PRACTICAL WILDLIFE MANAGEMENT INFORMATION

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Earl Says...

Do you have some things that get on your nerves and just downright bother you? They're called Pet Peeves and thankfully I only have a few of them. I do my best not to let the little things in life bother me but let's face it, some people seem to have been put on this earth just to make our lives difficult.

Now I'm not talking about people who are born with a bad attitude or a sour disposition. I've learned to ignore them for the most part. Most of the folks who are bothersome are so without even knowing it. Like the guy who thinks he owns the left-hand lane on the Interstate while going just below the speed limit. Or the Spandex-wearing bicyclist on a country road holding up traffic because he thinks he's a vehicle. (I better not go into any more detail because I've had bitter arguments with good friends about this one). And don't get me started about folks that just won't return a phone call. If you don't want to talk to me just tell me….I can take it!

As landowners and land managers we also have troublesome people and situations to deal with. Poachers and trespassers are not only troublesome but can also be dangerous. It's best to let the authorities handle these bums rather than taking a chance at someone getting hurt. Dealing with predators that prey on our quail, turkey poults or fawns can also be frustrating. It's always going to be something whether you have to put up with bad weather or some jerk on the highway.

I hope you all have a safe and successful hunting season this year. And don't forget that a gift subscription to ***Wildlife Trends Journal*** for Christmas could be the perfect present for your friends and neighbors.

Andy Whitaker
Publisher/Editor

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Cover photo by Jeremy Meares

Wildlife Management Options on a Cattle Farm

By G. Ryan Shurette

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There are many challenges that exist when managing wildlife among the more "altered" pasture habitats and high traffic grazing areas associated with a cattle operation, as opposed to timber production.

For both private and industrial landowners, maximizing the economic potential of your property is very important. In the Southeast, many large landowners have traditionally leaned on timber and pulp production as an investment and source of revenue. In fact, private and industrial timber management is the number one industry for the majority of the forested lands in the Southeast region. For this reason there is a lot of interest, and in turn available information, regarding the various ways to manage wildlife resources alongside timber. Whether the wildlife resources provide timber managers a direct personal benefit (recreational hunting) or an economic benefit (in the form of hunting/conservation leases), most folks recognize the overlap and synergy of managing timber and wildlife in parallel.

However, not everyone's in the business of growing trees. Obviously agricultural crops are a big-time business and they cover a lot of the landscape. The benefits

(food) and drawbacks (limited cover and native vegetation) of agricultural fields are often discussed in wildlife management circles. However, there is another common industry that often gets overlooked when we talk about managing wildlife on rural private lands. Cattle production is also quite significant when it comes to land use, and not just in the open ranges of the West. Over 170 million acres are currently in livestock production in the South and Midwest. Let's look at Alabama for example, with its 23 million acres of timberland. There is also 1.2 million head of cattle (a 2.5 billion dollar industry) roaming around in the state. Florida has 4 million acres of pastureland associated with cattle production and another million acres of grazed woodlands. Tennessee has almost 5 million acres in pasture, although a notable percentage of this acreage is associated with horse farms. While the livestock industry doesn't have as large of a footprint as forestry, these are still significant figures with regards to potential wildlife habitat across the landscape.

Obviously there is a lot of difference, however, when it comes to managing game and non-game species in forests versus on large farms. There are actually many more challenges that exist when managing wildlife among the more "altered" pasture habitats and high-traffic grazing areas associated with a cattle operation. However there are also some opportunities. In this article we will consider and discuss some of these issues and opportunities, and hopefully paint a picture of how to more efficiently manage for select wildlife guilds on commercial cattle properties, hayfields, and pasture lands.

Direct Impacts to Wildlife

As it should, the majority of our discussion will focus on habitat management and environmental parameters. But a couple of major differences are obvious when managing wildlife in the woods versus on a livestock farm. Unlike tree farming, cattle production typically exposes the local wildlife to repeat encounters with farm equipment and large concentrated herds of unobservant and indifferent ungulates. Direct effects of sharing the landscape with livestock are usually pretty benign, as almost all mobile wildlife species can simply move out of a cow herd's way and avoid direct contact. Large game species like deer and turkey are commonly seen feeding in and amongst cattle and seem to be right at home with their cud-chewing neighbors. However, there are actually some real considerations that come into play with regards to bovid impacts on native wildlife species. Several studies have examined the impacts of grazing animals on ground-nesting birds and have indicated that high density grazing can in some situations lead to trampling and nest

Fawns, rabbits, nesting birds, and many other animals are vulnerable to mortality from hay mowers. However, losses to wildlife during hay processing can be mitigated in several ways.

loss. In one European study, trampling by cattle was actually the number one cause of nest failure among pipits and larks (Pavel, 2004). In 2001 and 2002, grazing cattle in the ponderosa pine forests of Arizona was shown to negatively affect the fledging of dark-eyed juncos by altering the overhead vegetation and exposing the nests to weather and predators. In some other cases, grazing has been shown to benefit native bird species (including quail) by reducing woody encroachment and maintaining patches of bare ground for dusting and seed-foraging. As you can see, grazing location, density and duration (as well as the particular species of affected wildlife) can come into play with regards to potential impacts. Limiting those impacts during certain seasons is something for managers to keep in mind.

The different types of livestock can also be a factor in direct and indirect wildlife impacts. Sheep, for example, are more prone to trample avian nests than cattle and horses (Ausden, 2007). Sheep also nibble vegetation closer to the ground than horses and cows, typically leaving a cleaner pasture and less available wildlife habitat. Cattle typically leave taller tussocks (clumps) of vegetation than sheep. Over time a horse-grazed pasture will retain more uneaten and un-trampled patches of vegetation than those holding cattle, due to these differences in feeding habits.

Disturbance from mechanized equipment associated with cattle production, especially during large scale agricultural events, can also have direct effects on many groups of wildlife. Cutting hay (and to a much lesser extent raking and baling) is a good example of this. This is an intensive type of disturbance that drastically changes the structure and appearance of an open field, but it is generally confined to a couple or three events per growing season. Fawns, rabbits, nesting birds, and many other animals are vulnerable to mortality from hay mowers. Losses to wildlife during hay processing can be mitigated in several ways. The most obvious way to minimize impacts is to cut hay during a timeframe that minimizes contact with wildlife or their nests. Some managers delay first cuttings until mid-July (or even later) to maximize nesting success in some ground-dwelling birds. If a spring cutting is necessary, try to cut early (before mid-April) and then leave at least two months of weedy conditions to allow a higher rate of nesting success than on shorter rotation fields. Non-native hayfields don't typically offer the highest quality nesting habitats for quail and many of the more uncommon bird species anyway, so it is not the end of the world when the mower comes through. Having higher quality nesting habitat available on the property can compensate for these issues. This can be achieved by using native vegetation buffers or old fields left fallow for a while. If these buffers or other nesting habitats are in close proximity to improved (production) hayfields, they can actually absorb most of the wildlife use. Another mitigating technique that can be used during hay operations is to set the mower a few inches higher than the traditional setting. This will allow

reptiles and other small critters to avoid getting wiped out. As you are probably thinking by now, there is often some level of economic compromise in managing farm wildlife versus traditional hard core cattle operations. But since cattle farming is typically not as wildlife-friendly as timber farming, it will be necessary to make these adjustments if you want to achieve the goal of maximizing wildlife use on your operation.

A **flushing bar** is an additional tool sometimes used by wildlife-conscious hay farmers. This simple (often homemade) apparatus consists of a front mounted crossbar (situated 3 to 4 feet in front of the tractor that can extend outwards a few feet on the mower side) with a few short sections of drag chains. The chains, which barely touch the ground, are effective at flushing fawns and young rabbits before they are hit by the cutting head. Even the pattern of cutting a hayfield can have an effect on wildlife mortality. Cutting around the perimeter and spiraling in towards the center will inevitably cause young rabbits and other small mammals to congregate in the middle of your hayfield. There, they will typically hold longer and be more likely to come into contact with fast moving metal or a tire in the final passes of cutting. Predation risks are also higher for rabbit kits crossing a vast expanse of open field trying to make the edge. These risks can be lessened by mowing in a pattern that allows wildlife to move progressively towards the field edge while maintaining cover. While direct effects from livestock hooves and hay mowers can be important, especially within sensitive ecosystems and timeframes, generally the more important aspects of collaborative wildlife and cattle management deal with habitat manipulation and availability.

So Can Grass Really Be Wildlife Habitat?

The answer to that question of course depends on a lot of things. One thing to consider is "just what kind of grass are

A vast expanse of clean improved pasture provides little in the way of wildlife habitat. However, introducing edge and other vegetative structure can make a huge difference.

One of the greatest benefits improved pastures and hayfields can offer wildlife is in the form of brooding and bugging habitats for wild turkeys.

Even a couple of large mast-producing trees in the middle of a pasture can make it a little more appealing to some species.

we talking about?" We all know and understand the benefits of native bunchgrasses with regards to many types of ground-feeding and ground-nesting birds. And while many managers do graze native forages, exotic sod-forming grasses are more commonly what you'll find on permanently-grazed pasture lands. Lush green fields of non-native grasses like Bermuda, Bahia, dallis, and fescues are generally preferred by ranchers and hay growers, as these types of grasses typically maximize grazing yields considering the economics of cattle production alone. These fields of non-native vegetation are often referred to as "improved pastures". If wildlife management is a serious interest however, there are often feasible options that involve grazing native vegetation. We'll touch on this more later. In bobwhite quail and native ecosystem management, we preach about the importance of the eradication of non-native grasses, due to the fact that they can effectively displace desirable native species. However, if permanent grazing pastures are a landowner's livelihood, and must be maintained to some degree, there are some options. And although it hurts me a little to say it, the truth is that just because a pasture is not in a native ground cover doesn't mean it can't serve as partial wildlife habitat for some species, in some cases. One general rule of thumb to remember is that diverse weedy pastures are better for wildlife than closely grazed monocultures.

Obviously the relative scale and intensity of a cattle operation also comes into play. If a landowner has a thousand densely wooded acres with only a ten-acre pasture in the middle of it, that pasture would almost certainly benefit many game and non-game wildlife species by introducing a limited early successional habitat component into the forest. To what extent that benefit would be realized depends on the species of wildlife. At the other end of the spectrum, a thousand acres of clean pasture with a ten-acre woodlot on it would mostly be pretty poor habitat for most wild animals, save for maybe cattle egrets and brown-headed cowbirds.

For many species, the most beneficial aspect of pastures and hayfields is directly related to their abundant insect production. In the warmer months of the year, hayfields and grazing pastures can be home to several pounds of grasshoppers, spiders, hemipterans, beetles, lacewings, and other insects per acre. This serves as a buffet for a variety of bird species. Insectivorous birds like shrikes, bluebirds, kingbirds, purple martins, barn swallows, mockingbirds, and kestrels all utilize pastures in spring and summer. Most small seed-eating birds (including sparrows, cardinals, buntings, and bobwhites) also switch to feeding on insects during the nesting and brooding season to meet the high-protein demands of reproduction. Lots of other non-game wildlife including shrews, voles, skunks, and several non-venomous snakes also prefer these arthropod-rich hunting grounds.

Cattle and Bobwhites

In the dry, scrubby rangelands of the Southwest, it is not uncommon to find quail in fairly high densities alongside grazing cattle. In cattle operations of the East, however it's often a different story. Without adjacent native habitats (bunchgrasses), improved pastures and hayfields are usually poor environments for bobwhites. This is largely because quail can't access bare ground in improved pastures. They simply cannot scratch through that thick lush thatch of exotic grass. Unless bunchgrasses or weedy areas are available, pastures are not very good nesting cover either. However if scrubby areas, native buffers, and fall-disked strips are available and protected, low to moderate quail densities can be managed on cattle farms, provided that some tough cover is also available. Bobwhites will actually use the edges of weedy pastures, especially during brooding and bugging in the summer. The challenge therefore is to create enough edge to grow bobwhites while also cost-effectively growing heifers and calves. Granted, most eastern cattle farmers don't go to the trouble of doing this since good quail habitat can so drastically conflict with the modern methods of grazing livestock in non-desert regions. But on smaller operations or on lower density ranges, it can be done.

Larger Game Species

Wild turkey and white-tailed deer are more prone to utilize larger areas of pasture since they are generalists and are much more mobile. Fallowed and uncut fields can provide good fawning cover. Deer will actually sometimes forage improved pasture grasses (more likely in some parts of the western US) but these grasses generally offer little in the way of nutrition and should not be viewed as a staple food source. For example, the average crude protein content of tall fescue is only about 9% during most of the year (possibly up to 16% in spring) and it is not very palatable (nor digestible) to deer. The same is also true for most native warm-season grasses. Many native legumes and forbs on the other hand are highly sought after by white-tails. Beggarweeds (*Desmodium*) for example, have been analyzed at more than 28% crude protein content, and have a low fiber composition (approximately 20%). This makes them a highly digestible and preferred browse. In addition to just exotic grasses, other non-native forages including alfalfa and clovers are commonly for grazing pastures and hay too. These plantings would obviously offer more in the way of nutrition for both deer and turkeys.

One of the greatest benefits improved pastures and hayfields can offer wildlife is in the form of brooding and bugging habitats for wild turkeys. This relates directly to the abundant arthropod production we mentioned earlier,

and the open structure makes turkey hens and poults feel comfortable and safe from predation. When poults are small and vegetation is low, kindergartens of several hens and poults will typically stick to the edges of larger pastures, but later in the season they often venture farther into the interior. By late summer and early fall, adult and juvenile turkeys frequent large pastures, targeting grasshoppers, American locusts, and other insects. Some coarse hayfields can also provide adequate turkey nesting cover provided they are not mowed before the eggs are hatched. But scrubby old-fields will generally serve this purpose better. Fallowing hayfields for a couple of seasons can improve turkey nesting conditions. Dormant-season habitats (mast producing hardwoods) also need to be within a reasonable distance (the closer the better)

One big problem with the common exotic pasture grass varieties is that they form a mat of dense growth above and below the ground. These sods basically block out the native seedbed and don't allow higher quality wildlife plants (shown above) to germinate or grow through them.

for turkeys to utilize a cattle property. Options that address more of these limiting habitats are discussed below.

Break It Up

As we have established, a vast expanse of clean improved pasture provides little in the way of wildlife habitat. However, introducing edge and other vegetative structure can make a huge difference. Planting or creating wildlife corridors (using trees, shrubs, or even tall grasses) can allow more efficient travel and utilization across a large green desert of pasture. In some cases, as little as two or three rows of pines or oak trees can make a big pasture more desirable to wildlife. Even a couple of large mast-producing trees in the middle of a pasture can make it a little more appealing to some species. For bobwhite quail and some of the higher maintenance species, a few rows of trees probably would offer little benefit however, and more substantial grassy and shrubby borders would typically be needed to make some of the pasture usable. Ideally these would contain bunchgrasses, legumes, and forbs. These "wildlife conservation buffers" are commonly installed on agricultural lands and farms using federal incentive programs. In 2004 the USDA Farm Service Agency introduced this concept under the CP33 (Habitat Buffers for Upland Birds) program and through the Wildlife Habitat Incentives Program (WHIP). While WHIP programs were discontinued under the recent 2014 Farm Bill, incentives funding for basically the same types of wildlife habitat work is available now under the Environmental Quality Incentives Program (EQIP). Consult your local NRCS agent or a local wildlife biologist if you want to find out more about these specific programs and the best way to implement them.

If these native warm-season grass buffers are installed on existing pasture grass, it will be important to site-prep the area with herbicide. A tank mix of imazapyr and glyphosate can be an effective tank mix to prepare the site prior to drilling or planting native grass seed. Pasture grasses are usually tough to kill and it may take more than one application. Indiangrass and little bluestem, along with one or more native legumes, is a simple, proven combination for grassland bird habitats. It is very common to see a natural release of native plants following one or more herbicide applications without planting a single seed, so supplemental planting may not even be necessary. It usually pays to be patient and see what responds in the following seasons. Once established, periodic burning of these early-successional habitats is preferable and will promote the desirable composition of plants in these buffers. Keep in mind that narrow, linear nesting habitats have been shown to increase the detectability of ground-nesting prey by coyotes and other canid predators. That's why wider and uneven is usually better when it comes to wildlife strips and buffers.

Native Pastures and Hay

One big problem with the common exotic pasture grass varieties is that they form a mat of dense growth above and just below the ground. These sods basically block out the native seedbed and don't allow higher quality wildlife plants to germinate or grow through them. If wildlife is an objective, another option is to actually graze cattle on native vegetation. Again, this practice is common in the drier habitats of the West, but out there a much larger expanse of poorer range (acres per head) is usually needed when compared to using irrigated or improved pastures. In the East and parts of the Midwest, native grasses can produce fairly good grazing yields, and a few landowners choose to graze only native ranges. Native vegetation can also be cut and baled for hay. Silvi-pasturing is also a growing trend among many landowners. This strategy involves growing both trees and livestock on the same piece of ground. The vegetation can either be native or non-native, but as we know, a manager that has an added objective of improving wildlife habitat would be much better off utilizing natural plant communities. For cattle farmers, open pine stands with native herbaceous understories (maintained by periodic fire) are actually good candidates for seasonal grazing. Here, timber and cattle production can occur simultaneously while maintaining high quality wildlife habitat.

In summary, managing for wildlife and livestock on the same piece of property has its share of challenges. Direct impacts from livestock and equipment can sometimes pose an issue. Also, the most cost-efficient methods for cattle and hay production aren't always consistent with wildlife habitat management. We have established that large, clean monocultures of exotic pasture grasses do not serve as adequate habitat for most species. But by adding diversity (in the vegetative structure and composition of fields), creating edge, and limiting disturbances during key times of the year, wildlife can successfully be managed alongside cattle.

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Small Property... Big Dreams

Roadsides can be maintained to provide additional food plot acres, cover, or promote aesthetics.

By Jeremy Meares

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Managing a small property can be extremely rewarding once you begin reaping the benefits of your hard work. However, small properties can present a unique set of challenges requiring patience and realistic expectations. Some of the challenges that come with managing small properties include but are not limited to home range size for the species you are managing for, management (or lack of) on neighboring properties, current habitat conditions, and managing pressure/disturbance.

The most common species landowners and hunters we work with are interested in are white-tailed deer and wild turkey. Both of these species can have widely varying home range sizes depending on time of year and habitat quality. Home range size for deer and turkey can vary anywhere from a couple hundred acres to thousands throughout the course of a year. In addition, yearling bucks can disperse several miles from their birthplace. This can be a disheartening realization when you are

trying not only to attract but "hold" wildlife on your property.

This is where having realistic expectations comes in to play. If you have 200 acres of mixed woodlands and ag land in the Midwest your expectations are likely different than if you have 200 acres of primarily timberland in the Southeast. However, we have seen several small properties across the Southeast that just seem to be where critters want to be. In these cases, you are ahead of the game and may only have to make minor adjustments to achieve your goals. However, most of the time the "to do list" is substantial. Depending on the property, this list can be overwhelming leaving you asking the question "where do I start?"

Where to Start

When trying to decide where to start, evaluating the property's strengths and weaknesses in relation to the property goals is a good beginning. This evaluation should be conducted by a wildlife biologist. If your property is raw, then the basics of creating food and cover will be the starting point. During the evaluation process, it would also be beneficial to identify strengths and weaknesses of the neighboring properties. If managing for quality deer is your objective and you are surrounded by mature bottomland hardwood or open agricultural land that provides little cover, creating quality cover would be a necessity to encourage more deer to utilize your property. Conversely, if turkeys are your primary interest, providing openings where turkeys can feed on vegetation and insects would set your property apart from your neighbors'. Most improvements will be habitat-focused and really can be boiled down to providing quality food and quality cover.

Food Plots

One common method for providing quality nutrition is creating a year-round food plot program. Devoting 10% of your property to food plots is ideal with 1% being the minimum. Food plots on small properties will act as attractants for deer and should be managed to provide year-round nutrition. This means maintaining summer, fall, and/or perennial plantings. There are several food plot options but the more common choices for summer plots (depending on your soil conditions) are soybeans (several varieties available), lablab, and iron-clay cowpeas. In moist, woodland soils Aeschynomene may be a better choice. For fall plantings, look for mixes that "green up" quickly and attract deer but also have a component that will extend the life of the plot beyond hunting season. A mix we commonly have success with across the Southeast is wheat, oats, crimson clover and arrowleaf clover. The wheat and oats tend to provide the initial attractant while the clovers develop underneath. Depending on weather conditions, this mix can provide quality forage into the early summer months. In case you want more options, perennial plantings are also available. Perennials will primarily be species like (but not limited to) white clovers, alfalfa, and chicory. Food plots should only be part of your overall habitat management plan for producing quality food sources. A good supplement to a quality food plot program is adding fruit trees that benefit wildlife.

Fruit Trees

Planting wildlife-friendly fruit tree orchards is a good way to supplement other food sources like food plots and natural foods. Planting a variety of species helps ensure that food will be available throughout the year. Keep in mind that including species that produce fruit during the fall can create bowhunting "hot spots "on your property. These plantings are not only beneficial to deer and other wildlife but also improve property aesthetics. Fruit trees (and shrubs) can be planted along roadsides, around food plot edges, or in orchards. Another potential option for providing additional food resources can be found as you drive your property's roads.

Roadsides

Roadsides can provide a tremendous amount of quality forage and additional bedding, nesting (turkeys) and escape

Timber stand improvements like treating the understory in a thinned pine plantation to remove undesirable vegetation provide quality cover and food resources for a variety of wildlife species.

cover if managed properly. This is due to more sunlight exposure to these areas which stimulates plant growth. A properly managed roadside for wildlife also creates more "edge" habitat which is preferred and used by most game animals. The primary ways to increase the wildlife value of roadsides are to widen the shoulders approximately 20-30 feet on either side of the road, lime/fertilize as needed, and periodically mow or disk (disking in late winter is preferred to stimulate germination of desirable forbs) to maintain control of encroaching trees species as well as promote increased browse production. The added lime/fertilizer stimulates plant growth which will increase the nutritional quality as well as produce more tonnage of browse and food for deer and turkeys. Fertilized plants are more palatable to deer than those that are not, while maintaining a neutral pH with lime allows nutrients (fertilizer) to be available to plants. In some areas where possible, you may want to consider planting fall and summer food strips (e.g., clover, sunflowers, grain sorghum, cowpeas, chufa, wheat, etc.) along your roadside in order to increase available food plot acreage on the property as well as increase habitat diversity. Manicured roadsides can be pleasing to the eye, however, with a little planning, properly managing your roadsides can help improve habitat quality while at the same time maintain an aesthetic appearance. For example, you could limit mowing to only one side of the road and plant it with supplemental fruit trees while allowing the other side to develop naturally and maintain by mowing/disking every couple years. Alternatively, on the "unmowed" side of the road, summer or fall crops could be planted that would provide wildlife and aesthetic benefits. Roadside management is another opportunity to improve habitat and nutrition for a variety of wildlife species. Depending on the size of your property, you may have several miles of roads that could enhance habitat conditions along with providing additional hunting opportunities.

Timber Management

Timber stand improvements (TSI) are practices that remove undesirable trees or understory vegetation to promote more desirable wildlife foods, improve mast production, and promote better tree growth. TSI can vary greatly depending on scale. You may have a few undesirable trees around a mast producer you want to remove and this can be done simply with a chainsaw (followed with spraying the stumps with herbicide to prevent future stump sprouts). Another smaller scale option is the hack and squirt technique. This technique is fairly simple and involves making a cut about chest

height penetrating the cambium layer below the bark. With your cut create a "cup" that will hold herbicide. The herbicide is then delivered via a common spray bottle (one spray per cut which should be about one milliliter). One of the more common herbicides used for this technique is Aresenal AC but as with usage of any herbicide be sure to read the label to ensure it is safe for the application and effective on the species you are trying to control. On a larger scale, you may have a pine planation that has been thinned but the understory is choked out with species that have little to no wildlife value. This can be improved by using a skidder application of herbicides to remove these species promoting those that provide quality food and cover for wildlife. The herbicide treatments are usually tailored to control the specific problem species found in the understory. This tactic is usually best followed by prescribed fire.

Prescribed Fire

One of the best (and cheapest) management techniques to improve thinned pine stands is fire. As you know, fire is a valuable tool commonly used to enhance wildlife habitat. In addition to enhancing habitat diversity, burning will increase the wildlife value of this area as fire consumes the litter layer and stimulates germination of the seed bank. The result is normally higher quality deer browse, as well as nesting and brood-rearing cover for wild turkeys. Burning also sets back plant succession and keeps browse within reach of deer. If management is excluded from these stands, undesirable hardwoods (sweetgum, elm, etc.) will soon take over and suppress desirable browse production. To provide the most benefit to your deer herd, stands should be burned on a 3-4-year rotation, depending on the vegetation response. If undesirable woody vegetation (sweetgum) continues to be problematic, growing season burns (just after "bud break") can be implemented to more effectively kill these species (cool-season burns generally top-kill woody plants, which only causes more to sprout back the following year). However, weather conditions in the growing season are less stable, which makes it difficult to plan and implement burning activities. Once the smoke settles, be sure to take advantage of and maintain firebreaks. These can provide hunting opportunities, maintain access into more remote areas of the property, and can also be planted. Planting firebreaks in wheat, sorghum, millets, and other small grains will benefit deer, turkey, and quail. Prescribed fire has other valuable applications outside of TSI practices as we will discuss future.

Food and Cover

Regardless of the geographic region, having adequate food and cover are essential to managing wildlife. Dense

In addition to creating habitat diversity, burning typically results in higher quality deer browse and provides valuable cover for turkeys, quail, and other bird species.

mature hardwood stands with open understories provide very little deer browse and escape/bedding cover. With the exception of acorns during fall and winter, food resources are also limited throughout these areas. Therefore, these limiting factors should be addressed in order to maximize wildlife value and enhance hunting opportunities. The wildlife value and hunting quality of hardwood or pine stands can be enhanced through various techniques like thinning and/or creating small "wildlife" clearcuts. Wildlife clearcuts are different from conventional clearcuts (from a forest management perspective) because they are relatively small (5-15 acres) and irregularly shaped. Irregularly shaped clearcuts help funnel deer movement by again creating more "edge" habitat, which is an important habitat component for game species, particularly deer. Thinning and clearcutting increases sunlight availability at ground level and results in increased browse production and bedding/escape cover (not to mention providing nesting and brood-rearing cover for wild turkeys). Also, in stands with plenty of oaks, thinning can help enhance acorn production. By removing competition around oaks, tree crowns are allowed to expand, which can result in increased acorn production. Thinnings and wildlife clearcuts do not need to be large to be effective. Strategically creating a patchwork of these treatments across your property can increase acorn production, browse availability, bedding/escape cover, habitat diversity, and hunting opportunities. Wildlife clearcuts can produce opportunities to create "old field" habitat. Creating "old field" habitat simply means allowing the area to develop naturally into quality, early-successional habitat. A fire break should be created around the perimeter of these areas to facilitate burning every 3-4 years, depending on the vegetation response, to maintain quality browse within reach of deer and provide cover at ground level. By creating this habitat feature, you will again be setting your property apart from those around you. Combining old field habitat with the strategic food plot designs will create excellent hunting opportunities as deer will feel comfortable feeding in these areas within close proximity of quality cover.

Grasses

Another early-successional habitat option is native warm-season grasses. These species can provide valuable cover and forage opportunities for small and big game animals and a variety of bird species. Some of the more common native warm season grasses are big bluestem, little bluestem, broomsedge, indiangrass, switchgrass, sideoats gamma and Eastern gammagrass. As with any other technique we have mentioned, periodic management is required to keep these areas productive. Without periodic disturbance (prescribed burning, disking, herbicides), these fields will lose important open structure at ground level. Adding these areas to your property would likely be a feature your neighbors are not providing. Most improvement projects require financial

resources to complete. Timber activities such as thins and clearcuts provide some financial return which can be used to aid in offsetting costs. Other options are available to help landowners achieve their management goals in a cost-effective manner.

Cost-share Programs

Many landowners may not realize that millions of dollars are available each year through state and federal programs to assist them with managing their property. Numerous programs exist that provide funding for wildlife, soil, water, aesthetics, and timber conservation. In many cases, all you have to do is enroll. The Natural Resource Conservation Service (NRCS) offers cost-share programs including WHIP (Wildlife Habitat Encentives Program), WRP (Wetlands Reserve Program), EQUIP (Environmental Quality Incentives Program, and CRP (Conservation Reserve Program) among others. Many of the habitat improvement recommendations mentioned (e.g., herbicide applications, prescribed burning, food plot establishment and management, supplemental fruit tree plantings, etc.) are covered in full or at least partially under some of these programs. To this point, we have focused on ways to improve your property from a habitat perspective. Now we are going to shift gears a little and look at ways to manage hunting pressure and disturbance.

Hunting Pressure

Where possible, having food plots located away from main access roads and in close proximity to quality cover will help reduce pressure and disturbance and encourage more daytime utilization. A common mistake we see hunters and landowners make is hunting stand placement on food plots. They will make a statement like, "we just aren't seeing deer on our food plots", and upon further investigation usually their food plots are heavily browsed. However, all this activity is happening at night. Usually stands are not placed in a way allowing hunters to enter and exit the stand without disturbing deer or the stands are being hunted with no regard to wind direction. Hunting stands should be set up to take advantage of the prevailing wind direction, but it is also valuable to have a few options for when weather fronts push through changing the prevailing wind direction. Another way to reduce/minimize hunting pressure on food plots is to create a "natural" screen or buffer around your shooting houses or stands. Screens and entrance routes should be established to allow hunters to enter and leave hunting stands unnoticed. A simple technique to create a natural screen is by planting a small section (about 30 feet wide) in front of and around your shooting houses in Egyptian wheat during the summer (May - June). Egyptian wheat can get 10-12 feet tall and create an excellent screen if left undisturbed when planting fall food plots. Entrance trails should also be established to allow hunters to enter and leave the stand without disturbing deer on the food plots. This technique should promote more daytime use of your food plots (particularly mature bucks) and improve overall hunting quality. Now

Egyptian wheat can get 10-12 feet tall and creates excellent screens allowing hunters to enter and exit stands without spooking deer.

Creating food plots in old field or early-successional habitats can create great hunting opportunities by providing food in close proximity to quality cover.

that you are managing your habitat and keeping pressure at a minimum, it is time to meet the neighbors.

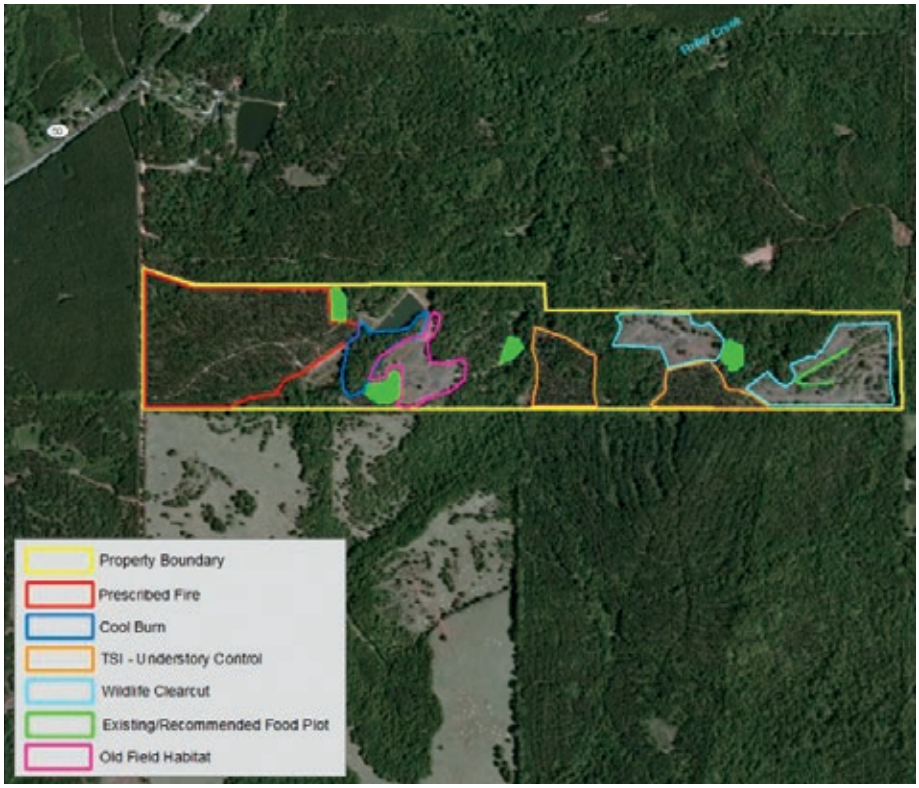
Neighbors

Although a few hundred acres is a large property to most, it is relatively small from a deer management perspective. You will, without a doubt, "share" deer with your neighbors. We recommend determining who your neighbors are and invite them to your camp for a cook out/meeting to discuss management strategies. Although this can be a difficult task, persistence can pay off in many cases. The goal of the vast majority of hunters is to harvest a quality buck; many hunters just need guidance and direction on how to do so. The last thing you want is for your neighbors to harvest young bucks that you spend your time, money and efforts trying to grow and protect only because they think you are doing the same thing. Obviously, the more adjacent landowners/hunting clubs that are practicing quality deer management the better your program will be. This not only includes protecting young bucks from harvest and harvesting an adequate number of does, but also better habitat management. Other benefits of a cooperative management approach are opportunities to cost share on management activities such as ordering bulk lime, fertilizer, and seed. Also, there are opportunities for sharing resources like tractors or other heavy equipment to complete enhancement projects. Now putting most of what we have mentioned into practice, let's take a look at a property we have worked with in the past.

In 2008, we received a call from a landowner in east Alabama. He needed assistance with developing a plan to improve his property for wildlife, primarily deer. The landowner's goals were to promote quality hunting experiences for his family and have opportunities to see and harvest 3 ½ + year old bucks. The property is long, narrow, and roughly 100 acres. Given the shape of this property, he is most certainly sharing deer with his neighbors. The primary habitat components were approximately a 20 year old pine plantation that had been first thinned and the remainder consisted of a mixture of upland and bottomland hardwoods. The understory of the pine plantation was choked out with undesirable species and there was nearly 100% canopy closure in the hardwood stands. As a result, quality cover was a limiting factor on this property. In addition, when you looked at neighboring properties, cover seemed to be a limiting factor for the neighbors too. There were existing food plots in place distributed pretty well given the layout of the property. Since quality cover was a primary limiting factor on this property, we devised a plan to create it. As you can see on the map, we recommended installing small

wildlife clearcuts, prescribed burning, herbicide applications in the thinned pine plantations, and creating an area of old field habitat to add cover. We made the same recommendations previously mentioned regarding hunting pressure and disturbance. Since 2008, you can now see some timber management starting to take place on adjoining lands and some food plots being installed. However, they do not have the quality cover aspect created through the wildlife clearcuts and old field habitat. These areas have become attractive to deer, especially mature bucks. By creating quality habitat (food and cover) and managing his hunting pressure, this landowner continues to meet and exceed the primary goals as mature bucks now have a reason to use the property which leads to increased quality hunting experiences.

Landowners should focus efforts and resources on things within their control like providing quality food and cover in creative ways that are not being offered on neighboring properties. By working with a certified wildlife biologist and/or registered forester to aggressively manage the habitat and making efforts to minimize pressure and disturbance, your property will begin to be utilized in ways that achieve your management goals.



Habitat improvement plan that will set this property apart from those around it and give wildlife a reason to be there.

What do Bobwhite Quail and Woolworth Stores Have in Common?

By Mark W. Thomas

Mark Thomas is a Certified Wildlife Biologist/Forester and President of Forestry/Wildlife Integration, LLC. He is also a Past Chairman and current Board Member of the Quality Deer Management Association. Contact him at 205-733-0477 or caribouhunter55@yahoo.com or visit his website, www.forestrywildlifeintegration.com.

Excellent quail habitat created with Arsenal®. This field was 100% sweetgum prior to the treatment. Note the dead sweetgum trees in the background that were injected. This is an example of old field conversion from low quality hardwoods to early successional herbaceous plant communities, perfect quail habitat.

During the last 45 years, northern bobwhite quail (*Colinus virginianus*) populations in the Southern United States have plummeted. From 1966 to 1995, quail populations in Mississippi, Alabama, Georgia, and Florida declined annually by 3.5%, 3.7%, 3.9% and 2.7%, respectively. The decline accelerated from 1980 to 1995, with average annual declines of 4.4%, 6.3%, 4.6% and 4.7% for those states, respectively. The annual decline across the United States averaged 2.4% from 1966 to 1995 with an increase in the average decline to 3.0% for the years 1980 to 1995. The quail population has continued to decline up to the present. In Alabama, the decline almost doubled, from an average of 3.6% annually to 6.3% annually. Reasons for the decline are many and include the following prioritized list in order of impact; agricultural grain crop/marginal cropland conversion to fescue, low-quality hardwood understory invasion in forestland, non-native plant species displacement of native

plant communities, mortality induced by fire ants, inappropriate use of prescribed fire and mechanical treatments, and predation. Habitat changes seem to account for the majority of the declines, including the reforestation of the South.

At the Black Prairie Research Area of east central Mississippi, the utilization of five cultural treatments has led to a dramatic increase in native wild quail populations. The native quail population increased from 18 coveys to 235 coveys in three covey seasons, an increase of over 13-fold, and finally stabilized at 185 coveys. The five cultural treatments listed in priority with respect to impact are; imazapyr (Arsenal®) for non-native plant eradication and low-quality hardwood brush control, imazapic (Plateau®) for native warm season grass establishment/enhancement, hydramethylnon (Amdro®) for fire ant control, rotational strip discing, and rotational prescribed burning.

Imazapyr, one of the imidazolinone herbicides, was introduced to forest managers in 1986 and has become the dominant herbicide used for silvicultural applications in the South. Uses include site preparation, herbaceous weed control, conifer release, mid and late-rotation release, pre-harvest site prep, improving forest aesthetics, and wildlife habitat enhancement. It is especially well suited for bobwhite quail habitat management as legumes (lespedeza, partridge pea, beggarweeds, etc.) and rubus species (blackberry and dewberry) are tolerant and recolonize areas after treatment, as they are released. Other plant species that recolonize treated sites can include ragweed, goldenrod, pokeweed, fireweed, milkweed, panicum grasses and other early pioneer successional species. In areas dominated by mature longleaf and loblolly pine where low-quality hardwood brush has been controlled by imazapyr followed by a prescribed burn, native quail populations have increased up to ten-fold in the last

Food Items Most Frequently Eaten From 1,400 Quail Crops Averaged Over 10 Years

Food Item	% Appeared
Trailing Wild Bean Seed	52
Beggarweed Seeds	50
Sesbania Seeds	39
Large-Seeded Partridge Pea	35
Green Leaves	34
Loblolly Pine Seeds	25
Small-Seeded Partridge Pea	22
Milk Pea Seeds	17
Common Lespedeza Seeds	17
Butterfly Pea Seeds	14
Native Lespedeza Seeds	13
Small Milk Pea Seeds	13
Bicolor Lespedeza	10
Florida Beggarweed	6

Flex boom with two Model 045 BoomBuster® nozzles. Spray 18' per side, with about 4' overlap behind the ATV, for a swath width of about 40'. Note the 335 gallon mix tank.

ATV configuration utilizing two 25-gallon tanks and a 50-gallon pup trailer, for a total capacity of 100 gallons, capable of spraying 10 acres @ 10 GPA/load. Note flex boom.

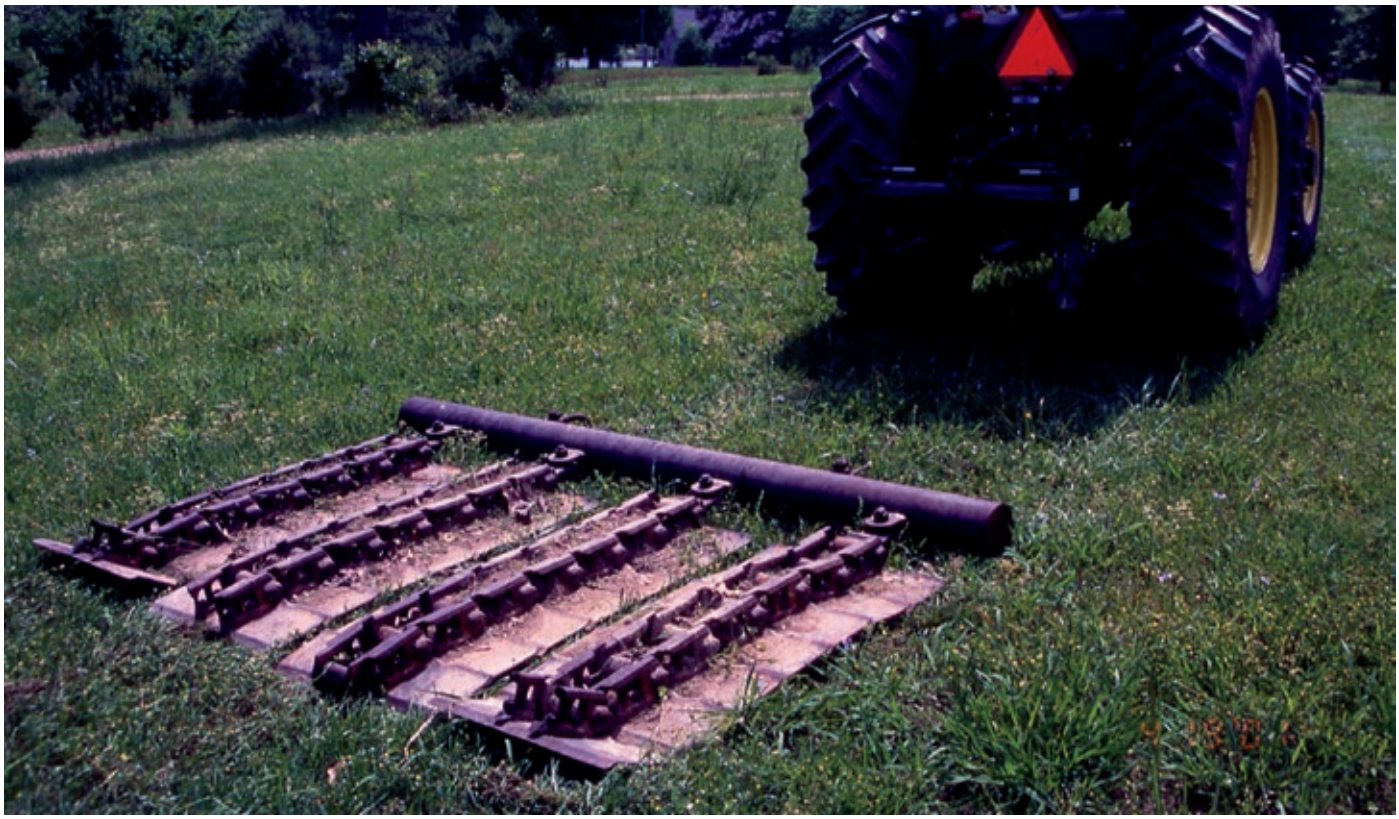
Native Plants Tolerant to Imazapyr (Arsenal®)

Sensitive Briar
Partridge Pea
Sesbania
Indigo Bush
Samson Snakeroot
Pencil Flower
Beggarweeds
Trailing Wild Bean
Wild Indigo
Goats Rue
Spike Tephrosia
Narrowleaf Vetch
Ground Nut
Butterfly Pea
Dollar Weed
Hairy Rhynchosia
Wild Pea
Milk Pea
Erect Milk Pea
Hog Peanut
Redbud
Black Locust
Common Lespedeza
Blackberry
Dewberry

six years. An increase in forbs, legumes and rubus species occurred. Average seed weight in legumes has been documented, as well as an increase in the protein content of seeds. Due to an increase in flowering plants, insects have been shown to be more abundant for several years following applications for much of the entire growing season. The reduction in low-quality hardwoods in the understory followed by a prescribed burn has resulted in up to 33-fold increases in forbs (dry weight basis).

Mechanical treatments have long been used as bobwhite quail habitat management tools, especially roll drum chopping and bush-hogging. Neither treatment adequately controls hardwood rootstocks and actually increases the number of low-quality hardwood stems due to prolific sprouting. Research shows that each rootstock will send up an average of 9.2 sprouts. A new mechanical device, called a Maddron drag, when used in combination with an imazapyr application, has been recently tested. Maddron drags consist of old crawler tractor tracts attached to a clevis welded to 6" double-walled round stock. Advantages noted include nearly permanent hardwood control, exposure of bare mineral soil, and the recolonization of legumes, rubus species, flowering plants and forbs. The treatment smoothes out the soil and allows for easier walking for quail hunters and can be less expensive and more productive than other mechanical methods. Another tool, called the Brush Master® square-wheel disc, has also been tested. This disc has flex risers that support the axles and triple-sealed bearings. The flex risers absorb the shock and this disc can be utilized in very tough conditions, including in the woods. You can pull it directly over stumps without damage. Coming in three sizes, the smallest unit is 7'3" and weighs just over 2,200 pounds. I use this unit for rotational strip discing in forested and non-forested wildlife management compartments as well as for installing ecotones.

Bobwhite quail toxicology testing has also been conducted on imazapyr. Oral LD50 values of >2,150 mg/kg body weight and eight day dietary LC50 val-



Maddron Drag suitable for quail habitat enhancement.

ues of > 5,000 ppm were determined. In 18 week toxicity and reproduction studies, no treatment-related signs of systemic toxicity and no adverse effects upon reproductive performance and egg production, egg thickness, egg quality and hatchability were found at dietary levels of up to 2,000 ppm, the highest dose tested. No mutagenic effects, teratogenic effects or fetotoxic effects were observed. Environmental fate studies have also been conducted. The calculated half-life of imazapyr in forest soil ranged from 19 to 34 days. Half-life of imazapyr in plant and pine tissue ranged from 12 to 40 days. Half-life in leaf litter ranged from 37 to 44 days.

Low-quality understory hardwood control and other uses of imazapyr for bobwhite quail habitat management enhances preferred food plants, increases access for wildlife management activities, enhances hunter visibility and safety, improves forest aesthetics, increases wood production, and increases early successional plant biodiversity, reduces the accumulation of fuel and reduces the intensity and frequency of prescribed fire, which, together, dramatically increase the carrying capacity and subsequent population of bobwhite quail.

Work at the Wheeler Estate/Wheeler Foundation lands (Lawrence County, Alabama) from 2004 to 2007 treated approximately 2,000 acres for northern bobwhite quail habitat improvement, or approximately 500 acres per year. Quail habitat was lost due to batwing bushhog treatments, and the areas were in danger

Native Plants That Typically Recolonize After Arsenal® Treatments

Panic Grasses
Broomsedges
Pokeweed
Pigweed
Carpet-Weed
Common Chickweed
Greenbrier
Smartweed
Sheep-Sorrel
Yellow Wood Sorrel
Wild Geranium
Dove Weed
Wolly Croton
Flowering Spurge
Poison Ivy
Winged/Smooth Sumac
New Jersey Tea
Virginia Creeper
Muscadine Grape
Violets
Maypop
Evening Primrose
Fireweed
Love-Vine
Morningglory
American Beautyberry
Blue Curls
Ground Cherry
Trumpet Vine
Poor-Joe
Florida Purslane
Giant Ragweed
Common Ragweed
Sunflowers

Amco Brush Master® with square discs. Disc gangs are attached with flex risers that absorb shock when discing over stumps. Scraper blades keep the discs clean. The drag board smoothes the soil behind the disc.

Polaris Big Boss 500 6X6 rigged with two 25-gallon spray tanks in back, Model 045 BoomBuster® nozzles, and two Moultrie seeders.

Excellent quail habitat created with Arsenal®. This late-rotation, thinned loblolly pine stand was virtually 100% sweetgum prior to the treatment. Good canopy plants here with mostly partridge pea and lespedeza, both tolerant of imazapyr, two years after application.

of losing CRP status. The low-quality sweetgum invasion averaged from 5,000 to 10,000 stems/acre, with virtually no herbaceous component. Equipment for foliar applications included Polaris 6X6 rigs with 50-gallon capacity tanks on the back and 25-gallon tanks on the front, coupled with a 50-gallon pup trailer, allowing for around 12.5 acres/load @ 10 GPA. Production averaged around 50 acres per day. Rates utilized ranged from 16 to 20 oz/ac and tank-mixes with Escort® and Roundup Pro® to control blackberry (rubus spp.) were used as needed on a site-specific basis. Each treated compartment was side-trimmed and fire lanes were established around each, as well. Ecotones were then established utilizing straight imazapyr varying in width from 10 to 30' wide. All light-seeded edge trees (sweetgum, box elder, ash, maple, etc) were then injected with imazapyr (50:50 V:V) during the late fall or in the dormant season. Prescribed burning was not utilized, and early successional plant communities consisting of panic

grasses, broomsedge, pokeweed, pigweed, carpetweed, chickweed, greenbrier, smartweed, sheep-sorrel, yellowwood sorrel, wild geranium, dove weed, wooly croton, flowering spruge, poison ivy, winged sumac, smooth sumac, Virginia creeper, muscadine, violet, maypop, evening primrose, fireweed, love-vine, morningglory, American beautyberry, blue curls, ground cherry, trumpet vine, poor-Joe, Florida purslane, giant ragweed, common ragweed, and sunflower recolonized within a few months after the applications. Plants tolerant of imazapyr (legumes and rubus species) were released including sensitive briar, partridge pea, sesbania, indigo bush, Samson snakeroot, pencil flower, beggarweeds, trailing wild bean, wild indigo, goats rue, spike tephrosia, narrowleaf vetch, ground nut, butterfly pea, dollarweed, hairy rhynchosia, wild pea, milk pea, erect milk pea, hog peanut, lespedeza, blackberry, and dewberry and colonized the site immediately after application. Food items most frequently eaten by quail included trailing wild bean seed, beggarweed seed, sesbania seed, partridge pea, milk pea seed, lespedeza seed, butterfly pea, and Florida beggarweed.

Brush Master® with drag board down, which levels and smoothes the soil. Note the well established ecotone around the field. This is the second pass.

So, what's the answer to the question in the title, "What do Bobwhite Quail and Woolworth Stores Have in Common?" The latter is already extinct, and the former is on their way! With proper management inputs, however, the trend can be reversed.

Managing Multi-Use Lakes

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 or (336) 941-9056.

This large lake is home to high quality largemouth bass and bluegill. In the winter, the smaller duck pond below is full of migrating ducks throughout the entire hunting season.

We manage many different kinds of lakes throughout the Southeast, from trophy largemouth bass lakes to lakes primarily used for irrigation with trophy bass in them. When in the planning stages of building a new lake, the landowner has to decide the primary purpose for their waterbody. Just because a lake is designated as a lake for primarily something other than quality fish doesn't mean it cannot have quality fish, as long as precautions are taken and the owner knows that at any time in crisis the quality fishery could be compromised or lost and the fish population may need starting over.

Many lakes and ponds on private and public property have duel purposes. Many are originally built for things like agriculture for livestock or crop watering, duck hunting, flood control, temporarily holding runoff and cleaning water before it enters a natural waterway (retention pond), water sports like skiing/jet skiing, or even dog training. Some of these are very compatible with quality fishing, and a few are difficult for that dual-purpose.

Agriculture and Quality Fishing

One combination and the most frequent encounter for us as a dual use waterbody is agricultural and fishing. The waterbody may be used for watering livestock or crop irrigation. Managing both combinations are difficult and come with their own set of problems unless the lake is large enough to handle the added nutrients or water withdrawals. A small lake used to water cattle is difficult to manage for quality fish. It's not that big fish cannot be grown in such a waterbody, but it may experience a fish kill at any time. Cattle like to walk in water, sometimes lie down to cool off, and always expel their waste (nutrients) into the water. These excess nutrients, depending on the number of animals and lake size, can affect water chemistry directly by raising Ammonia, Nitrogen and other parameter levels detrimental to fish. The excess nutrients promote weed growth either in shoreline vegetation, submerged vegetation, filamentous algae or planktonic algae (green water). Another issue caused from live stock entering a waterbody on a regular basis is erosion. They can expedite bank erosion and make the water turbid (muddy) from walking inside the lake basin and getting in and out. This turbity to some degree will help shade out sunlight and hinder submerged plant growth. But water that is too muddy can stress fish causing issues with egg hatching success, fry survival and production of food for upper level predators, thus slowing their growth.

When faced with this combination we look at how many animals there are, how large and deep is the waterbody and the current effect the animals are having. If the lake is large enough, there may be no detectable effect from the livestock on the lake. Most often that is not the case and some alternatives need to be considered. First, can the livestock be excluded from one waterbody to enhance the water chemistry, vegetation and fish? If one waterbody can be designated for fishing and one for livestock, that is the best solution. Remember, when excluding livestock from a waterbody, plan to prevent excessive runoff from pastures or feed lots. If water sheet flows from livestock areas directly into a waterbody every time it rains, this is no different than if they are in the lake. Design or add a vegetation buffer zone between livestock and water. As water moves toward a lake it is somewhat filtered prior to entering the

These cattle were eventually fenced off from this lake and diverted to two others on the property. When we arrived, visibility was 6 inches due to the planktonic algae bloom (green water) caused by the cattle waste.

The 18 acre lake in the foreground has it all – A well, two pumps for center pivots and runoff from surrounding agricultural fields. And you can't see them but big largemouth bass and redear sunfish are abundant.

fish pond. If feasible, build a small natural area (marsh) between the two to help filter some nutrients. Can the animals be restricted to a designated area of the lake? This can be done with fencing or by making pond banks too steep for livestock to use, directing them to one end or a designated area. The excessively steep banks will also deter shoreline vegetation from growing. If in an emergency the animals need to be granted access then do it. The short term added nutrients may or may not affect the fish population in what will be presumably a drought affected lake.

Using a pond for irrigation and developing a quality fishery is very feasible if you have the capability of adding well water should the fish pond become too low from water withdrawals. If your crops need watering that means there is already not enough water in the area. Now you are drawing water from a lake that is probably already low. But if you have the capability to add well water as you make your withdrawals you can continue to be successful at growing crops and quality fish. It is recommended to keep the fish pond water level at a manageable level. Do not draw the water down to critical levels and then refill with pure well water. Well water is not the best water for fish, but if gradually and steadily added while withdraws occur, it is acceptable and it will not have any negative impacts.

Another issue to be aware of with quality fish lakes and agricultural lakes is herbicide use around the lake. The more quality habitat you have the better for fish. Besides ground spraying, many big farms aerial spray and the chemicals around the lake can unintentionally kill desirable vegetation for fish habitat. Vegetation around lakes is a good thing for improving water quality, filtering runoff from surrounding crop fields and feed lots, and reducing erosion.

Duck Hunting and Quality Fishing

Another common dual-purpose lake combination is fishing and duck hunting. If you put a fish biologist and duck biologist on the same lake project they envision the waterbody being managed almost completely opposite of one another. Things like water depth, when should flooding and drought occur, the amount of submerged vegetation present, the species of vegetation present and the amount of certain types of vegetation all are addressed when trying to do both. Also add whether you are trying to attract diver or puddle duck. It can be very complicated and there has to be compromise on both sides to achieve both objectives.

The best way to achieve this is to have a large waterbody that can handle shallow marsh areas with lots of desirable waterfowl food and cover, but also a lot of steeper sloped banks with some vegetation present and lots of open water up to 12 feet deep for fish. If this is not feasible, having a fishing lake above your duck marsh works extremely well. If you have a well feeding the fish lake it always assures you that things for ducks will be flooded at the right time, while still having plenty of water for fish. A trench can be dug

around 75-85% of your duck pond with control structures at the in and outflow so it can be drained after the season, dried in spring and summer, planted in late summer/early fall and flooded in late fall early winter just prior to duck season. I have seen first hand with a fish lake of 13 acres averaging 12 feet deep (deepest spot was 20 feet), and a duck marsh below, totaling six acres, averaging two feet deep when full. After drying, the duck marsh can be prepped and planted with various duck foods (we recommend Japanese millet) and small areas of Egyptian wheat for natural hunting blinds. Gradually raise the water 18-24 inches before the first phase of duck season, so they find it before the season starts. If you have the ability to partition two areas, stagger the re-flooding so one area is hunted the first phase and the next area the second phase of duck season. Sometimes this scenario is not possible and the duck marsh has to be located upstream of the fish lake, which is feasible, but care must be taken when draining the duck marsh into the fish lake as to not introduce excessive low dissolved oxygen water and stress fish or cause a fish kill. A large natural area of vegetation between the two is recommended to help filter the water prior to it dumping into the fish lake. Late winter marsh water usually has low dissolved oxygen levels due to decomposing plant material from winter die off.

This young man is waiting for ducks to arrive and later can move out to open water to fish.

This lake is large enough to have a quality fishery and a naturally shallow marsh for duck hunting with flooded timber, shallow water and quality submerged vegetation (wigeon grass) that was planted for ducks.

Flood Control or Runoff Retention and Quality Fishing

Retention ponds are common along the coastal states for collecting runoff and filtering it or preventing the nearby property from flooding prior to allowing it to flow into a nearby creek, river or natural lake. The water comes from streets, parking lots, lawns and golf courses. Just because they are primarily designed to hold poor quality water does not mean they cannot grow quality fish. We have seen double digit largemouth bass in these ponds as small as three acres, and we have seen during a tropical storm or hurricane ponds roll over and the entire fish population wiped out or displaced down stream. With a flood, your fish population species composition may change after waters recede, with new species being trapped in your lake from other nearby waterbodies. You have to be aware that at some point water quality, drought or flooding may become an issue and have a negative impact on the fish population.

When the pond is built, it needs to be dug in a way (10-12 ft deep and steeper sloped banks) that it will not silt in quickly or grow weeds that constantly need herbicide, which fills in the waterbody that much quicker. If possible, not developing around 100 percent of the pond leaving natural areas is advised, but not always feasible. A retention pond is designed to have some vegeta-

tion in or around it, which is what helps filter nutrients and other impurities prior to it being discharged into the environment. Retention ponds work and last a long time when managed correctly, and can grow big fish for many years. These waterbodies, however, do require digging or dredging out more frequently than natural lakes, either due to washing in sediment or filling up with dead plant matter. These are a great place for artificial structure (fish attractors) that can be removed should deepening be required in the future and put back out. Natural structure material will only add nutrients as it decays and expedite filling in the pond especially if you refurbish them often. Adding a fountain(s) for aesthetics, or an aeration system to oxygenate water at all depths and/or to slow algae growth can be done. The fountain is mostly for aesthetics, but aeration can make a big difference in deterring filamentous algae growth and de-stratifying and oxygenating the lake to support more fish in the waterbody.

Water Sports and Quality Fishing

There are little to no natural resource issues between jet skiing/skiing and quality fishing. This is generally a user conflict issue and if there is one Lake Owner, they can decide when and where water sports can or cannot be done. We recommend placing underwater artificial structure deep enough so as not to cause injury to water sport participants, even during drought. The other recommendation is make sure the areas are large enough for safe operation and that shore erosion is not excessive from wave activity. A band of quality vegetation around the shore where wave action will occur to reduce erosion and provide habitat for fish is recommended.

Dog Training Facility and Quality Fishing

This one may be the most difficult of the others previously mentioned if it's not on a big enough scale. In dog training you need deep and shallow areas, with a few spots where land and water may be crossed multiple times for quality retriever training. Also, a few spots on shore and in water where logs, brush or vegetation protruding above the water line are placed for dogs to be trained to go through or over the obstacle rather than around them. A lake shaped like a hand can be very usable, but the open water (palm) needs to be large and deep enough to support the fish population. In the "fingers", expect some vegetation issues because it will be impossible to get them deep enough to not harbor and promote vegetation growth. These areas can be kept clean with herbicide or mechanical removal with a long arm dredge.

All of these scenarios are manageable, but you must keep in mind that at any time conflicts between managing the fish population and other purposes will arise and have to be dealt with. I have seen firsthand with all of these scenarios quality fishing last for decades before any issues arose. That is many years of enjoying quality angling before having a setback, or having to start over. Routinely checking water chemistry and once every few years having an electrofishing sample conducted to monitor things is advised. Always have an electrofishing survey conducted after a catastrophic event such as drought, flood, or die off prior to restocking.

This dog during training doesn't care about lake design or even water quality. But as managers, we need to address all the parameters that help us achieve our goals whether a lake is labeled a single purpose or multipurpose lake.

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Sequin (Chinese Chinquapin)

By Allen Deese

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Sequin with Green burs and new blooms.

We exhibit at a lot of Deer Shows and Outdoor Trade Shows each year and it's always interesting to hear what folks are looking for when planning to plant trees for wildlife on their property. The most common question we usually get is, "What's the fastest producing tree you have? I want to be around to enjoy watching a deer eating from my trees!" We usually bring along a variety of fruit trees as well as hard mast producers. But some of the most surprised reactions we get are about the Sequins, or Chinese Chinquapins.

The American Chestnut once ranged all along the East Coast and westward well into the Ohio Valley. Oh what we would give to have this important tree of our past back today. So much so that a foundation was established (acf.org) for the sole purpose of returning the American Chestnut to its once dominate form along the eastern part of the United States. The Chestnut blight brought here in 1904 on some trans-

planted Chestnuts from Asia all but wiped out this top wildlife nut-producing tree. So here we are today to discuss another important and very nutritious nut-producing tree relished by the Wild Turkey and White-tailed Deer, the Sequin.

The disease resistant Sequin (Chinese Chinquapin) is an awesome plant that produces yearly and abundantly offering a high protein food source from September well into November. The nuts from the Sequin are not only nutritious but also highly palatable to wildlife. The Sequins typical bloom is in May therefore late spring frosts rarely damage the flowers thus insuring a great crop every year.

The Sequin will typically have two to three flushes of vegetative growth per season as well as bloom sets. This allows the plant to set nuts at different stages of growth as well as dropping in different stages throughout the fall. The nut is similar to the chestnut in that it is high in starches & sugar but low in fats, only smaller. The M&M sized morsels will begin to drop around the first of September and persist well into November once the tree has matured, typically in 5-8 years.

The sequin is a vigorous grower and an early producer typically producing small chestnuts the second growing season. Because of the burst of vegetative growth through-out the growing season and late into fall the sequin will show signs of tip die-back. This is caused by the continual growth and late blooms that last into the first frost, thus damaging the tips and soft tissue on the fresh new growth at the end of the limbs. It appears to have no real damaging effect on the overall health of the plant and is not as noticeable once the plant matures.

In today's world of, "I want to plant today and see results tomorrow", the Sequin is a real winner. Typical plant development will take a couple of years even though the nuts will come quickly. The Sequin will look somewhat like a ragged shrub for two- three years but by year five will turn into an abundant producer, as well as an attractive shrub or small tree. If you plant it with a tree tube the Sequin will grow into a small, single trunked tree. Or by utilizing a simple fenced enclosure will allow it to form into a large bush, which is its natural growth habit. Regardless of how you choose to grow it I strongly encourage the addition of this plant to your permanent wildlife plot.

Two year old Sequin setting seed.

Five year old Sequin in full bloom.

Fenced to keep Deer and Turkey out.

Close up of all the Burs. Each bur will contain three seeds or nuts.

Wildlife Trends Journal Management Calendar

By Dave Edwards

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Dormant season prescribed burning is one of the most effective tools that can be used to create quality wildlife habitat.

Prepare dormant season prescribed burn plans and initiate burns as weather permits.

Fire is a management strategy that is relatively cheap to implement and the results are very obvious for wildlife. If you have pines on your property, fire is an essential tool to improve wildlife habitat and should be on your annual task list. However, burn plans need to be well thought out and completed well ahead of time. With the exception of longleaf pine/coastal plain areas, most understory burning in the Southeast is conducted during the winter dormant season. Acceptable relative humidity, temperature, fuel moisture, and steady, persistent winds often occur during this period. Cool season burns are generally conducted between December and spring green up. In the Deep South, try to conduct burns before March 15 to avoid destroying turkey nests. Cool season or winter burning is not only a good way to reduce fuel loads and control undesirable hardwoods in a pine stand (which reduces the chances of a wildfire that can be detrimental), but is also a great way to stimulate new understory plant growth which will result in quality food sources for wildlife. Fire rotations (interval of time between burning the same area again) vary depending on your goals and habitat types but are generally every 2-5 years to promote quality wildlife habi-

tat. It is also a good idea to strategically plan your burns so that you always leave some areas unburned. How much area to burn will depend on your specific property and habitats. However, do not feel that you have to burn large areas (50-100 acres or more) to make a difference and create quality wildlife habitat. Relatively small burn areas in the 5-10 acre range are easily done in a couple hours and will make a difference. Always check local burning laws and consult with an experienced burn manager before lighting a woodland fire. The U.S. Forest Service or your state Forestry Commission are great sources for obtaining more information regarding burning in your area. Check with the US Forest Service for information regarding prescribed burning as well as examples of a burn plan. It is also a good idea to coordinate your burns with a professional land manager that has experience burning.

Trap and remove nest predators

If managing for wild turkeys is a goal on the property you hunt, don't overlook the value of removing nest predators such as raccoons and opossums. Having said this, attempting to control predators should not be a priority if you are not actively managing the land to promote quality turkey habitat. Creating and maintaining quality habitat should be the highest strategy on our list for managing turkeys. By the way, wild turkeys are a species that responds quickly to good habitat management such as thinning timber, burning, understory control, roadside management, etc. However, research has clearly demonstrated that nest predators, particularly raccoons, can significantly impact nesting success rates and thus turkey population growth. Not only will they eat the eggs, but they may even kill the hen turkey. Winter is a great time to trap and remove nest predators. This is also when hunters spend the most time at a property. Trapping offers a great midday management activity during a weekend at the camp. The key in being successful and efficient is to pick good trap locations. Water sources, feeders, and food plots can be good places to start. There are many effective traps available. The most common are live traps (cage traps) and steel traps (leg hold traps). If you use leg hold traps, I recommend "soft-catch" or offset jaw traps. These traps do not damage the foot of the trapped animal in the event that you catch a dog or other non-target critter. If you have never trapped before, you will learn a lot by trial and error. I recommend doing a little homework by surfing the web and YouTube to learn effective techniques. One more thing to know is that nest predators are prolific and have relatively high reproductive rates. This means that populations can rebound quickly. To be effective in controlling nest predators and helping turkeys, you must significantly reduce nest predator populations and continue to aggressively remove them each year.

If the property you hunt is rolling or hilly, or near large fields or bodies of water, create a wind map of your property to help you have more successful deer hunts.

A deer's nose is its best defense. Through my career as a wildlife biologist I have been fortunate to have worked and hunted with many "lucky" hunters – those that seem to cross paths with the biggest bucks on the property year in and year out. These are the guys you see in magazines standing under a barn wall full of mounted bucks. Generally speaking, I am not one that believes in "luck". To me, luck is where preparation and opportunity meet. All of these hunters did their homework to understand how and why deer (particularly the big bucks they were hunting) used the property and set up stands accordingly. They all seem to have different thoughts on where and when to hunt the stands. However, the single common strategy used among ALL of these hunters was they closely monitored wind and only hunted stands under favorable winds. That is, they only hunt areas when the wind is right – carrying their scent away from where they expected deer to come from. Although I often wear ScentLok and spray myself with odor neutralizers before heading to a stand, I am a firm believer that if a deer gets downwind, it is over (at lease in most cases). On properties that have hills or draws, wind will behave differently across the property. As wind hits ridges or tree lines it is diverted and results in the wind changing directions at given points on the property. You may be surprised that a true north wind can generate a south wind in some locations on a property. Something else that will cause "odd" winds is large bodies of water such as a lake or river. In the morning, cool air in

Winter is a good time to trap and remove nest predators.

the woods is often drawn out to the warmer water area creating different wind currents than the true wind reported. The opposite can occur in the evening. These situations often occur under light wind conditions. To create a wind map, simply record the true wind (wind direction without interference – wind the weatherman reports), then visit various spots on the property where deer stands are located and record the actual wind at these spots. Many hunters collect and record wind information over time, like while they are hunting, then compile what they have collected to create a wind map. Once generated, a wind map is a valuable tool that will help you select which stand to sit resulting in more successful hunts.
Obviously, you still need to be in the right place at the right time. But these "lucky" moments happen more often when you have prepared and selected a stand where your scent is not a factor.

Scout now for next duck season

Doing a little homework this season, even if it means missing a hunt or two, will help you have better duck hunts next year. By this I mean take time to watch and glass wetlands, moist soil impoundments, beaver ponds, lakes and flooded fields to find new areas to hunt. While food sources and water can change from year to year, ducks are often attracted to the same areas each year. Simply stage yourself somewhere a distance away from the area you are scouting – far enough you will not spook ducks – and simply watch. In most cases, a high vantage point that offers a landscape view is best as it often allows you to see where ducks are coming from as they approach and which direction they go when they leave. Good vantage points are often hills, bluffs, highways, bridges, barns, and sometimes deer stands. The key is to get as high as you can so that you can see the sky where ducks are flying. I can't tell you how many times I have set up and scouted like this and found an even better spot than the spot I thought would be good by being able to see flocks from a landscape level verses getting into the actual area (tight) where my landscape view was restricted. In some cases, you may not see ducks go down but notice that lots of flocks head in a certain direction. Relocating closer to the area you saw ducks headed on the next scouting mission will often reveal a new honey hole. As you begin to pin point areas ducks are using, close in tighter and start learning exactly where ducks want to be on a specific pond and how they approach when coming in. If it is still duck season, this is when I like to hunt the spot a couple times. Doing so will help you identify exactly where to build a blind this summer in preparation for next year.

Assess and flag or mark wildlife clearcut areas, new food plots or plot expansions, new roads, and roadsides that will be widened.

Because temperatures are cool (or cold) and the leaves are off trees where you can generally see better in the woods, winter is a great time to assess and mark areas where trees will be harvested or dozier work will be needed. Having the leaves off is certainly a big help because you can see what you are doing and visualize areas that you are flagging. Projects that may need to be

Now is the best time to scout for next year's duck holes even if it means missing a hunt or two.

marked or flagged include small bedding areas that will be created with chainsaws (can run the chainsaw during the winter too while it is cooler), new food plot areas or expansions on existing plots, areas along roadsides that need attention next spring, etc. Besides flagging areas that will require heavy equipment and drier conditions, winter is also a good time to flag areas that will be planted in wildlife friendly orchards, supplemental hardwoods, areas to plant hedgerows for quail through fields, etc. Marking these areas in winter will not only be more pleasant for you and allow you to see what you are doing, but will ensure you are ready to tackle these projects when conditions are right. Also, flagging in winter gives you time to think more about the areas you have flagged out before the project is implemented. The last thing you want is to be flagging just ahead of a logging crew and having to make hasty decisions on where you want a new food plot to be created.

Identify roads on your property that need attention

Winter is often very wet in the Mid-South which makes this a great time to identify and assess problem areas along roads where work will be needed next summer. Make notes or identify areas on maps that you can refer back to when you start to repair roads next spring or summer. You will be glad you did. Once your property dries out, it can be difficult to remember and/or find the areas that were bad during the hunting season. Although many landowners/hunters access properties during hunting season on 4-wheelers, electric carts, or other gas powered ATV's that will certainly get through wet and slippery roads, roads are an important part of managing a property. If you are actively managing your property, you will need to be able to drive or transport large equipment such as spreader trucks, tractors, and agriculture buggies throughout the property. Thus, having good roads is essential.

Winter is a great time to identify roads that need repairing this summer. Be sure to flag these areas or mark them on a map so that you do not miss them when the work starts.

Provide supplemental feed for deer

Late winter can be a nutritionally stressful period for deer. They have endured the rigors of breeding season and natural food sources can be limited. Providing supplemental feed during this time can boost energy and nutrition. This recommendation/activity is directed towards landowners or managers that have done a good job managing their natural habitat, food plots, and deer herd conditions. That is, before thinking about starting a supplemental feeding program for deer on your property, you need to take care of the "important" things first. In other words, you cannot hang shutters if you do not have a house – and you will not grow big bucks and a healthy herd with supplemental feed alone. It is a supplement to other management strategies and activities. However, when done in combination with other core management practices, supplemental feeding can be valuable for deer. Be sure to check your local game laws before providing feed on your property. Many states do not allow the use of feed during hunting season. Ideally, providing supplemental feed throughout the year is best, but supplemental feed will be most used and most valuable for deer in late winter and summer. These are periods when natural food availability is at its lowest. So if you have a limited budget and cannot or do not want to feed throughout the year, provide it during the periods deer need it most.

Prepare deer stands for the off-season

Once deer season ends, it is a good idea to "summer-ize" them. That is, to ensure they are in good working order next season there are a few things to do. Ladder and lock on stands should be loosened or removed from the tree to allow the tree to grow during summer and prevent it from absorbing the attached chain or strap of the stand. This not only protects the stand from potential damage, but is good for the tree. If the stand is not going to be removed from the woods, remove any cushions or seat straps and burlap/camo covers that may be on a stand. This will prolong their life and prevent the weather or critters from ruining them before the next season. Cushions and covers should be removed from tripods or other stands as well. Although they should already be secured, double check the tie downs and anchors of a tripod. There are two kinds of tripods – those that have blown over and those that will.

Making sure they are securely anchored will reduce the chances of a tripod getting blown over. Shooting houses should be cleaned out and sealed up as much as possible. Sealing them (meaning closing the door and windows) will reduce damage by squirrels, owls, etc. It will also reduce wasps as well (notice I said reduce). Cleaning shooting houses out in late winter is much nicer than trying to do it in August! Obviously, all climbing tree stands and pop-up blinds should be removed from the woods and stored over the summer. When "summerizing" ladders and lock on stands, it is VERY important to revisit these stands just before hunting season starts again the next year to reattach the chains/straps and tighten everything up. If you use ratchet strap tie downs to secure stands, I strongly recommend replacing them each year – even if the strap appears in good condition. Re-using these straps has been the cause of many tree stand accidents. One trick we use to identify stands that are ready is to tie a piece of flagging onto the stand once it has be tightened and checked. Use the same color flagging for each season. For example, this year we are using blue flagging. Next year we will use orange flagging. So if a hunter gets to a stand this season and does not see the blue flagging, he will know that the stand may have been overlooked and/or has not been checked and secured.

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