and "Durana: The Durable White Clover") to give you time to use the information in planning your fall food plots. And we just simply ran out of room. I deeply apologize to you all and thank you for letting me know how important this type of information is to you.

This whole subject helps to point out the serious problem we have in this country in dealing with wild hogs and the amount of interest landowners have in dealing with them. Last week I saw a rerun of the documentary, *Pig Bomb*, and it reminded me of a quote we once ran in an article from a wildlife biologist, "If you don't have hogs on your property now, get ready because eventually you will!" Please know that we at *Wildlife Trends Journal* will do our best to keep you up to date on the latest research and management information on wild hogs. And contact me any time to comment about any future articles that will help you manage your property.


Andy Whitaker
Publisher/Editor



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A New Approach to Pig Control: Part II

By Stephen Ditchkoff

Stephen Ditchkoff is an Associate Professor at Auburn University. At Auburn, Steve teaches both undergraduate and graduate courses in Wildlife Science and conducts research with white-tailed deer and wild pigs. He can be contacted at 334-844-9240 or ditchss@auburn.edu.



In the last issue of *Wildlife Trends Journal* I described the failures of our approach to wild pig control in North America. We have been expending considerable effort into trapping and shooting wild pigs in an effort at reducing their numbers, but in most cases our efforts have had only marginal success. Truly successful pig control programs are rare. However, I suggested that it may be possible to reduce wild pig numbers with considerably less effort than traditional approaches, and that these efforts may be more long lasting. In this article, I will describe how to control wild pigs using a sounder-based removal strategy.

The Reproductive Unit

An important fundamental aspect of any control program is an understanding of the reproductive unit. If we have 100 pigs in an area, and they are found at a sex ratio of 1:1,

Boars are irrelevant in pig control programs because they don't produce piglets and thus don't contribute to population growth

then we have 50 females and 50 males. The only pigs we should be interested in are the females because they're the ones that will produce more pigs. If we remove 49 males out of the 50 in an area, we will still have 50 females that are capable of producing young, and we will have reduced reproduction by 0%. But, if we remove 49 females out of the 50 in the area, we will have reduced reproduction by 98%. Another way to look at it is...by removing only one female (2% of the population), you will have more impact on the pig population than if you had removed 49 males (98% of the population). In short, males don't matter. While males contribute to agricultural and habitat damage, possibly on a greater scale than females due to their greater size, they are irrelevant in any discussions about population control. And, because it requires such great effort to successfully reduce a pig population (and time is money), we cannot afford to expend effort at controlling males. By focusing our efforts on females, we will have a greater impact on pig damage in the long run.

Unfortunately, this concept is not well understood by most. Traditional pig control programs usually keep track of how many pigs they have removed. This body count is used to evaluate the success of the program. But, the inclusion of males in this body count is irrelevant and gives a false sense of success because they do not contribute to population growth. The female is the reproductive unit. Deer managers are one group that has a good grasp on this concept. They control deer populations through antlerless harvest: the only reason males are harvested is for their trophy value.

Surveying for Wild Pigs

The first, and probably the most important step in a sounder-based removal strategy is to understand what pigs you have and where they are located. The success of a sounder-based removal strategy is to remove all the pigs in a sounder. Not 80%, or 85%, or even 95%. It is critical that 100% be removed, and this requires knowing precisely how many individuals are in each sounder

that are targeted for removal. Fortunately, we have the tool to do this with relative ease: game cameras. While game cameras were originally developed to monitor deer populations, they are equally effective at surveying pig populations.

To begin, you should establish a grid of camera survey stations so that there is one every 300 – 500 acres. These stations should be established at sites that have fresh pig sign. To establish a survey station, spread approximately 25 pounds of whole corn over an area that is 10 x 10 feet. It is important that you spread the corn out (rather than put it in a pile) to ensure that the pigs spread out and you can identify individuals in the images. If you do not have pig activity at the site in 3 – 5 days, then discontinue use of the site. Our data indicate that if pigs don't hit the bait in 3 – 5 days, then you're wasting your time. At those sites where you have pig activity, set up a game camera and allow it to take pictures for a week or so. Be sure and adjust the settings on your cameras to ensure that they take as many images as



Prior to trapping, carefully document the composition of each sounder using game cameras to ensure successful removal of the entire sounder.



Corral traps are more efficient than box traps for removing whole sounders because they allow for more pigs to be captured at one time.

possible while the pigs are on the bait. The more images you have, the better you'll be able to get an accurate count of the pigs using the site.

When you download images from the cameras, be sure to examine them carefully. It's critical that you know exactly how many adults and juveniles are in each sounder. Once you have that information, then you can begin the process of trapping. If you have a sounder that is using two sites, eliminate one of the sites. If you have a site that is being used by two sounders, this indicates that the bait site is on the edge of the two territories, and you may need to establish two more sites so that each site is used by only one group of pigs.

The final thing to keep in mind is that this isn't a race. It's not a problem if it takes you 3 months or longer to determine the location and composition of sounders. Our data suggest that this is the most important aspect of the entire process, so don't rush through this. In fact, just consider the surveying period as prebaiting. Failure to accurately iden-

tify the composition of the sounders could undermine this entire process.

Trapping

Once you have accurately identified the composition of your sounders, you can begin the process of trapping. The pigs are conditioned to coming to the camera sites for food, so just use those as your trap sites. The best trap style for trapping an entire sounder is a corral trap. The large size of the corral trap is essential to ensure that you can maximize the number of pigs that enter the trap. The specific details regarding bait, door style, trigger type, etc., are irrelevant. Use what works for you...what you are familiar with. I suggest using more than one trap at each site. In our study, we used 4 (3 box traps and a corral trap) per site.

Once you have your trap set, tie the door open so that the pigs can become accustomed to it. It can take days to weeks for the pigs to become comfortable with the trap, but it is essential to the process that you give the pigs all the time they need. Monitor the acclimation process with the

use of a camera. Once you have all the pigs entering the trap, it's time to set it.

This is the point in the process where I'm about to tell you some things that will go against every bit of common sense that you have. When you walk up to check your trap the first morning, it's critical that you identify all the pigs that are in the trap. Did you catch the entire sounder? If you did, then kill them. But....if you didn't, open the door and let them go. If you shoot the pigs in the trap, you will have just educated the remaining pigs, and the task of catching and/or killing the remainders will be much more difficult. But, if you let them go, you increase your chances of getting them all. It may take 3 or 4 days for them to return, but they'll come back, and, they will have had a positive experience with the trap. We have let partial sounders loose multiple times, and they always come back. I mentioned earlier that we use multiple traps at a site. This increases the chances of catching the entire sounder. If some of the pigs trip a trap, there are more traps

for the remaining pigs to enter.

If you have the misfortune of trying to eliminate large sounders (more than you can get into a trap), you will likely be forced to make a decision on whether to shoot pigs in the trap when there are others you haven't caught. Make your decisions based upon the experience level of the pigs that aren't in the trap. If they are young pigs, they shouldn't be too difficult to trap. But, if they're mature animals, they can be extremely difficult, and you will likely be forced to change trap sites, trap styles, etc. At the very least, it will take considerable effort to get the rest of the sounder. But, it is essential that you do. If you leave even one female, they will repopulate the area. If you get them all, you'll be pig free for a while. Once you have eliminated a sounder, move to the next one. Work on two at a time. Take a break for a month or two. But, whatever you do, just don't quit until you have successfully eliminated an entire sounder.

We also suggest that you don't kill male pigs in the trap. If you catch a boar, let it go. Pigs often shy away from traps that have been soiled by pig blood, so shooting the boar will reduce your chances of catching the local sounder. If you just can't swallow letting it live, open the trap and shoot it on the run... just don't shoot it in the trap. But, always remember...males don't produce piglets, females do. Your goal is to eliminate the sounder...males are irrelevant in the long run.

Case Study: Fort Benning

We began monitoring the sounders of wild pigs in our study area on Fort Benning in 2007. Our goal was to locate and identify all of the unique sounders, identify all of the individuals in each sounder, and develop a picture of the spatial arrangement of sounder territories. This was accomplished with the use of game cameras and GPS radio collars. Ear tags enabled us to monitor sounder composition in great detail (for research purposes), and GPS collars

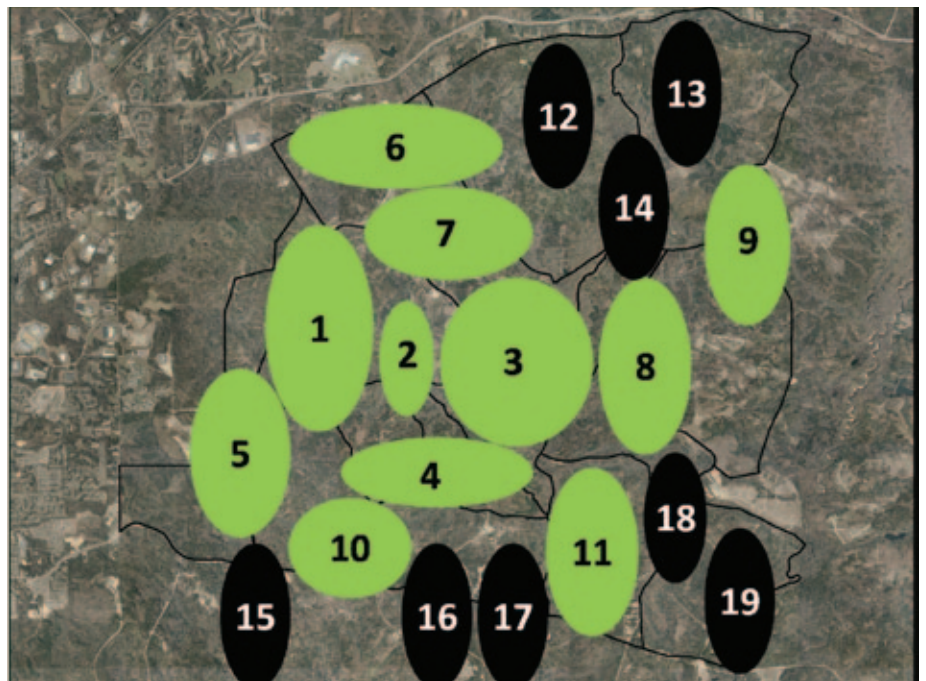
provided detailed data on territory boundaries. Figure 4 shows the approximate territory size and location of 19 individual sounders that were identified during this process.

In May, 2009, we began trapping with the intent of removal. We removed Sounders 1 and 2 in 15 days of trapping, which had 28 and 7 pigs, respectively (Figure 5). This cleared approximately 3,500 acres of females and their young. Following this removal, we monitored the cleared area with baited cameras, and followed the movement of pigs in the surrounding sounders with GPS radiocollars. As of April 2010, one year later, no sounders had moved into the area. We did, however, document a few exploratory ventures of surrounding sounders into the vacated territories. Each of these exploratory ventures was documented at a camera site, and did not last for more than a day or two. These data demonstrate that expansion of female pigs into new territories occurs very slowly, and properly designed removal efforts can be successful at eliminating the female portion of a pig population in relatively small areas.

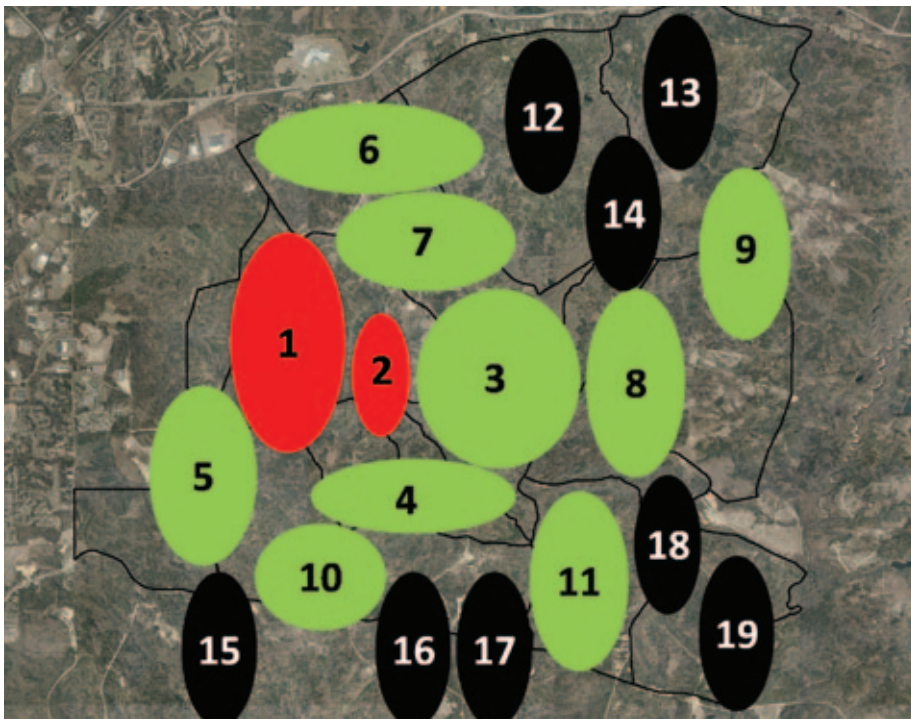
Six months later, in November, 2009,

we continued with our removal experiment. We targeted Sounders 3, 4, and 5, which had 21, 13, and 7 pigs, respectively (Figure 6). After 9 days of trapping, we had removed 18 of 21 pigs in Sounder 3: we could not remove 3 adult sows with this first effort. One sow was killed by a hunter in mid-January, 2010, and it was not until the end of January that we were finally successful at removing the final two. As described earlier, incomplete removal of a sounder resulted in the remaining pigs becoming educated, and their successful elimination only occurred after considerable trapping effort. Ultimately, we had to change trap sites, modify our trap style, and change our trigger type.

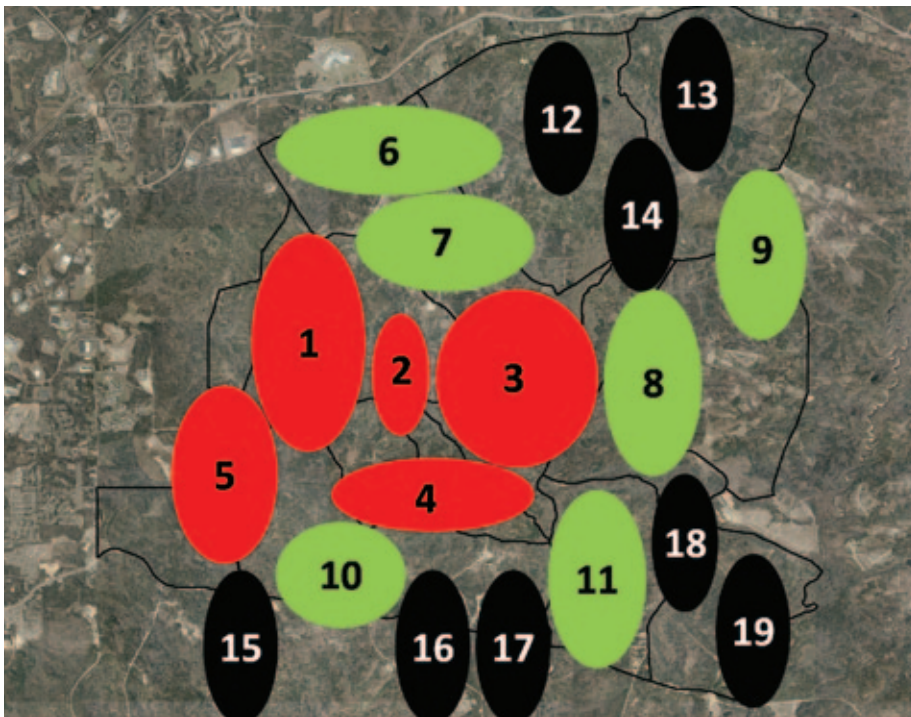
Sounder 4 also presented difficulty. We were able to remove 12 of 13 pigs in Sounder 4 in 11 days of trapping. The remaining sow was finally captured near the end of January. Prior to her capture, we caught 4 piglets that she had produced in the interim, and we captured the remaining 3 in mid-February. Fortunately, we were able to target these piglets before they had gained experience with traps. Sounder 5 (7 pigs) was successfully removed in 8



This diagram details the approximate size and location of individual sounders in our study area. Green ovals represent sounders where every individual was identified, and black ovals had incomplete identification.



In May, 2009, we removed Sounder 1 and Sounder 2. These sounders are represented by red ovals.



During November, 2009 – January, 2010 we removed Sounders 3-5. These sounders are represented by red ovals.

days of trapping. This second removal effort cleared an additional 3,000 acres of females and their young. This, combined with the previous effort totaled approximately 6,500 acres.

Since these removal efforts we have continued to monitor the former territories of the removed sounders. We have

yet to document incursions of new females or young: only adult boars have been documented in the area. While boars will also cause damage, they are unable to produce young and the population will not grow. Continued removal effort (e.g., hunting and trapping) over time can be applied to target remaining

adult boars. However, we hypothesize that activity of males in these areas will decrease over time as there are no females in the area. Most data suggest that movements of adult boars are driven by the urge to reproduce, and the lack of females in the area will result in boars moving to areas with greater concentrations of females.

Final Thoughts

The take home message is that wild pigs can be successfully eliminated from an area if a strategic approach is applied. Trap and removal efforts that only strive to maximize a body count are almost never successful. Rather, targeting sounders using a strategic approach clears acreage that is recolonized by surrounding sounders very slowly: cleared areas may remain sounder-free for at least a year. It should be noted that we feel that the key to this approach is in monitoring. Identify unique sounders, identify all of the individuals in each sounder, and begin trapping only after you have good information about the pigs in the area. Only when you reach this point should you begin trapping. While we have only conducted this one experiment, others have begun to apply our technique and have reported success. Good luck.

Addendum...

Since completion of this article, we have begun our final efforts to eliminate all females and young in our study area. After 9 days of trapping, we have removed 100 females and young from 10 sounders. Six sounders have been completely eliminated, and we have 1 to 3 females remaining in each of the other 4 sounders. There are an additional 3 sounders that we plan on removing in the coming weeks. In total, we have cleared approximately 26,000 acres of females and young (with the exception of a few stubborn females that we will clean up in the coming weeks. By the time you read this article, we will hopefully have eliminated these final pigs.

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Rammed Earth Walls For The Farm

By Keith Summerour

Keith Summerour, a graduate of Auburn University, founded Summerour Architects. Since 1991, the firm has been designing high end residential and commercial projects throughout the country but with a strong presence in the Southeast.



In the never ending search for cost effective, yet substantial construction techniques, I am forever finding that our predecessors had perfected cost efficient, locally supplied buildings long before modern construction technology entered the scene. In fact, one of the oldest, most long lived erection concepts is the use of dirt. That's right, soil when compacted to 50% of its normal volume becomes 60% the strength of concrete and lasts, well, practically forever. This ancient building type has been employed for thousands of years. Sections of the Great Wall of China, churches, plantation houses and garden walls have used this method throughout human history.

In the United States, rammed earth structures were exposed to the public through a book by S.W. Johnson named "Rural Economy" in 1806. Rammed earth buildings lost popularity and were soon forgotten as a construction method after World War II when there was a need for quickly constructed houses and manufactured material

costs dropped significantly due to industrial output for the war effort.

Today there are the same sound reasons to employ rammed earth technology in constructing a shelter or fence/wall as in the past – it is your materials from your land, it is very energy efficient, uses only locally supplied resources (it is sustainable) and fast (taking 2/3's the time of typical masonry structures) and is very durable (you are making man made sedimentary rock).

What you need to know:

- **Soil type** - The best is 70% sand, 30% clay with low organic content. Georgia soil is ideal as long as there is not too much clay.
- **Testing soil for suitability** – Form a ball of mud and drop from 3’-0”. The amount of disintegration indicates its viability.
- **Formwork** (see diagram) – Two 3/4” plywood forms or metal concrete pan forms. Very well braced.
- **Tamping** (Ramming) – Use pneumatic tamping devices, compress soil to 50% of its original volume.
- **Time Costs** – Four people can erect 300 square feet per workday

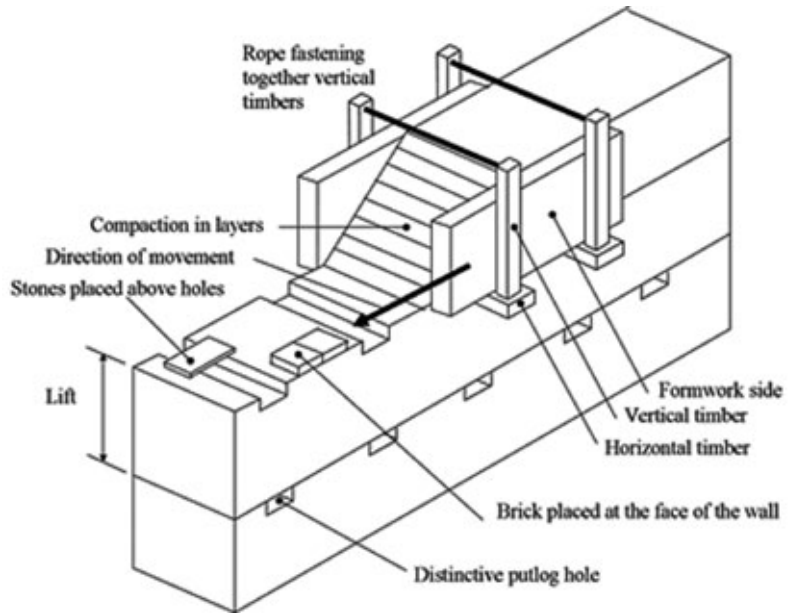
Where to learn more:

Easton, David. *The Rammed Earth House*. Chelsea Green Publishing Co., 1996

McHenry, Paul Graham. *Adobe and Rammed Earth Buildings: Design and Construction*. University of Arizona Press, 1989



Rammed earth structures can provide an exciting, cost efficient alternative to purchasing manufactured materials and also provide a unique flavor to your rural landscape. In this time of economic uncertainty, you can always count on your land, your soil and your efforts to build structures that last.



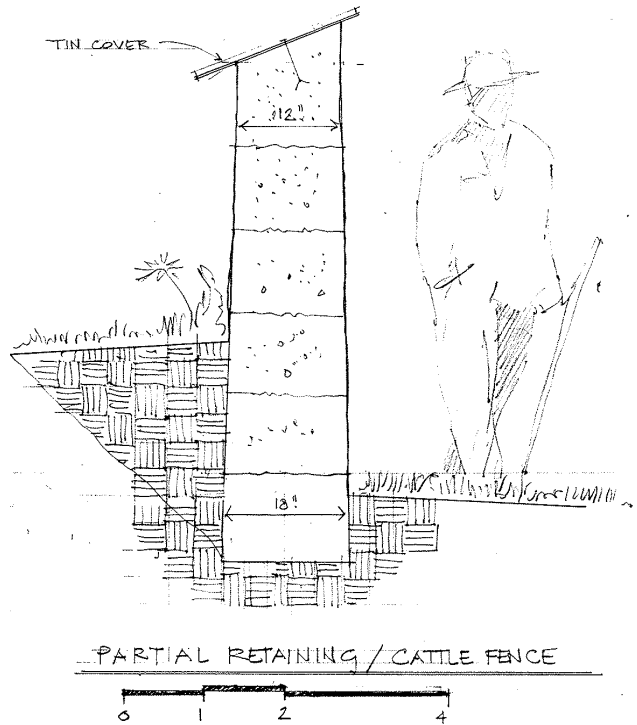
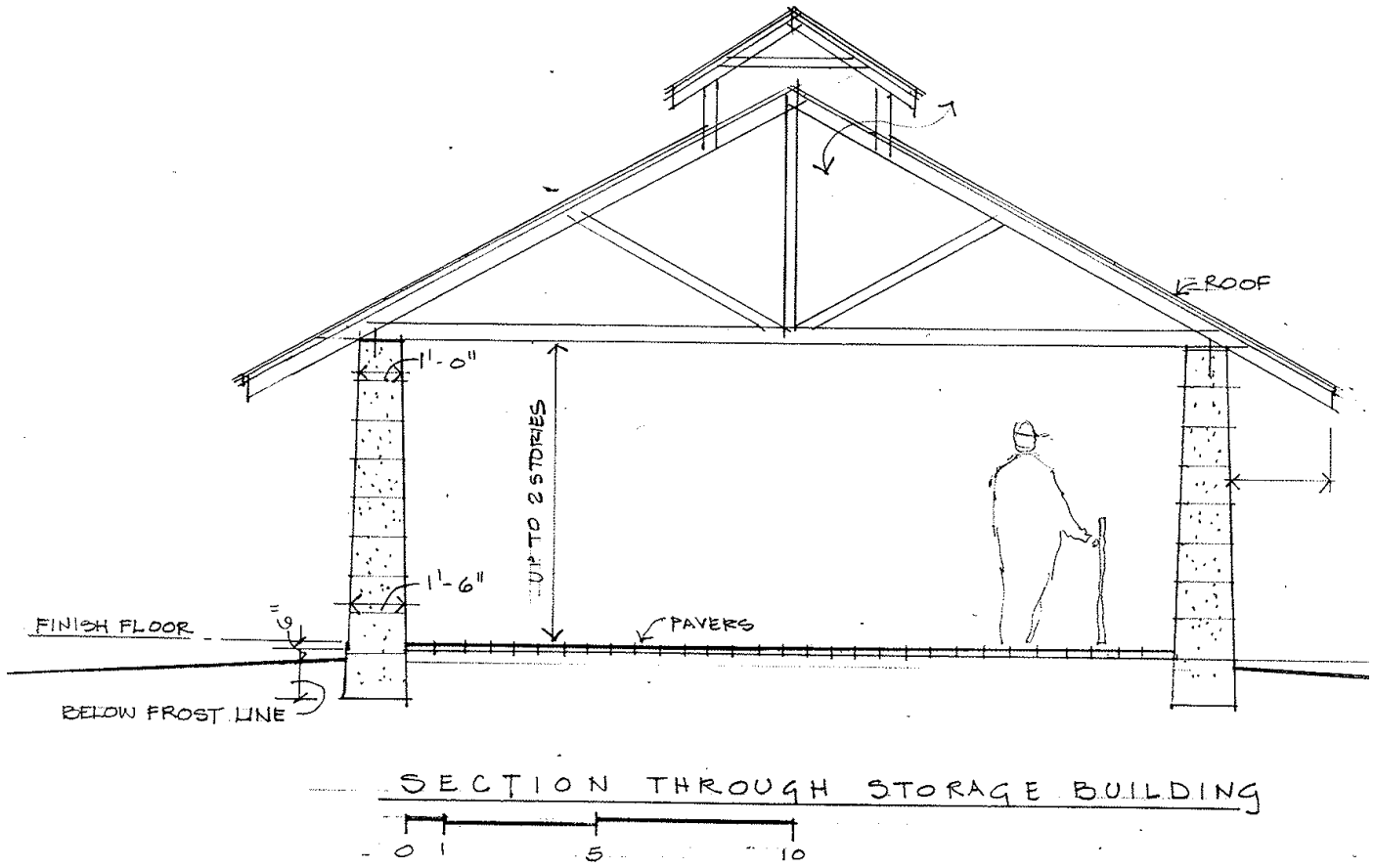
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Native Plant Community Establishment and Maintenance for Bobwhite Quail

By G. Ryan Shurette

G. Ryan Shurette is an Ecologist/Botanist with the USDA Forest Service.



Typically native bunchgrasses are naturally intermixed with several other forb species, as well as bare ground. (Photo: Ryan Shurette)

Until as recently as the 1980's the northern bobwhite was abundant in most counties of the Southeast. The prosperity of the species during most of the 1900's was primarily due to the widespread mosaic of small farmlands and the abundance of burned open habitats. However, agricultural economics began pushing the farming and timber industries towards larger areas of cleaner crops with less native ground cover and fewer "weeds" that were needed to support quail. While there are many complex factors involved in the restoration and management of the bobwhite and its habitat, we need only to examine the nature of those native understory plants to solve the most important piece of the habitat puzzle. Virtually all the requirements of the bobwhite can be found if one looks in the grass and weeds. The point is, without quality, burnable, native vegetation it will be almost impossible to successfully build and maintain a viable wild bobwhite population.

While it is relatively easy to describe what a desirable understory plant community looks like, with regards to meeting the needs of quail, it is not as simple to instruct one on how to achieve it. This is because almost every land manager starts from a different point. There are all kinds of landowner situations that vary in: size of tract, soil, timber type and age, agricultural history, or any of several other factors that will have bearing on how the manager proceeds towards building quality ground cover. The answer is further complicated by the fact that quail need more than one successional stage of ground cover, due to the shifts in life cycle and seasonal requirements of the species. Fortunately, there has been some amount of research and headway made with respect to reaching a desirable destination from all the various points. While there are other (non-herbaceous) habitat features that are important from time to time, this article will focus on

the creation of the functional herbaceous plant community that will support quail, considerations for different starting points for land owners, and the maintenance of these communities through management and time.

A Picture of the Correct Understory

In general, quality bobwhite ground cover will usually consist of many species of herbaceous plants, including native bunchgrasses, legumes, and composites. Native bunchgrasses include bluestems (*Andropogon* / *Schyzachyrium* spp.), Indiangrasses (*Sorghastrum* spp.), plumegrasses (*Saccharum* spp.), switchgrasses and panicums (*Panicum* / *Dichanthelium* spp.), oatgrasses (*Danthonia* spp.), lovegrasses (*Eragrostis* spp.), needlegrass (*Piptochaetium avenaceum*), spikegrasses (*Chasmanthium* spp.), and wiregrasses (*Aristida* spp.), depending on the region. Native bunchgrasses

grow in a clumping habit, and therefore are typically naturally intermixed with several other forb species and bare ground, as well Figure 1). This is the reason they are so important to quail.

In any given unimproved (non-agricultural) forestry setting, these native grass species will probably be present to some extent on the upland sites. But these species generally prefer open sunny conditions, of course, so maintaining an open canopy is inherently important in building good quail habitat in your timber stands. Perennial bunchgrasses provide foraging, brooding and nesting cover for quail. While they generally produce small seeds that are typically of little value to the bobwhite, they are very important for another reason. These grasses constitute the major portion of the fine fuels necessary to carry productive fire in open stands and meadows. Regular fire will promote the establishment and maintenance of a diverse community of other herbaceous



Regular prescribed fire is the best way to maintain native herbaceous communities when managing for quail. (Photo: Kerry Clark USFS)



Before any meaningful native planting can occur, it will almost always be necessary to kill whatever pasture grasses are present, using one or more commercial herbicides.

plants that will satisfy the nutritional needs of quail, with respect to seed production. High quality seed producers including native legume species like partridge pea (*Chamaecrista* spp.), native lespedezas (*Lespedeza* spp.), pencil flower (*Stylosanthes* spp.), wild beans (*Rhynchosia* spp. / *Strophostyles* spp.), and Beggarweed (*Desmodium* spp.) are often quite abundant on fire-maintained upland sites. Sedges (*Carex* spp.), foxtails (*Setaria* spp.), crotons (*Croton* spp.), and composites like beggarticks (*Bidens* spp.) are among the other important “seed weeds” that naturally occur in open stands and edges. This complete “working” plant community, refreshed periodically with fire, will also provide a fairly good base of invertebrates and succulent vegetative matter needed by bobwhites in spring and summer during mating and brooding season. Quality brooding habitat can be created or enhanced in other ways as well, and is discussed later in the article. While there may be a few trees, shrubby thickets, and other structural features present in the picture of an ideal quail landscape, this diverse grassy plant community is the foundation of desirable bobwhite habitat.

Starting Points

Stand structure, soil type, and land

use history will usually dictate what kind of vegetation is expressed (or will be potentially expressed) on the ground of a particular location. These factors should be weighed when considering sites for quail habitat improvement, as they will influence how much cost and effort will be needed to create desirable native plant communities. On upland cutover areas or in thinned timber, the appropriate ground cover vegetation may already exist, or the site may just need some burning or selective herbicide treatments to reduce hardwood encroachment. In most cases, on natural, non-agricultural sites there will be enough of a seed source of the desirable native weeds and grasses to forgo any need for native plantings. The existing community would need only to be released and adjusted through regular fire and control of hardwood competition (shading). Unimproved (non-agricultural) natural pine stands and cutovers are generally the easiest of sites on which to create and maintain ideal quail understory.

One tool that is often overlooked when starting the process of building open early seral quail habitats is growing season (late spring and summer) fire. Growing season fire in the southeast has been a subject of some debate with regards to nest mortality, however,

its effectiveness for controlling hardwood saplings and promoting a grassy bunchgrass understory is well documented. Waldrop et al. in 1992, found that a frequent summer burning regime was successful in completely eliminating the hardwood sprouts in a stand. Using small, alternating burn blocks, managers on the Talladega National Forest, USDA Forest Service, regularly use early summer fire to create and maintain grassy understories in open mixed pine timber stands and manage successfully for quail. Understory species propagules (seeds and/or rhizomes) respond naturally to the disturbance of fire, and in turn those species are released and expand across the stand.

On the other hand, if you want to build native plant communities on sites with an agricultural history, odds are that it will be more difficult to create a diverse burnable understory. Fallowed row-crop sites typically have an abundant seed bank of annual pioneer weed species (both native and exotic), and may serve a manager better as brooding patches maintained by fall and winter disking, rather than by fire, especially if bunchgrass cover is already abundant in adjacent areas. These old agricultural fields can be good producers of ragweed (*Ambrosia* spp.) dominated brooding habitats. However, unless these areas were in pasture production, these sites can usually be successfully converted to native perennial understories, by planting with the appropriate species, also. One or two site preparation applications (in the summer and fall), using a glyphosate herbicide would likely be needed prior to the next year’s planting to reduce competing species like Johnsongrass (*Sorghum halapense*). Typically, native warmseason bunchgrasses are planted to begin the process so that the stand can be burned periodically, which in time will probably produce a functional herbaceous ground cover, with regards to quail habitat. Depending on how quickly the manager wants to “restore” the site, more supple-

mental planting or selective herbicide application may be needed. Native species site preparation and planting is discussed in more detail later.

Former pasture sites (containing exotic sod-forming grasses such as bahaia, fescue, and Bermuda grass) are probably the most expensive and difficult to restore to natural conditions. Before any meaningful native planting can occur, it will almost always be necessary to clean the slate of whatever pasture grasses are present, using one or more commercial herbicides (Figure 3). Over time, if any of the “big three” pasture grasses mentioned above are present in an open situation, they will most often outcompete the native species by forming a thick, continuous monoculture with no access to bare ground. While good for heifers and horses, this situation is virtually useless to a bobwhite. Quail, especially poults, have trouble negotiating through the thick sod and thatch, and if any seeds from the occasional desirable plant do happen to fall into the tangles of grass, they are generally rendered unavailable to the bobwhite.

Again, it is very important to spend

the time and money up front to eliminate pasture grasses from the site, prior to native warm-season grass planting. Many land managers have been tempted into trying to plant strips of native grasses within their stands of pasture grass. These ventures almost always result in wasted effort and money. One effective site preparation treatment is to mow the site in early spring and apply Arsenal (imazapyr) in late spring, or use sequential applications of Accord (glyphosate) at two month intervals throughout the growing season (Longleaf Alliance 2010, CWC Chemical 2010). Use plenty of water in tank mixes when treating pasture grasses. Follow-up treatments may be necessary even in the following year. When it is necessary to spot-treat exotic grasses amongst native warm season species, imazapyr at low rates can be used, as most native bunch grasses are somewhat tolerant of the herbicide (See Table 1).

Once the pasture grasses are removed, you may be surprised at what species respond naturally from the seed bank and/or surrounding sources. In fact, there may not even be a need, in many

cases, to plant any native seeds on the site as existing species will be released by the herbicide treatment. It is important to remember that quality herbaceous quail habitat can’t be built overnight and that sometimes the benefits of waiting an extra year to see how a site responds naturally can often be worth the time. However, on some areas there just might not be enough of a native grass response to burn the site effectively, and supplemental planting may be needed.

Native Species Planting

Native species can be established using seeds or plugs. Usually seeding onto a prepared seedbed is the cheapest method, however, plugs may be a better option if the site is rough or the manager is simply trying to “inoculate” the site with a particular species that may be lacking. A few vendors now sell plugs with the same dimensions as standard longleaf pine tublings, and so the plugs can be planted with a longleaf dibble (Figure 4). When planting native seed or plugs, it is important to find the most local ecotype available for your location. For example, coastal plain varieties may

Situation Recommended Herbicide Application Rate

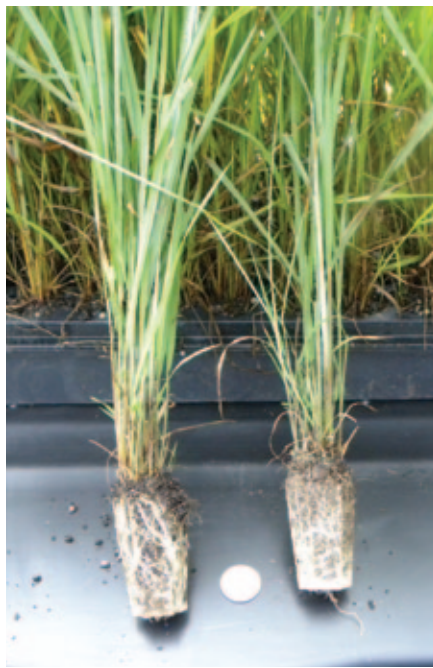
Situation	Recommended Herbicide	Application Rate
Cutover Timberland Site Prep (Artificial Pine Regeneration)	Arsenal AC® or Velpar®	Arsenal at 24 oz/acre, Velpar at 1.5 lb/acre
Control of Hardwood Saplings/Sprouts in Pine Stands	Arsenal AC®	12-16 oz/acre
Control of Hardwood Saplings/Sprouts in Desirable Hardwood Stands	Garlon 4®	2-4 qt/acre
Pasture Grasses (Site Prep)	Arsenal AC® or Accord® XRT II	Arsenal® at 24 oz/acre, Accord® XRT II at 2 qts/acre for 3 consecutive applications
Pasture Grasses – Bermuda grass (Site Prep)	Arsenal AC® or Accord® XRT II	Highest label rates of Arsenal, Accord® XRT II at 2 qt/acre for 3 consecutive applications
Agricultural and Pasture Sites (Pre-emergence Control)	Journey®	11-32 oz/acre
Pasture Grasses (Spot Treatment in Native Grass Stands)	Arsenal AC®	12 oz/acre direct to target
Fallow Row Crop Fields (Site Prep)	Accord® XRT II	1-2 consecutive applications of 6 pints/acre

Table 1. Herbicide Application Situations Relevant to Native Understory Release and Establishment. NOTE: These are suggested rates for general applications. Always follow specimen labeled rates and procedures for each local situation.

not be as likely to survive in the soils and colder temperatures of the Appalachian Mountains, and vice versa. Native seed is often quite expensive, but many species (especially warm season grasses) have become more affordable with the increased popularity and availability. The most commonly planted native species for quail include little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), yellow Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), and partridge pea (*Chamaecrista fasciculata*).

Often germination rates of native grasses are not, on average, as high as traditional hard-grained species. For this reason, as well as the fact that there's usually a lot of inert material and debris in the bag, they are usually purchased in Pure Live Seed (PLS) amounts. PLS is calculated by simply multiplying the percentage of pure seed (minus inert and other crop materials) by the total germination rate. When establishing the native warm season grasses by seed, it is best to drill the fluffy mix into a prepared seedbed using a specialty drill, like those manufactured by Truax. Warm season grasses are usually established from March through May and germination typically occurs when soil temperatures are above 50 to 55 degrees. Depth of planting varies but the appropriate range for the species mentioned above is generally ¼ inch or less. If obtaining a specialty drill is not feasible, these species can also be broadcast by hand or in a spreader at a little higher rate (Table 2). In fall seeding applications, winter wheat or oats are sometimes used as a carrier in a cyclone seeder and are then mowed prior to seed head formation.

Typically no fertilizer is applied to the site when planting native warm season grasses. Fertilizers usually only encourage the growth of non-desirable annual weed competition. If the native grass seed source is from the general vicinity or same physiographic province of the planting area, the species being



Some native species, like this yellow Indiangrass, can be purchased in plugs. (Photo: Walter Bland, Rock Spring Farm)

planted will usually be adapted to the fertility of the local soils and can usually persist, even on relatively poor sites without any fertilization. When broadcast-planting native warm season grasses, it is very important to have a well-prepared seed bed and to cultipack after seeding to ensure good seed to soil contact (Harper et al. 2004).

Maintaining the Understory

The perfect quail understory at any one point in time is still an ephemeral phenomenon, unless of course, there is some type of regular disturbance to maintain its existence. There are several tools that can be used to accomplish this but the best and the cheapest one is most often fire. Once a somewhat desirable plant community has been established or released, there are many physiological reasons that fire is better than mowing or herbicide alone. Many of the plant species (including wiregrass) used by quail specifically need fire to stimulate flowering, set fertile seed, or germinate, and their abundance in the stand will be based on whether they are exposed regularly to fire (Outcalt 1994).

Once the correct structure and native species composition is reached, and a

regular disturbance regime (prescribed burning) is underway, there are a few other things a land manager needs to consider during the maintenance phase. One important thing is the manipulation and maintenance of an open canopy, if the site has timber. As time passes, it will be important with regards to bobwhite habitat, and to your wallet, to plan and conduct timber harvest treatments. Generally, traditional thinning operations (without site prep) do not pose any serious risk to physically damaging the rhizomes and/or seed reserves of the native plant communities across entire upland stands. However, if clearcuts are used and there is the need to regenerate the timber stand, there are several things to consider when looking at site prep options. It is well documented that very intensive site prep practices (including shear and pile/windrow) can almost totally remove the existing perennial grass component of a stand. Virtually all the rhizomes and seeds can be displaced and pushed up to be burned in this type of treatment. A study currently being conducted by Troy University and the USDA Forest Service in the Alabama Gulf Coastal Plain, noted that cutover stands that were site prepared using shear and pile were dominated in the years to come by annual pioneer species and sand blackberry (*Rubus cuneifolius*), while control stands that were burned only retained their dominant bunchgrass component. Exotic invasives like bahaia were also noted more frequently in the shear and pile sites, since there was more opportunity for them to move in and less native competition.

Heavy drum chopping has the potential to significantly reduce perennial bunch grasses in a stand, in some cases also. For example, studies have shown that two passes of a drum chopper in wiregrass sandhills will nearly eliminate wiregrass from a site (Longleaf Alliance 2010). Contrary to popular belief, selective herbicide site prep tends to leave more of the native peren-

nial herbaceous community important for quail intact, than does mechanical prep. For example, one study in a Florida sandhill community found that a broadcast application of hexazinone removed only a few of the desirable understory plants but the native grasses persisted (Longleaf Alliance 2010). Many native legumes are also not harmed by label rates of hexazinone or imazapyr, and stimulation of profuse blooming has been observed in the second growing season after the application (Longleaf Alliance 2010). An intensive mechanical site preparation will generally eliminate many of these root systems, and many of the species that invade the site will most likely be weedy annuals or exotic opportunists.

Conclusions

A functional herbaceous plant community is the foundation of a successful bobwhite management program in the Southeast. In open native environments regularly maintained by fire, native grasses and forbs will provide quail adequate cover structure and food resources, as well as access to those resources. Certain aspects of the bird's requirements may be met and/or enhanced by other means, but the majority of good bobwhite habitat will usually include the type of native species composition, structure, and maintenance that was discussed in this article. However, it is important to remember that there are many points from which to start heading towards a good quail understory, and many specific issues may warrant the counsel of a local professional.

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Native Species	Drilled Rate (lbs of PLS/acre)	Broadcast Rate (lbs of PLS/acre)*	Depth of Planting (Inches)
Big bluestem	3	4-5	¼
Little bluestem	3	4-5	< ¼
Switchgrass	2	3-4	< ¼
Indiangrass	3	4-5	< ¼
Partridge pea	10	12-15	¼ - ½

Table 2. Typical seeding rates for establishing native species on fallow fields (adapted in part from NRCS Plant Sheet: Little Bluestem, Jimmy Carter Plant Materials Center, Americus GA. 2003).

Crop Rotation



By Rodney Dyer

Rodney Dyer is a private wildlife biologist and consultant in Millbrook, AL. He received his B.S. degree from Auburn University and specializes in deer, turkey and small game management.

Fall is the time of year most hunters, especially in the South, start planting food plots. You can tell because the roads are full of trucks pulling tractors with disk and spreaders on them to their properties or hunting clubs. But with this recession and the cost of fertilizer, fuel and seed increasing, it has become questionable to many hunters if they can afford to plant. You will find that most hunters and hunting clubs go out and plant the traditional wheat, oats, or whatever the man at the seed store recommended. Once planted, they then will hunt over it and leave it until next season to start the process over again. This is fine if you want to keep wasting your money on fuel and fertilizer over and over again to plant the same plot. I want to show you how you can make what you plant work for you to save time and money simply by putting some thought into what you plant and how you plant it. Not to mention the benefit your deer herd will receive from the added food source.

First you have to throw all the old thinking of wheat and oats out the window and start thinking long term by planting perennial clovers in your food plots. From here on out in this article when I mention clover, I mean perennial clovers like Ladino clover. These make great sources of forage for the deer and provide year round food when others are not available. Clovers are very palatable to the deer and highly attractive as well. Another plus to clover is that most white clovers are well over 30% protein, which means they provide more than enough protein to maximize antler growth. The added protein is critical due to the overpopulating deer herds, which have eaten nearly all the native browse down so quickly that it only leaves the existing vegetation at around 8% protein. Now here is the trick; you want to plant half your plots in clover to start and your others in blends of brassicas. Brassicas are your turnips and rapes, which are high in carbohydrates. Deer need carbohydrates in the winter to have the energy to breed and survive the cold. A plot of brassicas can provide tons of forage to help the deer survive the cold and breed. The added carbs will also help bucks come out of the rut with less stress on their bodies and in turn will help him get ready to start growing his next set of antlers. Do not be alarmed when your deer do not flock to or eat your brassicas right away. The plant needs to have a hard frost on it first. What happens is that when a frost hits the plant there is an enzyme in the plant that turns all the starch in the leaves to sugar. That is why a lot of people have experienced deer totally destroying a plot over night. We are going to set up a crop rotation program on a small scale on your hunting property. This has been done for years and years by farmers with cotton, corn and soybeans and it will work for your plantings as well.

Let's start with the basics. What is a crop rotation? A crop rotation is a method of planning which crops to

plant in certain locations to utilize the benefits the plants provide for future crops. This is accomplished by planting plants called legumes which pull nitrogen from the atmosphere and puts it into the soil through a fixation process. The legumes create small nodes on the roots that contain the fixated nitrogen that can be used by other plants in the future. Nitrogen, which is the first element of a fertilizer formulation (N-P-K)

is essential for plant growth and jump-starts germination in non legume plants such as grasses and it is also used in getting brassicas growing strong. Commercial nitrogen fertilizer comes in the form of Urea and Ammonia Nitrate which is expensive and can be corrosive to equipment if prolonged exposure occurs. The benefit of using the rotation system is that you would not have to apply a nitrogen fertilizer every time



Velvet clover provides many years of high protein forage for your deer herd.



Bean and pea mix for summer planting



Winter forage of rape and turnips for carbohydrates for the winter.

you plant your food plots because it is put into the soil every growing season by the clover, soybeans, and peas. Clover itself fixates up to 150 pounds of nitrogen annually. When the rotation is used, a cost savings up to 45% can be reached on fertilizer alone. In the summer of 2009, the savings was approximately \$41 an acre, not to mention the savings in fuel and time due to less weight in fertilizer to be distributed on the acreage.

A simple example of a crop rotation would have two food plot fields. One would have clover, a perennial legume blend. The second field would have annuals such as soybeans planted in the spring and brassicas planted in the fall. The food plot with the clover can be either frost seeded in February or seeded on a prepared seedbed in March or October depending on your planting zone. This field would remain in clover for three growing seasons, during that time it will accumulate nitrogen which will act as a food source. One of the benefits from having the clover in for the three seasons is that it will provide a year round food source for the deer. This food source is necessary when other vegetation is not growing in the late winter and early spring months. Another benefit is when the other plot is being planted and bare of plant life, there is still a food source to keep deer on the property. After the three growing seasons the clover will be tilled under to make way for the brassicas.

The second field will be planted seasonally with annuals. First in the spring, soybeans or peas should be planted to fixate nitrogen. Plus soybeans provide literally tons of green leafy forage for wildlife needed for the spring and dry summer months. With bucks growing antlers and does gestating fawns or nursing them this added forage will help. Soybeans are around 32% protein which is important because the growing antler is 80% protein and the added protein hopefully will go straight to his head. The soybeans also provide a large



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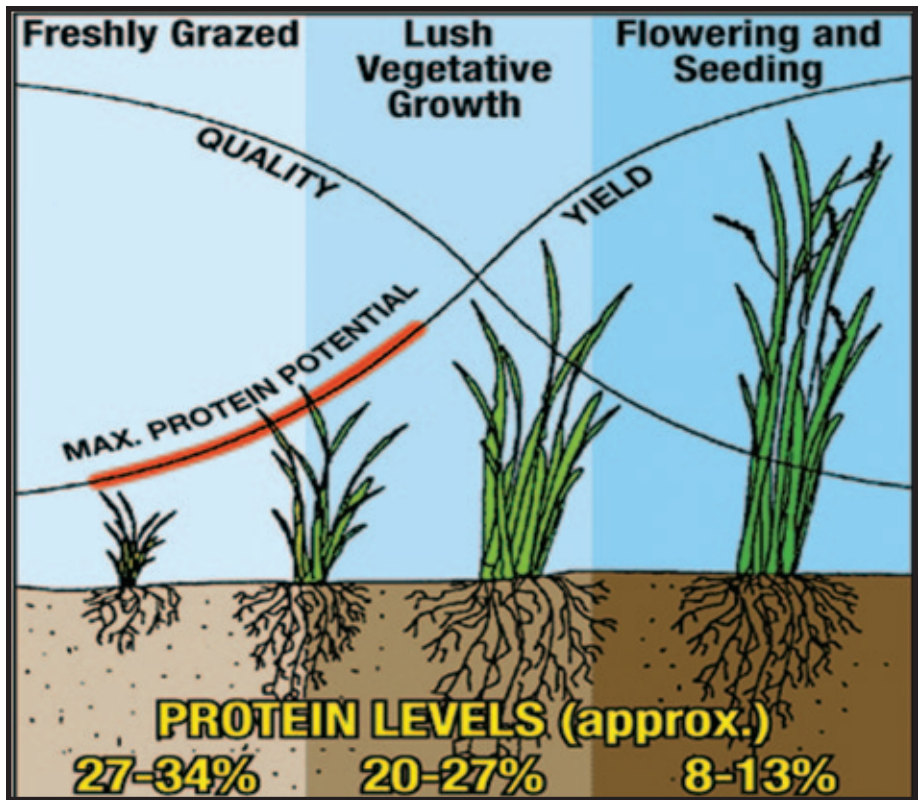
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amount of cover in the field for turkeys and upland birds. When August comes around, it will be time to till under the beans and plant the brassicas. Brassicas provide an excellent protein source to keep deer going through the tough winter months following the Rut. The following spring the soybeans or peas would be planted again and followed by brassicas for a total of three annual rotations. After the third fall, the brassica mix is planted, the rotation will change and clover will be planted in its place the following spring. The original clover will become brassica the following fall. Once the clover is established in the new location, simply allow the clover to grow for three years and rotate out as done before.

The first year the brassicas are planted, the initial fertilizer application will require a higher amount of nitrogen fertilizer than any other year, but after that application all three blends will use the same low nitrogen blend. For example, the brassicas will take an initial 300



This chart shows the benefit of mowing to keep the plant producing young tender growth, which in turn provides higher protein levels.

pound per acre mix of 17-17-17, then after that all three blends will use the

same fertilizer blend of 0-20-20 at 300 pounds per acre as long as the rotation



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is in effect. The great thing about this is that there will be no need to switch fertilizers from one plot to the other and there is no need to change settings on the fertilizer spreader being used making it simple and effective in producing a viable food plot.

Once the food plots are up and growing, keep an eye on the food plots to look for grass weeds that can hinder the growth of your food plots. A common concern is over which chemical to use. The reason for this is if the wrong type of herbicide chemical is applied to the plot it could either extremely damage the plants or even kill them. The great thing about the rotational system is that all the seed blends are Poast Plus grass herbicide compatible, which reduces the risk of unwanted crop damage and creating a more productive food plot. With these seed blends being grass herbicide tolerant, there is no need to recalibrate the spraying equipment for a different herbicide or drain and mix a different chemical for a separate seed blend making it more time efficient and less expensive to do. As we all know, grass is a huge problem in food plots. Managing them will help your plot get more moisture when it is dry. Grass and weeds are very prolific in dry conditions, God made them that way. You can use 2,4D-B on the broadleaf weeds if they become a problem in your clover, peas or soybeans but DO NOT spray your brassicas with 2,4D-B or they will die. In the clover, you will still need to mow



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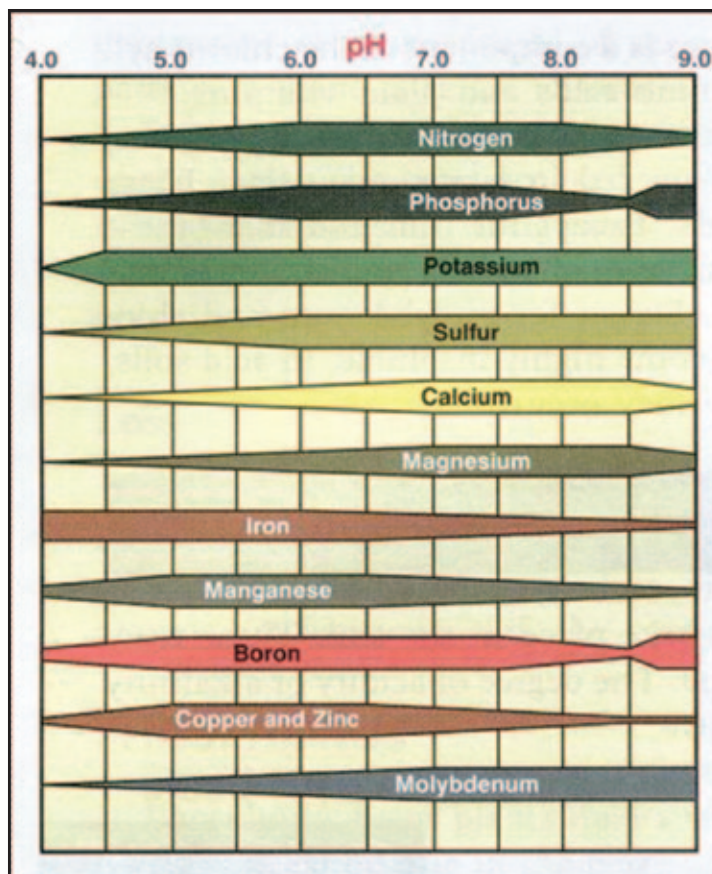
when it gets to 12 to 15 inches tall, mowing it to about 6 to 8 inches. Mowing will also help with weed control along with keeping your clover growing new tender growth that is softer and more palatable to the deer. Cut or browsed plants are higher in protein and are more attractive than old growth that is tough and has converted its energy into flowering and seeding away from forage production. So it is a good idea to keep them mowed.

Now just because you are following a crop rotation plan you still need to soil test every two to three years just to keep your pH levels up to 6.5 to 7. The pH level shows you how acidic your soil is. This range of 6.5 to 7 is where the most nutrients are available to your plants. Also, when the plants are growing in a soil with the right pH they are also more attractive to the deer. Deer know what is good for them and what is not. Deer will seek out the most nutritious food source and camp out on it. This helps keep deer on your property. Just a reminder! You raise the pH by adding lime. Lime is very cheap and in most cases easy to find someone to spread it for you.

This method of crop rotation is nothing new. Farmers have used it for years and years. By putting this practice in your food plot regime you can help save time and the most important factor you can save is money. Plus, it will hopefully help you attract more deer to your property and help hold deer there as well.

With this added attraction to your property or hunting club, you will have to monitor the herd carefully. Following a quality deer management plan is very important. You need to harvest does and allow your young bucks to walk. Having a qualified consultant or wildlife biologist to help you determine the right amount of does to harvest and the right buck, is important. Doing a camera census and keeping harvest and hunter observation records will also help you decide how many deer to harvest. No food plot plan will work without a deer management plan. If you do not control the deer all your efforts will be eaten up in a short period of time and the benefits will be too spread out to help your herd.

There are so many seeds and seed blends on the market to choose from, it will almost give you a headache trying to decide what to plant. Look for companies that gear their seed products to crop rotation. This will help you sort through the companies that are just peddling seed. Quality companies have information and consultants to help you be successful. If you want more information contact me at wildbiologist@elmore.rr.com.



This chart shows the availability of nutrients to plants at different pH levels.

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Weather or Not It's Bad?

A look at how extreme weather events can affect ponds and lakes.



By Matt Euten

Matt Euten works as a fisheries biologist for Southeastern Pond Management in Birmingham, AL. He earned his Masters degree in fisheries science from Auburn University where he studied the recruitment and growth of largemouth, smallmouth and spotted bass. Contact him at meuten@sepond.com.

Ponds and lakes are severely affected by prolonged periods of drought conditions.

There is an old saying in South, “If you don’t like the weather, wait a day and it will change.” I can remember it snowing one day and two days later I was fishing in jeans and t-shirt. Over the past four years here in Alabama, we have had some of the most extreme changes in weather that I have ever seen during my time as a fisheries biologist. From two years of prolonged drought, to the frigid winter last year, ponds and lakes have just about seen it all. Extreme weather events such as drought, heavy rainfall, freezing temperatures and scorching days in the summer can have lasting effects on ponds and lakes and the fish populations they support. In this article, I will address these four different events and how I have seen them affect the fishery as well as the fishing.

During the summers of 2007 and 2008, the country experienced one of the worst droughts ever recorded. Aside from being unsightly, the loss of water volume due to

a drought can drastically affect the fish population in a pond. When water levels drop and stay down for long periods of time, the shoreline habitat that once was a refuge for bluegill becomes exposed. In open water, the bluegill, particularly the intermediate sized fish, becomes a “Vegas buffet” to bass. One of the key ingredients to growing trophy bass is establishing a forage species that either reproduces many times throughout the year or one that has a robust spawn once or twice a season. Bluegill fall into the first category, where they reproduce several times from March through October. Also, when ponds and lakes drop during drought conditions, much of the spawning habitat for bluegill is exposed and reproduction suffers. A decrease in reproduction rates, coupled with higher predation due to exile into the open water, can lead to the depletion of a bluegill population. When a fish population loses one of the major forage

species, the predators suffer and in the case of bass/bluegill ponds, the bass become stunted and cannot grow. This leads to unacceptable conditions in ponds and lakes which are geared towards growing trophy bass.

Another issue associated with longer periods of drought in ponds, is the lack of adjustment on one of the key management activities, the fertilization program. When water levels drop, so does the size of the pond in surface acres and therefore adjustment with the management activities are recommended. A good fertilization program is achieved by applying the correct amount of fertilizer per application based on the size of the pond or lake in surface acres. If a pond owner does not adjust the amount of fertilizer added during each application when the water levels drop; the risk of establishing too robust of a phytoplankton bloom increases. A phytoplankton bloom that becomes too robust can increase the chances of having a fish kill either by an

event such as a plankton crash or pond turnover. The standard rate of applying most soluble fertilizers is 4 to 5 pounds per acre per application. During drought conditions, like the one experience in 2007 and 2008, I always recommend cutting back on the amount of fertilizer added during each application. This will help prevent the heavy phytoplankton blooms and ultimately help reduce the risk of a fish kill.

The drop in water level during a drought can also open up areas of the pond that are more susceptible to aquatic weed growth. Most ponds, if constructed correctly, have very little water that is less than three feet deep, which is perfect for preventing aquatic weed growth. However, when the water levels drop, areas of the pond that would not normally receive sunlight, do get sunlight and aquatic plant growth can become a problem. An increase in the aquatic plant biomass can directly affect the fertilization program and ultimately



Much of the spawning habitat and structure used protection is exposed when water levels drop due to the lack of rain.



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rob nutrients from the fish population. If water levels drop due to such an event, it is important for a pond owner to regularly scan the pond for any unidentified weed growth to prevent an expensive infestation.

Opposite extreme drought conditions, heavy rainfall can also affect many of the dynamics of ponds or lakes and the fish they support. It seemed as though as soon as we came out of the severe drought of 2008, it started raining and would not stop. This was great for those pond owners who had lost so many surface acres when the rainfall was scarce, but when the lakes were back to full pool, the excessive rain was detrimental to the management program. One of the major problems with heavy rainfall, particularly in Spring, is that the hydraulic residence time, or the time a particular volume of water stays in the pond, is reduced with the increased water inflow. Fertilization programs are intended to provide more nutrients for phytoplankton growth which ultimately increases the carrying capacity of the

pond or lake. Phytoplankton thrive in ponds and lakes because in most cases the flow thru is minimal and the microscopic plants have time to consume the nutrients provided by the fertilizer. Increased inflow from heavy rain events can prevent a pond from maintaining the nutrients needed to establish a robust phytoplankton bloom and therefore the management program suffers.

Heavy rain events can also affect the total alkalinity and cause longer periods of turbid water in ponds and lakes. Heavy rains not only dump large amounts of water in the pond itself, but also onto the watershed that surrounds it. This can lead to high levels of sediment entering the pond, which can directly affect the bottom contours and the total alkalinity. Most soils in the Southeast are highly acidic and usually require regular applications of agricultural limestone to ensure a successful fertilization program. Ponds and lakes are not exempt from this management practice and generally they require at least one ton of agricultural limestone

per acre per year. When ponds are inundated with sediment from heavy rains, the acidic soil coming off the watershed can cause the total alkalinity to decrease which means that more agricultural lime will be needed. Ponds that have low alkalinities due to heavy sedimentation also tend to stay muddy longer, which can directly affect feeding patterns and angler catch rates. Sedimentation also causes more shallow water, which in turn creates conditions favorable for aquatic plant growth. Both a decrease in the alkalinity and an increase with aquatic plant growth can impact the fertilization program, which ultimately affects the fish population.

Aside from extreme drought and heavy periods of rain, temperature can also impact the fish populations in ponds and lakes. Last winter, I, as well as many pond owners throughout the Southeast, got to experience one of the most unusual phenomenon's ever seen in the south; the surface of a pond completely frozen! In January this year, we had one of the longest stretches of sub-

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freezing temperatures on record. During this time many ponds experienced substantial ice cover. I even had a client tell me; his 100-acre lake was completely covered with ice! So what are the effects of such prolonged extremely cold temperatures on lakes? One of the major impacts we observed this year due to the low temperatures was the die-off of entire threadfin shad populations in ponds throughout Alabama. Many ponds and lakes, especially shallow lakes, experienced massive, if not complete die-offs of their threadfin shad populations. Threadfin shad are arguably one of the most important ingredients to growing trophy largemouth in ponds. However, one of the major draw backs to stocking threadfin shad is their intolerance to long periods of extremely cold temperatures. Although winter die-offs are common each year throughout the south, the impact on the population is minimal due to our fairly mild winters. This year

however, almost every pond owner I talked to saw dead shad lining the banks of their pond in January. So how did this affect the other fish, especially the bass? From my electrofishing evaluations so far, most of the bass in ponds that lost a major portion of their threadfin shad population look to be slightly skinnier and have lower relative weights than previous years. The bluegill populations have taken a hit as well, simply because they have now become the major food source for the bass in the pond. For most pond owners who did see an abundance of dead shad, it is highly recommended that threadfin shad be restocked immediately. Many skeptics may disagree with restocking after such an event as last winter. However, prior to frigid temperatures last January, it had been almost 10 years since we had seen such a die-off of threadfin shad populations due to such cold temperatures.

The summer months in the Deep

South are the complete opposite and July, August, and September can be brutally hot and almost unbearable. Coupled with the lack of rainfall, many ponds can lose several feet of storage capacity which can directly impact the fish population. Fish are cold-blooded animals, which means their body temperatures are strictly regulated by the temperature of their surroundings. Most of us are familiar with this concept when it comes to fishing. To catch fish in the winter-time, when water temperatures are low, lure presentation must be slow and methodical as cold-blooded fish are slow moving in these conditions. Likewise, springtime brings increased air and water temperatures and increased fish activity. During these months, fishing action may be fast and furious, as warm water fish species such as largemouth bass, bluegill and shellcracker thrive at their ideal body temperature and metabolic rate. But what happens to the fish during the “dog days of summer?”



January 2010 resulted in many pond owners seeing their lakes 100 percent covered in ice.



The result of the frigid temperatures this winter; threadfin shad sickles anyone?

In order to understand how fish are affected by the increased temperatures, we must first understand a little bit about water chemistry. As water temperature rises it becomes less dense. When the sunlight and intense heat constantly warms the surface of a pond, it causes a layering effect, which is called thermal stratification. In some ponds stratification may occur in the early summer resulting in a dramatic decrease in water temperature just a few feet below the surface. So it makes sense to say that fish simply move to the deeper, cooler water, right? Well, not really. Along with thermal stratification comes chemical stratification. In effect, as surface temperatures rise and the layering effect occurs, oxygen becomes concentrated near the top. Typically, the point in the water column where temperature begins to fall dramatically also represents the point

where dissolved oxygen becomes scarce. The line where the warm layer of water meets the cold layer is often times called the thermocline. In most ponds the dissolved oxygen levels below the thermocline is too low for fish to survive. However, just above that line is oxygen rich water that is cooler than surface temperatures and therefore this area becomes a summertime hangout for fish.

One benefit to this hot weather during the summer is the abundance of sunlight available to phytoplankton. A dense phytoplankton bloom can help shade the water column which can prevent aquatic weed growth as well as provide the nutrients needed for zooplankton and larval fish. By sustaining a healthy robust phytoplankton bloom, a pond owner can increase the carrying capacity of sport fish in his pond. However, as mentioning earlier, estab-

lishing too dense of a phytoplankton bloom during these few months can be dangerous as well. Ponds with dense phytoplankton blooms can be affected when a massive thunderstorm dumps an abundance of cold rain which ultimately shocked the phytoplankton and caused them to perish. When the oxygen producers, the phytoplankton, die; they not only are not producing any oxygen, but they consume it as well during and the end result for the pond owner is a massive fish kill.

These major weather events can be detrimental to ponds, however in most cases these drastic events are uncommon to the Southeast and our general area provides a stable environment for growing trophy bass and bluegill. There is knowledge gained through these experiences and as pond owners and managers we can only adjust and correct the problems when nature calls.

Management Calendar



Don't fall into the trap of planting too early. Planting fall food plots when soil moisture is good after October 1 generally results in successful food plots in the Southeast.

Food plot preparations

It is difficult, if not impossible, to establish successful food plots without preparation. Planting quality food plots is a process that may span over several months, not a weekend. There are several factors that influence the success of a food plot program. Among the most important are establishing a well thought out food plot plan, ensuring

proper soil fertility and pH, preparing a firm, smooth seed bed, only planting under favorable conditions, and controlling weeds. Each of these activities plays an important role in the success of your food plots. Don't fall into the trap of planting too early. Unfortunately, many landowners and hunters plant in early-mid September. This is often a very dry period across the Southeast

By Dave Edwards

Westervelt Wildlife Services

October/November 2010

which will lead to food plot failure. However, if you receive adequate rain, food plots may grow rapidly which will result in very high food plots by the time hunting season arrives. There is also a higher chance of army worm problems if temperatures are still warm. Early-mid-October is the ideal period to plant fall food plots in most areas of the Southeast. This is when we start getting regular cold fronts that bring rain. Planting "later" (meaning in October) will also result in young, tender food plots that are very attractive to deer and other wildlife during hunting season.

Conduct a camera survey to assess the status of your deer herd to make sound/educated deer harvest decisions before you start hunting.

Monitoring the status of your deer herd is the backbone to the success of your program. Collecting and recording harvest data (weights, measurements, ages, etc), hunter observation data (number, sex, and quality of deer you see while hunting), as well as population surveys (such as spotlight counts or camera surveys) provides you information about the deer herd that will allow you to make sound deer management decisions and adjustments in strategies where needed to accomplish your goals. Without this information you are simply guessing. If you are like me, you spend way too much time, money, and energy managing your property to just guess on how many and which deer to harvest this season. I want to know. Conducting a camera survey is the best tool available

to assess the status of your deer herd (number of deer, buck quality, fawn recruitment, etc) and make buck harvest decisions before you head to the woods.

Conducting a camera survey is more than simply putting out a few trail cameras. A true camera survey, one that is used to determine population characteristics of a deer herd, requires establishing baitsites across a property at a density of 1 site/100 acres (this may vary depending on habitat quality and diversity). These sites are systematically established across the property and within all habitat types present. Each site is pre-baited for a week or so to attract deer to the site. Once deer are using the sites heavily, cameras are placed at each site and operated for 10-14 days or until no new bucks are being photographed. The photographs taken during this period are used to estimate the population and its characteristics. Analyzing the pictures is not as easy as simply counting the number of bucks and does photographed, it is a somewhat complicated process that requires counting total does and bucks photographed, identifying the number of unique bucks photographed, estimating their age, and plugging this information into mathematical formulas. Although some landowners conduct camera surveys themselves, most consult with or use a wildlife biologist to complete a survey. For more help in understanding how to conduct a survey contact *Wildlife Trends*.

Regardless of whether you conduct a full scale survey or simply use cameras to scout, photographs from trail cameras are a great tool to assess buck quality and make buck harvest decisions before the moment of truth in a deer stand. I have seen many young bucks with great potential make it another year because they were placed on a “do not shoot” list. If you are using the trail camera photographs to make buck harvest decisions, late summer or early fall is when you need to deploy them. We generally try to conduct our surveys soon after

bucks shed velvet but before the majority of acorns start to drop.

Calibrate deer scales before hunting season.

Whether the scales you use to weigh harvested deer at your hunting property are 10 years old or right out of the box, they should be calibrated each year before hunting season to ensure accurate weight data is collected. To calibrate scales, simply hang an object of known weight from the scale (e.g., 50 lbs bag of feed, tractor weight, etc), along with your gambriel (normally a triangular metal hanger used to attach deer to

scale), then adjust the scale to the known weight if needed. Although there are many makes/models of scales available most have a calibration screw that can be easily adjusted. Also note that it is not uncommon for a calibrated scale to read something other than “zero” when idle. Recording accurate weights from harvested deer provides insight to the health of deer on your property and will assist in making management decisions (herd and habitat) to achieve overall goals.



Using a 5 gallon bucket with pre-measured amounts of seed is a useful tool to ensure accurate seed rates are applied to food plots.



Semi-dormant perennial clover fields will rejuvenate as fall weather approaches. Early fall is a great time to provide a boost of fertilizer to stimulate growth and increase nutrition of the clover.

Create a seed scale to ensure accurate seeding rates are applied when planting food plots

How many times have you ever been in the woods planting a food plot and had to guess on the amount of seed to pour into the spreader for that particular food plot? Here's a tip that will help you more accurately measure the amount of seed to put in the spreader. Before going to the field, use a bucket (3 or 5 gallon size works fine) to weigh the various types of seeds/blends you are using. Once you are at the desired weight for each seed type (e.g., 10 lbs. of oats), use a sharpie to place a mark (and weight) on the bucket. It helps to use a clear bucket so you can see the outline of the

seed from the outside. Due to the size and weight variations in different seeds or blends, you will need to follow this process for each of the different seeds or blends. For example, you may have a mark for 10 lbs of oats and another for 5 lbs. of crimson clover. Once marked, the bucket can serve as an accurate "measuring cup" to measure seed being placed in the spreader. This will ensure proper seeding rates are applied on the acreage you are planting.

Mow and fertilize perennial clover food plots.

While preparing your fall annual food plots, do not neglect your perennial plots. Early fall is a good time to give

them their final mowing and a boost of fertilizer. With the cooler temperatures and fall rains, the clover will start recovering from the stress associated with heat of summer. Do NOT mow the clover too low. Just above the clover plants is good (clipping the flowers and other weeds). After mowing roads, pond dams, and other areas on your property, be sure to clean weed seeds and thatch from your mower deck before mowing any food plots. Unwanted weed seeds have a sneaky way of collecting on mower decks then jumping off onto your well managed fertile food plots. Cleaning a mower deck off is easy to do with a gas powered blower or a small broom. Taking 2 minutes to clear weed seeds from a mower deck is much easier than fighting the weed once it gets established in your food plots. Also, do not use a fertilizer with nitrogen. Clover makes its own nitrogen. Adding nitrogen will only feed undesirable weeds. As a rule 200 lbs of 0-20-20 per acre is a good dose. However, it is always best to test the soil fertility and apply recommended rates. If lime is needed, apply this as well.

Host a cookout with adjacent landowners and/or game wardens.

This is a great way to meet your neighbors and local game wardens. The cookout provides opportunities to exchange ideas on deer and habitat management as well as harvest strategies. If you are trying to convince an adjacent landowner or hunting club to practice quality deer management, this is a great time to show them some of the success you have had. Pictures of harvested bucks and/or scouting camera pictures are usually all it takes to convince others to join your efforts. These cookouts often result in long-term relationships between landowners or hunting clubs that is mutually beneficial. I have yet to meet a game warden that doesn't like BBQ – particularly free BBQ! Making friends with your local game wardens has obvious benefits.



Inviting neighboring hunters and landowners over for a cookout is a great way to build and foster relationships that will help you succeed in reaching your wildlife management goals.



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Hold a preseason meeting with your hunting club or people that hunt your property to discuss the progress of the deer management program and harvest strategies planned for the upcoming season.

Holding a preseason meeting to discuss the deer management program and deer harvest plans for the upcoming season will ensure everyone is on the same page before the season kicks off and hunters head to the woods. Hopefully, you have been collecting harvest, hunter, and population data regarding the deer herd. Use this information to assess the status of the deer herd and how the herd has or is responding to your management strategies. A preseason meeting is a great time to review this information, make harvest decisions for the upcoming season, and share with the group or hunters using the property. As a biologist, I often present this information to hunting clubs or landowners with recommendations for the upcoming season. These meetings are most effective if held just prior to hunting

season to ensure the information is fresh on hunter's minds. This is also a great time to review general rules for hunting, discuss housekeeping items around the camp and property, and develop management and/or maintenance project lists. I often see these meetings tied into a work day or work weekend at the property.

Where possible, leave field borders and/ or summer crops standing for additional winter cover.

Deer, turkeys, and quail will use these areas for loafing, escape, bedding, and nesting cover. There may also be some seeds left from the summer crops that will provide additional food sources during the winter for turkeys and quail. Standing dead summer crops such as grain sorghum, corn and millets provide additional edge habitat and can be used to create "soft edges" along areas where food plots or fields abruptly meet mature forests. Soft edges can provide areas where deer feel safe and comfortable as they enter a food plot. Deer will often emerge from the woods and stand

in the soft edge habitat as they check the field for danger. This provides hunters an opportunity to observe and judge deer before they enter the field.

Mow lanes through CRP, grassy powerlines, or corn fields to provide additional hunting opportunities.

Growing mature bucks is relatively easy to do if you stick with a sound deer management program geared towards QDM. However, harvesting mature bucks is another story. Through my experience, there is no better place to observe and/or harvest mature bucks than in a long mowed lane that runs through thick cover (e.g., clearcuts, young pine stands, chest high grassy areas, corn fields, etc). This thick cover is where the mature bucks live. These lanes offer bucks a sense of security which makes them more apt to use these areas during daylight. They know that with a quick bounce, they are in heavy cover and safe. Mowed or disked lanes through thick cover also provides

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Mature bucks feel very comfortable stepping into a food plot with adjacent cover. Mowing and/or planting lanes through early successional cover will provide great mature buck hunting opportunities.

great travel corridors to connect woodlots or mature timber. Deer will often take the path of least resistance and will use these lanes to travel which can make for some exceptional bow hunting opportunities. Mowing a wagon wheel pattern or hub & spoke design works well if the situation allows for it. These areas make for some great hunting.

Conduct pre-season projects that will help reduce or minimize hunting pressure and disturbance.

Hunting pressure and disturbance on a property significantly impacts the hunting quality or number of deer you will see. We have lots of hunter observation data that shows as more pressure is applied, fewer deer (particularly mature bucks) are seen. Here are a few things that will help minimize hunting pressure: 1) Position stands around food plots so that hunters can enter and exit them without spooking deer. By this I mean place stands slightly inside the woods and/or plant a “screen” that will protect the hunter from being seen by deer in the field. Good screens include the remains of standing summer crops such as corn, Egyptian wheat, Sorghum Sudan. Other more permanent screens (which I prefer) include switchgrass, or evergreen type shrubs or conifers. Once

stands are placed inside the woods, simply cut shooting lanes for hunters to see and harvest deer on the food plot. 2) Inspect stands to make sure they are safe, but from a disturbance standpoint, check for noises. Oil squeaky chairs, windows, doors, etc. Move around in the stand. Does it creak? Find the source and fix it. Ladders may simply need to be tightened. These little noises can ruin a hunt and disturb deer for future hunts. 3) Cut and clear trails for hunters to get to and from the stand without making a lot of noise. 4) Determine favorable wind directions for each stand and do not hunt the stand unless the wind is right. At my camp,

we have a list of stands for each wind direction. We check the wind, review the list, and hunt accordingly. 5) Look at a map of your property and determine which roads will impact or disturb deer or other wildlife. Close these roads down before and during hunting season and only travel them on a “need to” basis. Besides properly managing the deer herd, the key to having high quality hunting experiences it to keep disturbance on the property to a minimum.

Harvest deer.

Although biologists provide guidance on how many and what kind of deer to harvest, the hunter is the real deer man-



Planting roadsides within young pine plantations can create productive buck hunting opportunities.

ager. Remember that each time you pull the trigger you are making a deer management decision. In fact, not harvesting deer is a management decision. Unfortunately, I see many landowners with goals of producing trophy bucks who are allowing the deer herd to overpopulate because they like to see 20+ deer when they go to a stand. This situation often results in a poor quality deer herd with significant dispersal of deer to surrounding properties, less reproduction and fawn recruitment, and ultimately poor quality antlers. If your goal is to manage for a quality or trophy deer herd, harvesting an adequate number of deer each year is essential to keep your deer herd and habitat healthy. In addition to maintaining a desirable deer density, doe harvest is the primary tool used to manage the adult sex ratio

of a herd. Maintaining a balanced sex ratio will result in a much healthier deer herd, better quality bucks, increased fawn survival, and exciting hunting. Balancing the adult sex ratio is also one of the tools I use to increase breeding competition and get mature bucks on their feet so that my clients can see or harvest them (which is often more challenging than growing them!)

Collect data from harvested deer.

This information is the “backbone” of your deer program and allows you to monitor/assess its success and make sound management decisions/ adjustments if needed to reach your deer management goals. Collecting this information each year is important because it will allow you to assess trends in the harvest and observation data which will help you determine if

your program is working and where adjustments are needed. Without this information, you are simply guessing and are less likely to achieve your goals. Contact your local state wildlife biologist or a wildlife consultant to determine what information/data you need to collect. You can also visit the Westervelt Wildlife Services website to download a deer harvest data sheet (www.westerveltwildlife.com under “wildlife consulting” then “deer management forms”). Be sure to stock your skinning shed with the needed data sheets and tools needed to record data before the season starts. Other preparations include calibrating scales, inspecting/repairing and oiling the winch used to hoist deer, checking water hoses and nozzles, cleaning walk in coolers if needed, etc.

Flood duck ponds to “full pool” by early-mid November.

Monitor water levels in duck ponds as Fall arrives. Many of us in the Southeast have been fortunate and have gotten abundant rains so far (some of us got too much!). However, too much water too early can be bad for growing duck pond crops/plants. Water control structures allow managers to regulate water levels and are valuable tools when a rain event such as a tropical storm comes through. Once your crop matures, allow ponds to slowly flood to “full pool” as November approaches. Ideal water depths for dabbling ducks such as mallards, gadwalls, wood ducks, etc is 12-18” with pockets of 4”-6” depths. The reason to have your ponds flooded 2-4 weeks before the hunting season opens is to give ducks a chance to find your ponds and get used to using them. Flooding too early (more than a month before the season) may result in seed deterioration resulting in less food later during hunting season. For best hunting, do not over-hunt your duck pond and allow a “rest” period between hunts. If you have several duck ponds, designate one as a “no hunt area” to provide a place for ducks to loaf. This will keep them on your property.



As you have heard many times, harvesting an adequate number of does each year is essential to promote a healthy deer herd. Coincidentally, not harvesting enough deer will result in high deer densities and out-of-balance sex ratios leading to deer herds in poor shape and few quality bucks.



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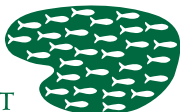


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