PRACTICAL WILDLIFE MANAGEMENT INFORMATION

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Earl Says...

I hope everyone is enjoying these cooler days and nights. Whether you're in a tree stand for deer, a blind waiting for ducks or walking through longleaf pines watching your favorite dog point up a covey of quail, it sure feels a lot more comfortable when the weather drops. And the changing of seasons means it's time to think about tree planting.

I hope you enjoy the article in this issue from Steve Tillman, with Plantra, Inc. He details a planning guide for buying, planting and maintaining trees for wildlife. He makes a great point that since we spend so much time, effort and money with our planting, why not take some extra time to follow a plan that maximizes the survivability of our trees. This is a user-friendly guide to help you, "Plant Like You Mean It"! Another point he makes that I would like to help emphasize is no matter what you plan to plant, contact your favorite nursery and order early. Allen Deese with The Wildlife Group told me last week that lots of folks miss out on their preferred plant selections when they wait too late to order.

Have you seen the new magazine format of *Covey Rise* magazine? John Thames and Kelly Waldrop have done a great job updating the look and content of the magazine and it's definitely worth a look. If you are into quail hunting, check them out at www.coveyrisemagazine.com.

Lastly, I would like to thank all our loyal subscribers and advertisers for another great year. In these tough economic times we all have to make decisions on where we spend our money and we appreciate you all more than you can know. 2013 will be our 13th year of publishing *Wildlife Trends Journal* and I vow to each of you that we will continue to strive to provide you with timely, cost-saving articles to help you maximize the potential of your property. Have a safe and productive hunting season and contact me if I can ever be of service to you.

Andy Whitaker
Publisher/Editor

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Cover photo by Allen Deese

Plan and Plant Like You Mean It – 5 Key Strategies to Grow Hardwood Trees and Shrubs for Wildlife

Choose a grow tube that is best suited to available sunlight. The oak tree shown here is in a grow tube designed for partial sun conditions. Note the lower leaves inside which illustrate the translucent properties of a well-designed grow tube that promotes a healthy greenhouse microclimate.

Imagine the following scenario. It's a weekend day early last fall. The smell of damp leaves hangs in the cool morning air as you step from the truck to make your way to the field. Thoughts of a previous work week full of demands and deadlines retreat with each quiet stride down a well-worn trail. You're finally back in the woods and headed out to check on last spring's tree planting, one you hope will produce a bounty for wildlife in the seasons to come.

As you get closer, anticipation grows and the excitement of seeing the first season's worth of growth quickens your step. Images of wildlife and your future habitat planting flood your mind as you walk along. Soon the planting site comes into view. Stepping into the clearing you hesitate, noticing something isn't right. You had hoped to see a field full of healthy, growing fruit, nut and acorn trees. But most of the seedlings you and your helpers worked to plant are missing and the few that

By Steve Tillman

Steve Tillmann is Plantra's Field Research Director and together with business partner Joe Lais the two have over 40 years of experience designing, manufacturing and pioneering the use of grow tubes and other plant establishment and protection technologies. This extensive experience has led to industry standard products and practices and includes inventor on 6 patents.

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remain succumbed to drought or have been heavily browsed – a year's worth of potential growth has been lost. Surveying the situation you realize that your only option is to replant the entire project next spring.

Does this story sound familiar? You may have experienced a similar scenario or know someone who has. Many seedlings planted into wild settings don't survive to maturity due to impacts from wildlife, wind, and weed competition. Take heart, you're not alone. Seedling failure is all too common, but it can be avoided. Read on to learn what you can do to assure your hardwood plantings survive, thrive and succeed…..the first time you plant!

1. Start with a plan

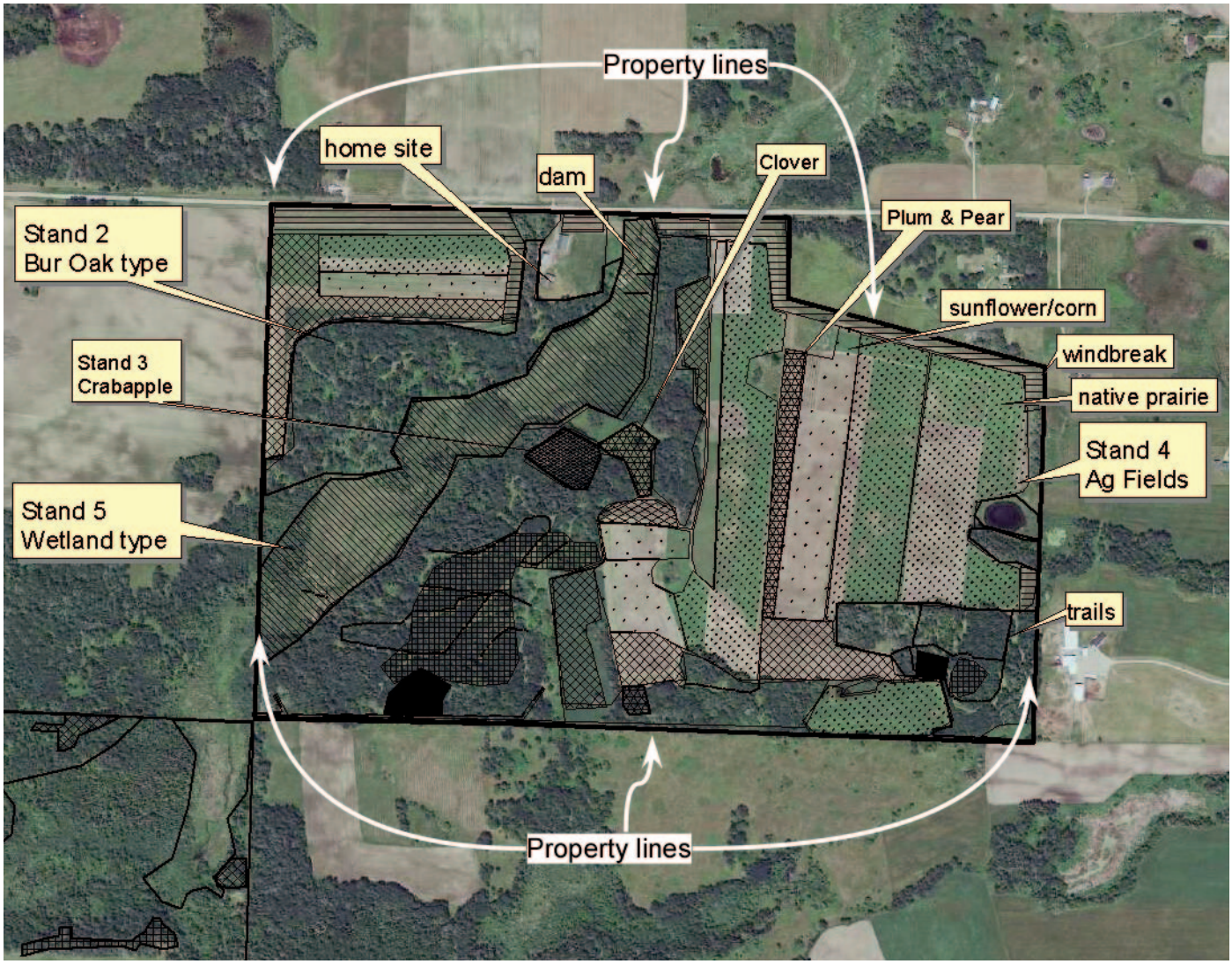
The adage "we don't plan to fail but we often fail to plan" applies to the planting field too. Critical to a successful wildlife planting is a well-developed plan to guide your decision-making and action. Whether your aim is to establish permanent food plots, increase protective cover, protect riparian zones or grow trees and shrubs for other reasons to benefit wildlife, the best plantings start with a detailed plan. Take some time to collect information for the topics outlined below to guide your planting project. Doing so will better focus your resources and efforts to "Plant Like You mean It" and make sure your planting *Survives, Thrives, and Succeeds!*

a. **Planting Goals** – Setting planting goals and objectives at the beginning of the planning process and well ahead of breaking ground will pay big dividends later. This process is critical to make sure your physical and financial resources are focused and better-prepares others to help, whether for hire or volunteer service. To get started, answer the following questions:
    - Why am I planting?
    - What do I want to accomplish?

b. **For wildlife specifically** – Plan for specific wildlife requirements to guide plant material selection, layout, and other land management strategies. Determine what wildlife species of interest live in your area and identify habitat requirements that your site has the potential to provide. At a minimum, focus your efforts on "the big three" that wildlife depend on; food, water and cover.

c. **For other uses and benefits** – Identify additional project objectives beyond wildlife you may be interested in and develop strategies to achieve benefits associated with them. Examples include windbreak, soil retention, water quality, aesthetics, privacy, recreation, investment, legacy and other beneficial impacts your planting could yield.
    - When do I want to see specific results? Write your expectations down and be specific and realistic.
    - Short-term goals (1-3 years)
    - Mid-term goals (3-5 years)
    - Long-term goals 5-10 years and beyond

d. **Financial Resources** – Success in the field isn't free but neither is



Planting Site Map – Topographic maps or aerial photos delineated with plant material locations, access roads and trails, property boundaries, and other information can be excellent reference tools for planting crews and for future record keeping.

mediocre performance or outright failure from new plantings. It's important, early on, to establish a budget that takes into account what makes sense for your bank account and for what's practical in the field. It can cost significantly more to lose a new planting than to do things right the first time. A good strategy is to match the size and scope of your planting to only those trees and shrubs you can truly afford to see survive and grow. By doing so you can "plant less but grow more" meaning that by committing resources to fewer seedlings to improve their chances for survival this could yield more trees and shrubs that live to maturity than by planting more seedlings and leaving their fate to chance.

We've all heard horror stories of plantings that for one reason or another fell apart and had to be replanted. While guarantees are hard to come by, the following should be included in your planting budget to get the best results in the field:

- **Site assessment** – Here, we're talking about a baseline inventory of your planting site. Information you need to know relates to geography and growing conditions which will help guide planting choices about what and where to plant.
- **Site preparation** – Depending upon the situation, a variety of steps may be required to prepare a site for planting. These can include trail construction and ongoing access to the planting site, invasive species removal, weed control, and resources needed to map and flag the site for individual seedling location.
- **Plant material quality and quantity** – Quality planting stock costs more but you've heard it before, "you get what you pay for." Consider quality when choosing a nursery and budget only for the number of plants you can actually afford to protect and nurture through to full establishment. Planting without taking steps to assure survival and then hoping for the best can be a recipe for disap-

pointment at best and the need to replant, at worst. "Plant Like You Mean It" means only planting what you intend to Survive, Thrive and Succeed.

- **Plant growth and protection plan** – Don't just plant. Grow and protect your seedlings. Be sure to budget for seedling establishment "tools" to keep your newly planted stock from being killed or damaged by wildlife and other impacts at the beginning of the process. It is much more cost-effective to establish seedlings with tree growth and survival products from the start than to replant lost or damaged plants afterwards). Important growth and survival products to budget for include the following:

e. **Grow tubes for trees (sometimes called tree tubes or tree shelters)** – Mini greenhouses to protect and grow individual nursery-grown seedlings, wild "volunteer" seedlings and direct seeded nuts or acorns. Be sure to choose the proper height of grow tube best suited to protect against browsing by critters. For example a 3ft grow tube can protect against rabbits and nutria but if deer are a problem, 5ft or 6ft grow tubes will be needed. Also, choose grow tubes that are best suited to available sunlight conditions for each seedling location. Go with a grow tube supplier that offers options for full sunlight conditions and for those sites that may have partial shade for part of the day (See Figure 1).

Special Note: It is important to remember that seedlings require a minimum of 6-8 hours of full sun during the growing season regardless of whether a full or partial sun grow tube is used. Do not use grow tubes with seedlings in shaded understories as sufficient sunlight will not be available for survival and growth.

f. **Grow tube support and training stakes** – Grow tubes require stakes for support while the trees are small and the best stake material, hands down, is fiberglass. Fiberglass stakes flex in the wind which helps trees grow stronger, straighter stems from the start. Nurseries have long used fiberglass stakes to grow and train high value shade and ornamental trees and wild grown trees can benefit the same way. When choosing a fiberglass stake, make sure the material is UV resistant for many years and multiple uses. When reused, the cost per tree with fiberglass stakes can actually be less than wooden stakes (See Figure 2).

If a natural stake is required, white-oak heartwood or other decay resistant wood should be used. Avoid "mixed-hardwood" stakes or bamboo if the desired field is more than 1-2 years.

- **Tree bark protection** – To protect larger sapling trunks against antler rub and chewing rabbits and other rodents.
- **Weed barrier** – Stop weeds before they start and make sure your plants get all the sun, soil moisture and nutrients they need to compete.
- **Fertilizer** – Early nutrition doesn't end at the nursery, it needs to continue in the field. Be sure to use encapsulated, time release fertilizers which can be used in the planting hole.
- **Repellents** – To use in conjunction with physical protection like grow tubes and tree bark protectors.
- **Rodent control** – Install gopher guards below ground and encourage natural rodent control by attracting owls, hawks, snakes and other rodent predators to your planting site.
- **Planting site monitoring** – Don't forget to install basic precipitation monitoring equipment to help determine if supplemental watering is needed. Also consider installing trail cams to keep track of wildlife using your planting area and to keep track of human visitors including those unexpected.
- **Planting equipment and labor** – Even volunteers are not free. Budget for paid labor or for food and other amenities you wish to provide your volunteer planting crews.
- **Planting aftercare follow-up** – These include specific tasks to assure long-term success of your project and can include ongoing weed and invasive species control, supplemental watering, periodic site review to assess corrective measures if needed, and other maintenance necessary to keep your plantings growing strong.
- **Professional fees** - Property land surveys, tax advice, planting consulting fees and other professional services should be planned for early in the process. Doing so can avoid costly adjustments later and head-off potential problems you might not have considered.

2. Conduct a planting site assessment

With a base plan and budget in progress it's time to learn as much as possible about the planting site to make the best decisions about what to plant, where to plant it, and what needs to happen to grow it and protect it. Site geography, climate and growing conditions are part of a comprehensive analysis that includes the following topic areas:

- **Seedling threat assessment** – Knowing what can stand in the way of seedling survival and growth can go a long way towards choosing strategies to combat common threats both above and below ground. Of special note are the "Big-3" threats; Wildlife, Wind, and Weeds. Wildlife, from shoot-browsing deer to root-eating gophers, eat or kill far too many unprotected seedlings. Wind can desiccate new shoots and leaves and weeds rob young trees and shrubs of sunlight and moisture. Preparing for these and other threats will put your planting on the fast track.

Quick Tips

If prescribed burning is in the plan, confirm with your local jurisdiction specific requirements regarding permits and safety precautions. When it comes to using chemicals, always follow label instructions and review use in the context of your planting site especially as it relates to sensitive areas such as riparian zones.

- **Biological assessment** – Information about existing plant communities, local wildlife surveys and USDA plant zone hardiness ratings will help with decisions about what to grow, where to grow it and if special situations exist that offer unique opportunities for both plant and animal species of concern.
- **Physical characteristics** – Climate, soils, drainage and sunlight patterns matter. Understanding your site's physical characteristics can impact everything from what to plant, where to plant, as well as where and how to construct permanent and semi-permanent access roads and trails if necessary.
- **Boundary survey** – Often assumed but not always verified, knowing your exact property boundaries can be critical to maintaining good neighbor relations. A little time and effort spent having your property surveyed (if it hasn't been already) can pay off down the road to avoid potential disputes with adjacent landowners. Once verified, physically mark your property boundaries and if possible have them plotted on aerial photographs and topographic maps for reference in the field. Be sure to review this information with your help, especially with those operating heavy equipment of any kind.
- **Structural factors –** Consider limitations such as proximity to utilities (both above and below ground) and site access logistics such as stream crossings and trail conditions. Ongoing access to the site will be important for planting maintenance including transporting supplemental water to seedlings in the event of drought conditions. Seedlings often require water between rains and it's important to plan for this requirement.

One additional structural factor to consider involves future land planning in your area. It is worth contacting your county planning office and other land management sources to learn if plans exist to develop or otherwise alter adjacent properties. Talk to your neighbors and others in the area to identify land use that may have an impact on your plans. Doing so may influence your decisions to choose specific plant materials to compliment or mitigate the potential impact on your property.

- **Human Resources and Equipment Required –** Determine if you will perform all or part of the planting or if you should hire help. If you're not sure, answer the following questions:
- Do I have the knowledge and skill to oversee the project? If not, can I acquire them ahead of time?
- Do I have the time it takes to do the

job right?

- Do I have the site preparation/planting tools and equipment that will be required? If not, can I afford to acquire or rent them?
- Do I have access to the manpower needed?
- Do I have resources to safely transport and temporarily store seedlings after receiving them from the nursery?

If the answer to one or more of the questions above is no, you may consider contracting services for some or all of your planting. But before hiring a contractor, research potential candidates including the following information:

- Experience – Does the contractor have the experience your planting requires? How long have they been involved in wildlife plantings like your project including site preparation, planting and aftercare?
- References – Does the contractor have references from other clients readily available for you to research? Do you have independent sources who have worked with the contractor that could provide reference information?
- Project Assurance – Will the contractor sign a consulting or project contract specifying prices for service and a guarantee for agreed upon results related to the work performed?
- Project Insurance - Does the contractor have adequate general liability and equipment (auto, field equipment, etc.) insurance?
- **Cost-share potential –** Some plantings may be eligible for cost-sharing and other landowner incentive programs offered through grants and government agencies. Incentives can apply to a range of plantings including riparian buffers, living snow and wind fences, bottomlands restoration, and species of special concern. If cost-sharing is of interest, contact your county conservation district or state district forestry office to learn more. If your property qualifies, cost-sharing can help stretch your planting dollar further.
- **Record Keeping -** Before breaking ground add photos and video to your field log or diary. Doing so will provide a visual "before" assessment to compare later, add to the legal record, and serve as a resource to guide future plantings. In addition, start a planting log or diary to record your activities. This information can provide invaluable reference information to measure performance and solve problems that may come up.

3. Choose the best plant materials from the best sources

- Choosing a nursery – Research potential nurseries

and select a supplier who can be of service before, during and after you plant. The best nursery is one that not only offers seedlings suited to your plan and site but which also stands behind its plant materials with a warranty, has a knowledgeable staff and offers specific recommendations for planting.

- Get additional help - Consult with land management professionals including wildlife biologists to develop specific strategies for your property. Wildlife conservation organizations are a good source of information and some like The National Wild Turkey Federation have biologists on staff to assist landowners with wildlife habitat planning.
- Plant selection criteria for wildlife should include:
    - Food – Variety is the key to providing year-round nutrition. Select food producing trees and shrubs that bear food at different times of the year and consider species that hold a crop late into fall and early winter.
    - Shelter and Cover – Choose plants that provide thermal cover for protection from the elements including roosting, bedding and loafing. Many trees and shrubs provide visual screening and concealment important for nesting and rearing while also serving as protective travel corridors.
    - General guidelines
- Choose plant materials that are the best match to your region and site including soils, moisture and available sunlight.
- Determine type of planting stock best suited for your project (containerized VS. bare-root).
- Determine how many seedlings will be needed (also driven by your budget).
- Determine the best time of year to plant in your area – confirm with your nursery.
- Choose a blend of species to extend the range of benefits to support your goals.
- Lay out your planting to achieve optimal physical distribution as in the case of edge creation, successional plantings and forest openings. Plot this information on maps or aerial photos for reference by field crews and future record keeping. (See Figure 3).
- Ordering plant stock - Order as early as possible, even the year before actual planting if possible. Doing so will help make sure the species you want to plant are available when you want to plant.

4. **Plant Right and "Like You Mean It"**

Phase I - Pre-Planting Site Preparation

Well before seedlings arrive, maybe even the year before planting, an important preparation step involves removing invasive species and other competing vegetation that can rob young seedlings of sunlight, soil nutrients and moisture. Depending upon your situation, a variety of weed control methods can be used including the use of mowing, disking, grazing, prescribed burning, and chemicals.

With weeds and other competing vegetation under control it's time to lay out the planting pertaining to your plant material choices, site conditions, and property boundaries. A good strategy is to flag or otherwise mark the planting by location and species.

Next, finalize a seedling transport and handling plan which should include a timeline for the arrival of plant materials and proper temporary storage. Careless handling of seedlings prior to planting can result in significant mortality. Bare-root stock is particularly vulnerable to poor care and should be stored away from direct sunlight and kept cool and moist until planted. As little as five minutes on the tailgate of a truck in the hot sun can dry small root tips and kill a seedling. Don't soak roots but do keep them moist in the packing material provided by your nursery. When in doubt, always consult with your nursery for their recommendations for best storage and handling. Acquire your plant growth and protection materials like grow tubes, support stakes,

Before: 5ft grow tubes and weed barrier fabric installed and ready to protect and grow bare-root fruit tree seedlings planted in mid-May in NW Minnesota not far from the Canadian border. Average seedling height at time of planting was 12-15 inches. Site conditions included relatively short growing season, shallow and rocky glacial moraine soils, full sun location, and unprotected site with moderate to high winds.

After: Same planting in August of 3rd growing season which included two summers with below average rainfall. Survival and growth exceptional with some trees already producing fruit.

weed barrier fabric, and fertilizer ahead of time. Have these items ready to install at the time of planting will help avoid losing newly planted stock to critters and the elements.

Lastly, schedule planting help in advance to get your seedlings in the ground and protected at the same time. These preparations should include making sure all necessary planting gear is staged and ready to go and that refreshments and food are available for your crew.

Phase II –Planting Day Activities

Your seedlings, planting tools, and growth-survival materials are staged, ready to go. The planting crew is standing by and a field lunch is in the works. It's time to plant, so let's go over some general planting guidelines starting with the planting hole. Sometimes, in the rush to get trees in the ground, planters can skimp on the important step of digging a big enough planting hole.

There's an old rule of thumb that states "if you've got a five-dollar tree then you need a ten dollar planting hole", meaning the hole needs to be at least twice as wide as the root area and deep enough to allow roots to extend their total length after planting. Hardwood stock, especially bare root seedlings with larger root systems, need more room to allow the roots to "fan-out" for the best transport of water and nutrients to the roots.

A larger planting hole will also help avoid root crowding and "j-rooting" that can kill seedlings. J-rooting can be caused by pushing roots into shallow or narrow wedge holes causing roots to angle back up in response to crowding. To avoid these and other problems, be sure to dig your planting hole big enough to allow roots to expand to their

Quick Tips

Dig planting holes BEFORE removing seedlings from protective bags, pouches or coolers. Keeping the seedlings properly stored until the exact time of planting will keep the roots moist and ready to grow.

proper depth and width. This is a good time to add fertilizer packets with time released nutrients to the planting hole. Be careful to avoid pouring raw fertilizer into the planting hole as this could "burn" the roots. Instead, use encapsulated fertilizer that safely releases nutrients over time. Remember, the nursery provides safe and early nutrition for seedlings, so should you.

With a proper planting hole ready, place the seedling into the soil and if bare-root, untangle and spread the roots to maximize the area available. Avoid pruning the roots back. Instead make a bigger hole to accommodate them. The root tips are where most of the nutrient and water absorption occurs. You paid good money for those roots and they're the engine that is going to drive early growth. Keep them and your seedlings will get a better start.

Next, keeping the seedling vertical, gently backfill the hole with soil making sure the seedling root collar (the slightly raised ring where the the roots and stem meet) is at ground level when finished. Pack the soil firmly leaving a slight rim of soil about 8-10 inches in diameter around the seedling to hold water.

Immediately after planting the seedling needs watering. It's best to soak the root zone thoroughly, saturating the surrounding soil. Doing so assures adequate moisture during the initial acclimation phase. If subsequent rains are in short supply supplemental watering may be necessary. Many a planting has been lost to

drought conditions that could have been mitigated with supplemental watering. Planting only those trees and shrubs you can afford to see survive and grow includes being able to provide additional water if Mother Nature doesn't cooperate. If supplemental water is needed, knowing where to water is important. For seedlings in their first season, the roots are likely still concentrated in or near the planting hole, so watering close to the stem (6-12 inches) is best.

Once seedlings are planted and watered, growth and survival products should be installed to assure survival and fast growth. Critters and wind kill countless seedlings before they ever get going. It's commonplace in unprotected wild plantings for significant seedling losses of 50% or much higher in the first seasons. One of the best solutions ever devised to prevent mortality and promote healthy, balanced growth in hardwood seedlings is the grow tube (also called tree tube or tree shelter).

Properly designed grow tubes act like mini-green houses that create a micro-climate for healthy, balanced growth all while providing physical protection from drying winds and hungry critters. When deciding a grow tube be sure to choose a design that optimizes sunlight and provides venting in tube heights above 3ft. Optimal sunlight in a grow tube will encourage rapid but balanced growth and venting allows for faster CO2 replenishment during the growing season and helps promote proper dormancy prior to winter. Grow tubes protect young seedlings above ground, but don't forget other products like weed barrier fabric to block competing weeds and gopher guards to protect the root zone (See Figures 4 and 5).

5. Planting Follow-up

With the planting phase complete and seedling survival and growth measures in place, it's time to prepare for follow-up in the field and in the office. For some, simply planting "green side up" and walking away to let chance and the elements dictate the fate of young seedlings is OK. For those who plant like they mean it this approach falls short of the mark. While planting with the bare minimum and walking away might work occasionally the odds are overwhelmingly against long term success. To assure your plantings benefit from the planning and work we've discussed so far, important after-care in the field and careful record keeping need to take place.

First let's address field aftercare. This involves inspecting the site routinely during the first several growing seasons. Take time to physically inspect your seedlings and take photos or video for later reference. Update your field log or diary. What's the condition of your planting including survival and growth? Are the grow tubes firmly in place and doing their job? Are the weeds under control? Are gophers killing some of the seedlings? Is supplemental water needed? Are insects causing damage? Is there a need for additional invasive species removal? What information did your trail cam images and weather monitoring equipment yield since your last visit? These and a host of other issues can be surveyed with regular field trips. In addition to providing necessary follow-up, having an excuse to be back in the field is generally a good thing.

Field inspections and ongoing aftercare are essential to good follow-up. Equally important is data collection and record keeping. "Nothing measured" often means "nothing managed." Comparing what is seen to what can be measured determines progress towards your original goals. Collecting data on survival, growth, and site conditions can confirm that the planting is either on track or uncover potential needs for corrective measures. Keeping detailed field notes in a diary and accurate financial records in a ledger form will provide much needed reference information as your planting matures.

Conclusion:

It is common to hear mention of how many trees one person or a group of people have planted at one time or over a period of time. However, while the number of seedlings planted is often well known, the number of seedlings that survive to maturity is not. Measures of success need to include efforts to increase survival and growth for EVERY seedling planted because, in the end, the seedlings that survive and thrive are those that matter most.

Use the strategies discussed here to increase the success of your next hardwood planting; make a plan, conduct a detailed site assessment, choose the right plant materials from the right folks, "Plant Like You Mean it", and follow-up. These strategies may require investing a little more up front but they can actually save you time, money, and frustration in the long run. Best wishes for your future planting!

Quick Tips

Avoid Overwatering. While it is important to keep your seedlings adequately watered during their first seasons, take care to avoid adding too much water. Roots require oxygen during the growing season so it's important to avoid saturating the root zone to the point oxygen is depleted. A quick way to determine if young seedlings could use supplemental water is to simply take a screw driver or similar tool, choose a spot 8-12 inches from the seedling and dig down at least two inches. A good rule of thumb is to use your thumb (and fingers) to test. The soil should be damp or moist to the touch. If it is dry, it's time to water. If it's soaking wet, there's no need to water at this time. When watering, be sure to check that water is draining into the soil and not running off into adjacent areas. Be sure to return few days later and check the soil moisture again.

Songbird Abundance and Diversity Trends from Early Successional Quail Management

G. Ryan Shurette

G. Ryan Shurette is a Certified Wildlife Biologist.

Native grasslands of the Midwest and open pine savannahs in the Southeast are now two of the most imperiled ecosystems in North America. (Photo by National Park Service)

There was a bright pink sky at daybreak that particular spring morning a thousand years ago, on the once-broad grasslands where now lies Tulsa, Oklahoma. A loud chorus from the many species of grassland birds rose up with the sun from out of the still prairie. As the morning progressed, gentle winds stirred the tall bluestem grasses. A few cumulus clouds began to swell upwards on the horizon. It had been a fairly dry year and no rain had fallen in over three weeks. Some American bison grazed in the distance. A bobwhite whistled his three clear notes from one of the few trees in sight; a big gnarly blackjack oak. Most of the dry grass the bobwhite called out over was from the previous growing season, individual tall clumps that collectively formed a sea of amber and green. New, chalky blue and green shoots were making their way up through the taller thatch of yesteryear's growth. As the morning grew warmer, and after the bobwhite had flown off into the direction of a

calling hen, the bright sunny scene suddenly grew much dimmer. One of the scattered tall thunder cells moved overhead with its bright silver-white lining contrasting against a cobalt blue atmosphere. Suddenly, with a deafening "BOOM!" and a white flash, the old oak was split apart and several splintered pieces of smoking blackjack fell onto the prairie. A couple of small fires, ignited from the strike, slowly kindled around and smoked in the bunchgrasses. Then, as the two flames spread, ever more quickly and pulled together, a strong headwind rushed in and drove the fire eastward for days like a herd of buffalo across the plains and hills of the region.

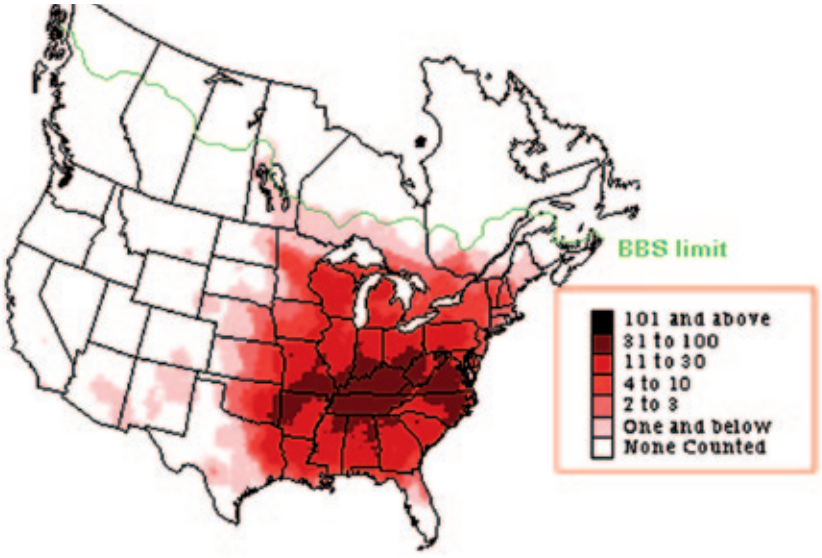
This type of scene undoubtedly occurred countless times over the past several thousand years, shaping not only the prairie grasslands of the Midwest but also the uplands and pine savannahs of the southeast, all the way into south Florida. Pine (especially longleaf) savannahs are essentially prairies with some fire-tolerant trees scattered about. The Native Americans, as we know, also ignited millions of fires across the country. Although there was widespread disturbance from bison grazing, it was largely this frequent fire that helped create the open early-seral habitats used by the many species of birds associated with these grasslands, including bobwhites. Open fire-maintained grasslands and pine forest communities have been shown to represent some of the most diverse ecotypes in temperate North America, providing critical habitat for many threatened and endemic bird species (Peet and Allard, 1993; Noss, 1988, Knopf, 1994). It has been estimated that longleaf pine forest systems once occupied as much as 90 million acres, and tall-grass prairies once covered more than 160 million acres, in pre-European settlement times. Of this original acreage, only about 4% currently exists today, and much of the remaining grassland and longleaf forest has been altered from its original condition by fragmentation and fire suppression. In addition, many of these original open lands have been converted to agricultural crops, exotic pasture grasses (including fescue, Bermuda, and bahia grass,) or pine plantations. Native fire-maintained grasslands and open pine savannahs in the eastern half of the country are now two of the most imperiled ecosystems in North America. Considering this drastic change, it is easy to see why so many grassland birds, including the bobwhite, have become so localized on the landscape.

Quail Management Mimics Historic Grassland Bird Habitat

As we have discussed in previous *Wildlife Trends* articles, the mainstay of good bobwhite habitat is the herbaceous understory (native grasses, legumes, and forbs) that provides cover and food. This same abundant understory also often supports a diverse assemblage of passerine birds (otherwise known as perching birds or songbirds), many of which are now uncommon. Therefore, quail managers are actually indirect managers for multiple bird species. This article will discuss the effects that quail management practices have on these other bird species.

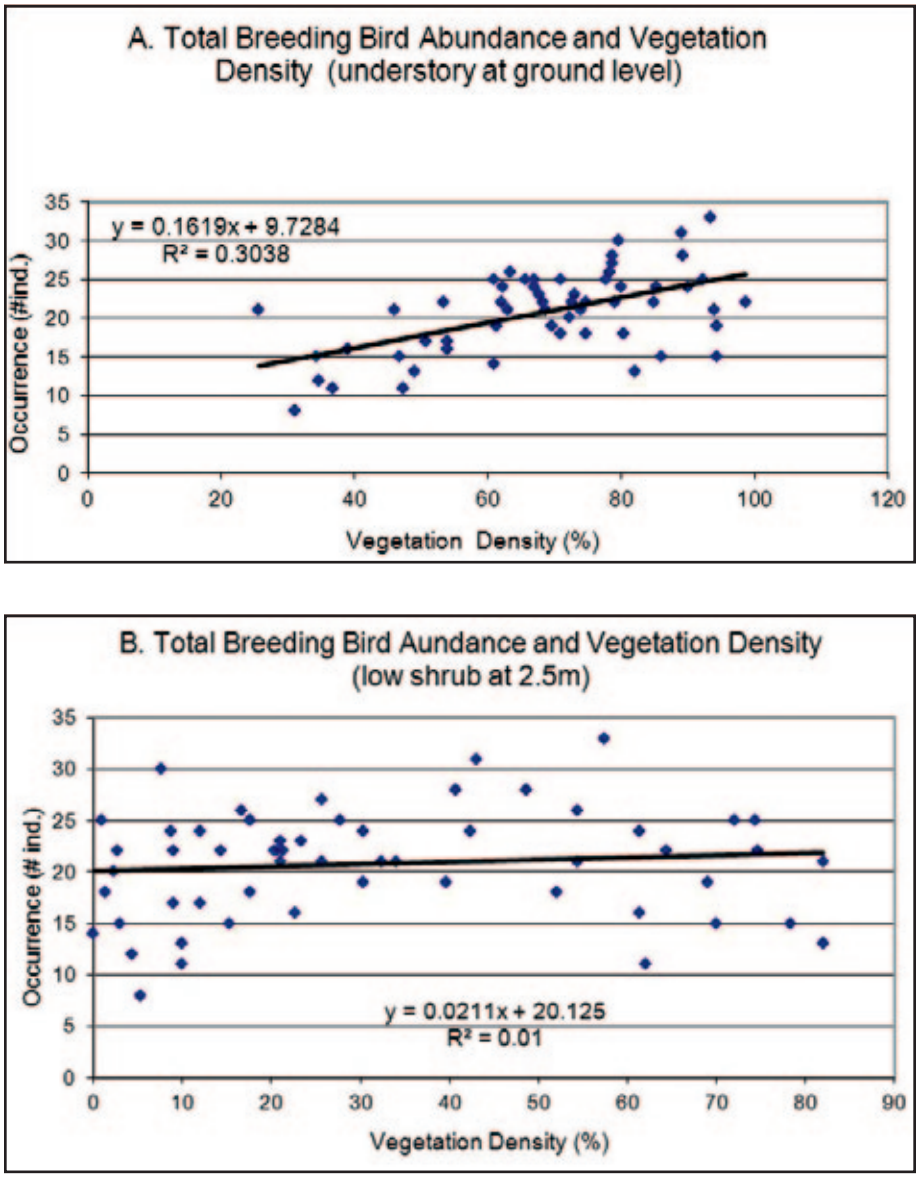
There have been a number of field studies over the past few years looking at the indirect effects of the many quail management practices (including thinning, burning, hardwood control, herbicide applications, mowing, disking,

Shrubby vegetation is important to many open ecosystem birds including the Indigo bunting which breeds in the eastern U.S. (Photo from National Park Service, Range Map from USGS).



native grass restoration, sod-forming grass eradication, etc.) on non-game bird communities. The results of these studies vary depending on where in the country the study occurred and what specific type of management was taking place. For example, grassland restoration activities in western Kansas would likely benefit birds like the lark bunting, whereas the same management in southern Georgia may yield more frequent detection of Bachman's sparrows. These two birds are not found in the same geographic regions. So the range of each species comes into play when talking about which birds one would expect to find in good quail habitat for a given location. Most often however, there is a general trend of finding higher densities of early successional bird species in intensely managed quail lands, and those are often the species that are now rare or declining in numbers. Species like Henslow's Sparrow, Grasshopper Sparrow, Eastern Meadowlark, Vesper Sparrow, Greater Prairie-Chicken, Dickcissel, Bewick's Wren, Field Sparrow, Prairie Warbler, Eastern Towhee, Bachman's sparrow, Le Conte's sparrow, and Indigo Bunting are all dependent on early-successional vegetation and all of these species are experiencing long-term declines.

Regardless the location, it has been shown conclusively that desirable vegetation composition (a diverse understory) and structure (openness) can affect the diversity, abundance and make-up of bird communities in grassland and southern longleaf ecosystems. For example, I conducted a study in central Alabama where I compared breeding bird communities in two different types of habitats. Fifty-seven points were randomly selected within designated upland longleaf stands, 29 of which were located in shaded, unmanaged longleaf stands with at least moderate hardwood mid-story densities (untreated sites). The remaining 28 points were located in open longleaf stands that had been regularly burned, had received mechanical midstory reduction, or otherwise provided suitable quail habitat (treated sites). For two breeding seasons I surveyed and recorded all the bird species that were using the stands. I also took vegetation density measurements from each of the points at different height levels (ground, 2.5, 5.0, and 7.0 meters) so I could see how the bird communities responded to the various layers of vegetation.



Total breeding bird abundance versus vegetation density values measured at A) ground level, B) 2.5 meters, C) 5.0 meters and D) at 7 meters in longleaf pine stands in Alabama (from Shurette et.al., 2007).

In the Alabama study, early-successional species such as Yellow-breasted chat, Bachman's sparrow, Chipping sparrow, Indigo bunting and Prairie warbler were much more common in open stands, while hardwood-associated species such as Red-eyed vireo and Yellow-billed cuckoo were more frequently observed in untreated stands, although total bird diversity did not significantly vary among the two habitats. As the amount of ground level (grassy understory) and shrub level vegetation increased, the total bird abundance increased, and as the mid- and upper levels of vegetation (mid-story) increased, total bird abundance decreased (Figure 2). In other words, an abundant grassy understory held a higher density of birds than the more shady stands where the cover and photosynthetic energy (that ultimately generates food) was captured higher up towards

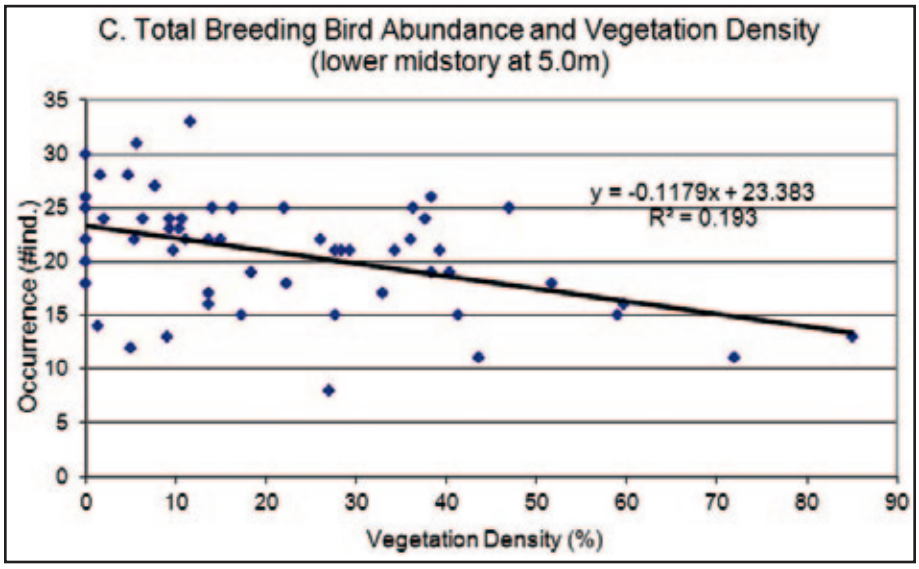
the canopy. Several species (including Northern cardinal, Carolina wren, and White-breasted nuthatch) did not differ significantly in abundance between the two longleaf communities in that study.

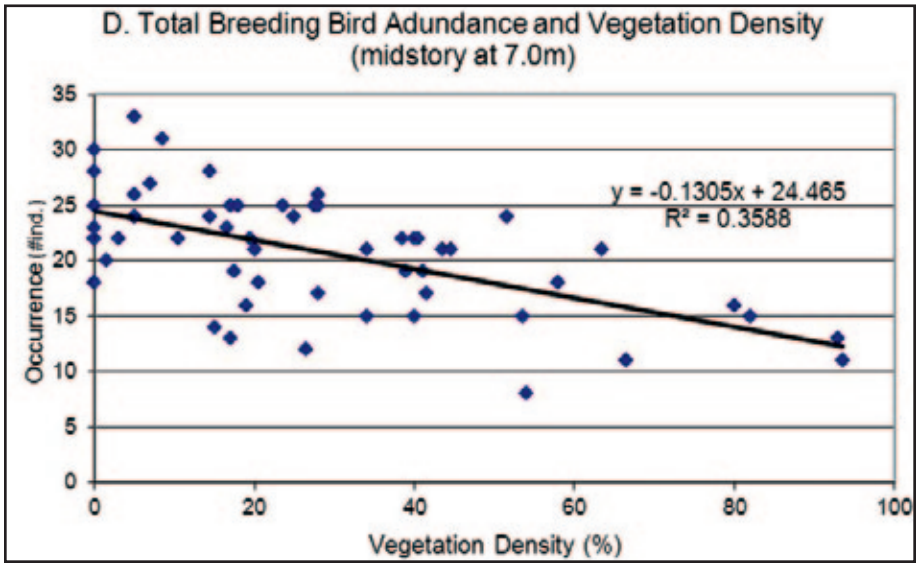
Studies in Nebraska (Engberg, 2004) have shown that both the size of grassland restorations and the type of vegetation restored significantly influenced that abundance and species richness of uncommon grassland bird species. In most cases, larger areas of quality native grass cover were more likely to hold more of some species of grassland birds. Interestingly, this is not always the case in all species, as shown by several other studies. Dickcissels (See Figure 3), for example seem to be tolerant of fragmentation and have even been shown to prefer smaller (25 -50 acres) grassland patches in some Illinois studies (Herkert, 1994). This suggests that quail managers, even on modest sized tracts of land, can provide significant benefits for some of these early-successional birds that are in trouble across their range.

Native Bunchgrass versus Pasture Grass for Birds

There's a lot of ecological difference between an open Bahiagrass pasture and an open native savannah or grassland. A thick lush sod formed by an exotic pasture grass is great for growing cows. For quail habitat, however, this situation is only slightly better than a paved parking lot. Just as quail need the structure that native bunchgrasses provide for nesting, maneuverability and access to the ground, so do some species of non-game grassland birds. Individual species of grassland birds utilize different grass heights and conditions. In Montana, McCown's longspurs, for example, nest in sparse plant cover. Baird's sparrows, conversely, need abundant overhanging bunchgrasses for nesting and will abandon an area if the surrounding grass becomes too sparse. In longleaf and loblolly pine stands in South Carolina, areas preferred by Bachman's sparrows consistently had high native bunchgrass vegetation (Dunning et. al., 1990). This is not surprising but just because the understory is abundant however, it doesn't necessarily mean it is good Bachman's habitat. Bachman's sparrows have repeatedly been documented to occur in greater abundance in areas that have been frequently burned (Meyer, 2006). In slash pine plantations in northwest Florida, sites burned at least once within the previous 4 years held significantly more Bachman's sparrows than unburned similar sites (Tucker et. al., 1998) and in mature pine sites in Georgia, Bachman's sparrow relative abundance on burned sites was significantly greater than on unburned sites (White et. al., 1999).

While some grassland birds (like the bobwhite) are not too tolerant of pasture grasses, the truth is that some prairie species in the real world do actually have to rely on pastures, hayfields, small grain croplands, fallow and old fields, and idled croplands for breeding habitat. Since there are so few native grasslands left, these "surrogate grasslands" in agricultural landscapes, provide most of the current nesting habitats for grassland-nesting birds (USDA, 1999). This is probably truer with the prairie species of the Midwest than for longleaf-associated birds of the southeast. Eastern meadowlarks, Eastern Kingbirds, and Loggerhead shrikes will often forage and nest in pastures more often than will bobwhites, although it is not their preferred, or natural, habitat.





Strip habitats including right-of ways for roadsides, railroads, power lines, field borders, and similar linear grassland habitats maintained in pasture grasses can provide some nesting and foraging habitats too. As a general rule of thumb however, the most productive habitat for native early-successional bird communities contains the natural vegetation for that particular location, and that would most likely be some suite of native bunchgrasses.

If you are interested in converting existing pasture lands (with exotic grasses) back to native grasses for bobwhite quail and the associated bird community, there are some critical steps to take prior to restoring native species. It is generally very important that the exotic species be controlled or eradicated before planting any native seed. Information regarding exotic species control, herbicide applications and timing, seed source/species selection for your region, and expected maintenance, is now readily available online. You may also contact your local extension agent or state wildlife agency for more information or to find a restoration specialist in the area.

"I Can't See the Grasses for the Trees"

A wise man once said, "It is easy to let your fields become shady…". Okay, actually I just made that up, but it is the truth. While some environments won't readily allow trees to grow up in open areas (those that are extremely dry, sandy, rocky, steep, shallow, poor, or otherwise unfriendly to dense woody vegetation), most of the land in the eastern half of the country will succeed to some type of forest if left alone for several years. It is true that timber grows pretty slow when it's waiting to be sold, but it is amazing how easily a tract of open savannah becomes shaded and overcrowded with trees and woody encroachment. With all the other things to do and the hassles of burning, bush-hogging, or disking, it just happens. Shrubby vegetation and a little bit of succession is important to many open ecosystem birds including indigo buntings, field sparrows, and yellow-breasted chats. However, as the shade gets darker, the early successional wildlife species start packing their bags.

Granted, there will most likely be several species of songbirds hopping around, singing, and nesting in these trees that sprang up seemingly overnight. Assuming you're within their range you'll probably see Carolina chickadees, Tufted titmice, Northern cardinals, and Pine warblers flitting around, perfectly content with the mid-successional habitat. However, the species of birds found in these young, common forests are generally common species of birds, not in any kind of danger from habitat loss. The birds we have discussed previously in this article don't like a lot of trees. Small patches or low basal areas of trees are compatible with most grassland birds' habitats, but remember the critical prerequisite to bobwhite and associated species habitat is sunlight reaching the ground. Without this energy source, an abun-

dant herbaceous understory quickly becomes sparse and fizzles out. If quail or early successional wildlife management is a priority on your tract of land, thinning and burning will be an important practice for creation or maintenance of native patches of grasses and forbs. The utilization of these areas by grassland bird communities will generally continue as long as these areas are maintained in an open native state.

In Summary

Quality bobwhite quail habitat is typically compatible with local native grassland bird communities. As with bobwhites, the importance of fire in these systems cannot be overstated. By maintaining an open forest structure and native understory vegetation the basic needs for many of these declining birds can be met. With such a small amount remaining of the original prairies, grasslands, and open pine savannahs, quail managers are an important contributor to the conservation of native non-game bird species.

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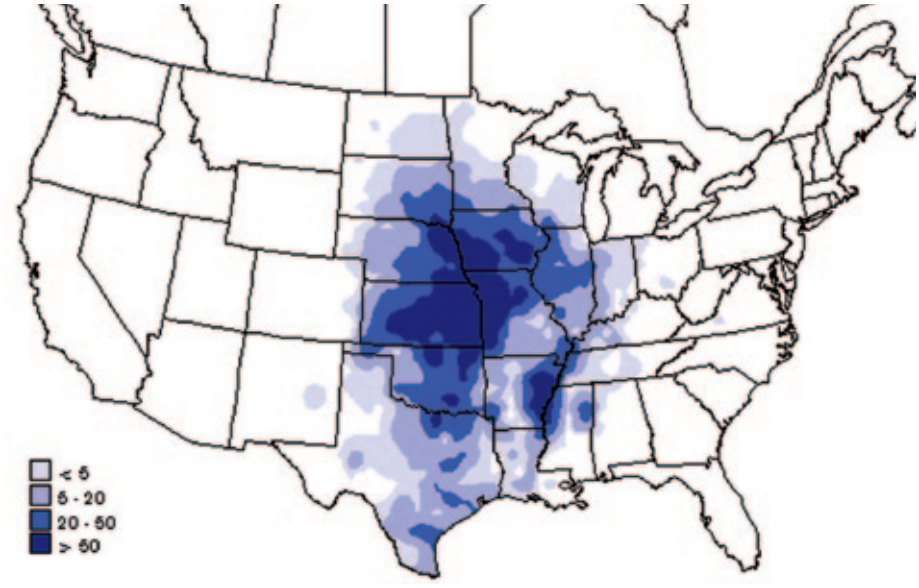
The Dickcissel is another species of grassland bird that benefits from native grasses produced by intensive quail management within its range. (Photo by US Fish and Wildlife Service, Range Map from USGS).



Pond Work in Winter

By Scott Brown

Scott Brown started Southern Sportsman Aquatics & Land Management in Spring 2007 and now has clients from Texas to Florida. Scott can be reached at scott@southernsportsmanaquaticsandland.com or (214) 383-3223.

During winter maintain fish feeders and store batteries fully charged in a warm, dry location.

People don't think there's much to do in winter as a pond manager, but there is actually quite a bit that can be done. Most pond owner's minds are on hunting, holidays, watching football and indoor activities during the winter. There are actually many things you can be doing as a pond manager during the winter, and getting wet is not one of them.

Mowing or using a weed eater along the pond shoreline during late winter just prior to green-up is advised to expose plants to sunlight and promote growth. Do not perform this until just before the growing season to help prevent erosion. If done in fall or early winter, the soil is exposed for a long period of time and unnecessary washing of bank sediment could occur. You can also mark areas where you want vegetation to remain short for bank anglers to have access. Throughout the year, come back and periodically mow to keep open. Mowing cattails in winter, then treating

with herbicides in early spring as shoots begin to appear is a good technique for reducing or eventually eliminating cattail growth. Be careful not to mow any desirable or recently planted trees.

Mechanically removing (with machinery or by hand) dead aquatic vegetation that has either become dormant or was left from a fall herbicide treatment reduces its presence in the spring and reduces the amount of nutrients released into the water and organic material building up on the bottom. Organic build up can contribute to excessive planktonic algae bloom or filamentous algae growth (green slime on bottom or floating).

Planting trees should always be done just prior to the growing season. In and around the lake consider hibiscus, red maple, and cypress. These can provide habitat for fish and wildlife, shade for anglers and aesthetics to the lake. When planting cypress in water, make sure all the branches are above the waterline when it greens up. Also, stake all trees planted in the water because their first year the trunks are very flexible due to the water intake. After two growing seasons the stakes can be removed. Plant accordingly to the tree's needs and tolerances to the current and predicted water levels. Predator guards are a must. Protecting the young trees from something that is not there is better than not protecting them from the beaver that are there. Beaver will destroy trees both along the shore and in 2-4 feet of water. Consider planting soft and hard mast trees around your water body. This provides additional food for wildlife including deer and turkey, while adding to the pond aesthetics.

Trim any trees both around the pond and on the property that either needs it for shaping/control or to promote fruit or nut growth during the upcoming growing season. All trees can benefit from various kinds of pruning. Check the literature for the types of trees you have for trimming and trimming techniques to achieve the greatest benefit. Willows and wax myrtles can become invasive, but if you want to keep them around your pond, they need to be constantly trimmed and surrounding upcoming shoots cut at the ground or below. Also, thinning trees around and in the pond can be done. Where you have multiple individuals or a desirable mix with undesirables, they can be thinned to improve growth of remaining trees.

Having a commercial company build a dock is best done in winter especially if the company is jetting in poles and doesn't need to enter the water. Your activity around your pond is probably reduced and the dock will be complete before spring when you start using your pond more frequently. A feeder can also be added and turned on in the spring when feeding activity increases and water temperatures get to above 55° F.

Fountains and Aeration Systems can be installed or routine maintenance performed without having a great effect on the water quality. Fountains can develop calcium build up on the heads creating an undesirable pattern or creating unnecessary pressure on the pump. Aeration stones can also become clogged with muck and calcium build up reducing air flow and putting added pressure on the pump. These types of

Winter is the time to clean and perform routine maintenance on fountains and aeration systems, or installing new systems.

Cleaning or installing new wood duck nesting boxes should be done in early winter. This reduces any chance of wasps or snakes occupying the boxes and will have them ready when ducks begin searching for adequate nesting sites in late winter.

cleaning projects can be done with Muriatic Acid on site or taking them to the barn or garage and replacing when finished. Some aeration systems have air filters and/or carbon veins that occasionally need replacing. When turning on a fountain or aeration system that has been off for a week or more, or turning on a new one for the first time, follow the manufacturer's start-up procedure to eliminate water quality issues or causing a fish kill.

Winter is the best time to conduct a draw down. Draw downs can be used to improve bottom sediment, kill vegetation, reduce surface acreage for a large scale herbicide treatment in spring, or to conduct repairs to dams or outflow structures. A lake with high organic buildup (muck) on the bottom can greatly benefit from either exposing the bottom to dry up organics or drawing down and scraping and removing organics completely while increasing lake depth. Draining a pond down to expose submerged vegetation to cold temperatures to kill it and slow its growth and reduce coverage in the spring when the water comes up reduces herbicide costs for habitual plants being treated constantly. If a large treatment with an expensive herbicide is planned, drawing a pond down to reduce the acreage and amount of herbicide required saves money and improves the treatment by keeping a higher concentration of herbicide on the plant for a longer period of time. This technique is frequently used with a Fluridone (Sonar) treatment. Should repairs be needed to a leaking dam or repair/replace an outflow structure, completing during winter so restocking (if needed) can commence in the spring as it fills up helps expedite the process.

Reduce or stop supplemental feeding, and repair or clean fish feeders during winter months. If water temperatures get below 55° F in your area, feeding can stop. If continued feeding is desired, switch to a sinking feed, fed once per day during the warmest time,

Some draw downs are simple, but this one entailed drawing down, scraping out organics, increasing slopes and deepening areas where excessive vegetation growth had occurred.

Running gill nets in the winter can be cold, but this sampling gear is perfect for catching catfish and crappie that are not as susceptible to electrofishing as other species.

in about 6-10 feet of water. Do not dispense feed any deeper, as the dissolved oxygen may be zero at greater depths and fish may not consume. Feed has a lot of dust and cleaning feeders with a hose or blower can remove the dust and enhance operation. Once dry, oil any moving parts that can be oiled. Batteries should be slow charged when pulled and stored at room temperature. Batteries can also be disconnected from the timer and motor and left in feeders when connected to a trickle charge solar panel if temperatures are mild. For areas with colder winters, pulling the batteries is advised.

Stop fertilizing or dying lakes when water temperatures get below 65-70° F. Once water temperatures drop below 60° F planktonic algae growth stops along with most vegetation. In areas with mild winters, this needs to be monitored closely as to not have an explosion of undesirable submerged vegetation growth in late fall or early spring resulting in excessive submerged vegetation.

During winter, meet with your pond manager to strategize about what has been working, what has not, and budget for the upcoming year. Has the management plan and implemented techniques improved the fishery? And is it to your expectations, and/or achieving your goals and objectives? Have things been prescribed that have not been performed or performed incorrectly that were not beneficial or detrimental to success? If your pond manager is responsible for everything, then success and failure lies on him. If you or your staff are supposed to execute the strategy, work closely with the Pond Manager to assure you implement techniques properly and in a timely manner. During these meetings, both the Pond Manager and Landowner/Land Manager need to be open to criticism and prepared to change things to reach the set goals.

Liming needs to be done in the fall or early winter to allow the water chemistry to stabilize before spring and the fertilizing season begins. Liming is generally done to ponds that are under a fertilization program or where Alkalinity and hardness are below 20 ppm (parts per million), pH (acidity) below 6 and conductivity below 50 uS/cm (micro Siemens per centimeter). Liming is also performed in water bodies where big swings in pH readings occur daily, which can cause stress to fish of many species. Most areas require 1-2 tons of agricultural limestone per acre, but you should have both the water and surrounding soil sampled and tested for pH before determining the proper amount of lime to apply. Your Pond Manager or County Extension Agent can help you determine how much lime, if any, is needed.

Cleaning out or installing new wood duck nesting boxes should be done in early winter. That reduces any chance of wasps or snakes occupying the boxes, and will have them up and ready when wood ducks start searching for adequate nesting cavities in mid to late winter. Annually remove old nesting material and replace with fresh cedar shavings or sawdust. Use a predator

Try some recreation in or around your pond during the winter. These fish were caught a few days after Christmas in just three hours. They were held in a large fish cage before the photo and then released.

guard on nesting boxes lower than 10 feet off the ground where feasible. Make sure the inside wall has adequate roughness for ducklings to climb out when leaving the nest. Also, assure when placing new boxes there will be adequate cover from the nest to the water for ducklings. If no activity has occurred in boxes for 3-4 years, moving them to a new location may be necessary.

Fish attractors from artificial materials can be built in the warmth of a garage or barn. Christmas trees can be collected from friends, neighbors or tree lots that didn't sell them all (you may get them for free the day after) and put out when air temperatures are more pleasant. Be sure to place in 6-10 feet of water to assure the dissolved oxygen is acceptable all year round and do not place in the 20-30 foot deep holes where lack of DO may prevent fish from using them certain times of the year.

Electrofishing to evaluate a waterbody is not done during winter, but additional sampling for species not typically collected during electrofishing such as catfish or crappie can be done using other techniques. Hoop nets and gill nets during winter months typically collect these species that are not observed in great numbers during spring or fall electrofishing. As with all fish sampling, check your individual state's regulations prior to starting.

Enjoy the resource! Try some winter fishing, duck hunting or place a deer stand near the pond. Fishing in the winter can be phenomenal for crappie (if you have them) or largemouth bass, especially after a long cold stretch followed by a couple of Indian Summer days in a row which triggers fish to feed since they have been eating very little during cold weather with a slower metabolism.

Keeping Up With Changing Management Strategies

By Anna Huckabee Smith

Anna Huckabee Smith is a TWS Certified Wildlife Biologist® with Innovative Wildlife Management Services, LLC out of Mt. Pleasant, SC (IWMS_Smith@att.net). She has worked for both South Carolina and North Carolina state governments, first as the SC Department of Natural Resources Forest Stewardship Biologist and secondly the SC Comprehensive Plan Coordinator. She then moved on to become the NC Wildlife Resources Commission's first Urban Wildlife Biologist. Smith has a BS degree in Biological Sciences (1997), a Minor in Anthropology (1997), and a Masters in Zoology (2001), all from Clemson University. She is also a 2006 Fellow of the Natural Resources Leadership Institute (North Carolina State University, Raleigh).

An infestation of sericea lespedeza in an old field makes it unusable for the quail it was meant to attract. Credit: James H. Miller, USDA Forest Service, Bugwood.org

As a wildlife biologist, I often wonder if members of my profession should be required to take a version of the Hippocratic Oath. Medical doctors must promise, "First, do no harm" *(Primum non nocere)* so why not wildlife professionals and even land managers? After all, our prescriptions can be extremely beneficial or dead wrong, based on current information. Doctors used to think that blood-letting cured what ailed you but now know it doesn't work and can lead to unintended complications. In wildlife management, past advice given on what to plant or how to maintain a population of a species—although it seemed a good idea at the time—sometimes was found to be woefully inadequate or downright deleterious. In all fairness, though, the more research and data we collect over time, the more proficient we become. Sometimes, we all simply have to learn by trial and error. This is true for many disciplines. Over time, management strategies have changed and the land-

owner needs to make sure he is keeping up with the latest research.

Some of the more obvious changes that have occurred concern hunting seasons, daily bag and season limits, and regulations on the sex of the animal harvested. As we learned what worked best for maintaining populations, we have modified these regulations to fit the science (minus some political setbacks). In the not-so-distant past, the Forest Service's slogan was, "Only you can prevent forest fires." When we realized that excluding fire from systems dependent on this natural phenomenon was doing more harm than good, the slogan was modified to "Only you can prevent wildfires." This made prescribed burning more acceptable by the general public as a viable management tool.

Even now we are discovering advantages to conducting prescribed burns during those times that most closely match the traditional lightning-ignited fire season of the region and not just doing dormant season (winter) burns nationwide. As with disking at different times of the year, burning can release different species of plants, some of which can only flourish if released at the proper time of year. At first, suggesting to a land manager that he should conduct a spring or summer burn was met with skepticism since there was concern that ground nesting birds like turkey, quail, and some songbirds would lose nests and their populations would suffer. However, after much research, it has been found that the benefits to native plant communities and the habitat as a whole are far more beneficial than the loss of a few nests. In addition, many birds quickly re-nest if a clutch is lost. Since the goal has always been to restore the natural fire regime to communities that rely on it to maintain their natural diversity, it only makes sense to conduct such burns during the times when both the plants and animals that have evolved together through that relationship will most benefit.

Other management practices have changed as researchers and land managers gathered more data and observations. One example is predator control for quail lands which has been found to work only when all other limiting factors—such as nesting and brood rearing site availability—are considered. Otherwise, new predators will just move in to take their place and the prey population will still be without adequate means to protect themselves, reproduce effectively, or feed.

Also, we have discovered that planting food plots specifically for quail is ineffective at increasing quail populations. Of course quail will utilize agricultural plantings such as benne, sunflower, and sorghum, but large food plots only discourage use since quail neither like to venture far from cover, nor are they good scratchers and so need bare ground for foraging. The best methods to use involve strip disking rows at different times of the year to promote various native plant species for seed and insect production (with some

Bicolor lespedeza in the understory of a pine plantation. These bushes are over 5 feet tall!
Credit: James H. Miller, USDA Forest Service, Bugwood.org

An autumn olive loaded with fruits to be eaten and their seeds to be deposited elsewhere. Credit: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

bare dirt strips in between for dusting and easy access to fallen seeds). Also, providing a series of nearby thickets for cover is necessary, especially when these thickets incorporate native soft mast species such as blackberry for additional food. Utilizing a rotational prescribed fire regime to maintain native warm season grasses for nesting substrates will also encourage usage by quail and help offset losses to predators.

Probably the biggest change in wildlife management over the last 10 to 15 years has been in wildlife foods planted across the landscape. Usually what we discover is that when we look for a quick fix to a problem or to make things easier, things can go from bad to worse. Biologists and landowners are finally seeing that fast-growing, resilient non-natives are not the answer to our habitat needs, even on poor soils. "Naturalized" doesn't count either! Natives are getting a well-deserved second look for use in everything from landscape plantings to thwart deer to orchard plantings to attract wildlife.

Two such offending non-native plants whose uses were—pardon the pun—"rooted" in erosion control and wildlife management were sericea lespedeza (*Lespedeza cuneata*) and bicolor lespedeza (*L. bicolor*). Shrub lespedeza (*L. thunbergii)* has also come under scrutiny. All of these semi-woody Asian forbs were great at quickly covering exposed soil and were also touted as good quail food (seeds) and cover. Unfortunately, these species can quickly take over openings, overrunning native plant species, and making impenetrable monocultures that actually deter use by quail chicks and turkey poults. The seeds can stay viable in the seedbank for decades in some cases, so the plants can be hard to eradicate. Plant density increases when they are burned so herbicides are the best option for removal. Better options for hedgerows for wildlife food and cover include native lespedezas, partridge pea, and native blackberries and plums.

I remember going on a site visit for a local landowner and watching him do battle with another wildlife-food-gone-wrong: autumn olive. Its silvery leaves and yellow flowers hosted many insects, and I knew the fruit that was soon to follow would be consumed by a wide variety of birds and mammals. The landowner had been trying to keep the large shrub under control by mowing around it to remove the suckers. He quickly learned that this only increased its resprouting as does burning. Autumn olive—and its cousin Russian olive—are both Asian imports that were first used in landscapes and gardens but quickly became recognized for their wildlife value. However, because olives are prolific producers, all the seeds from those consumed drupes were being deposited across the landscape where the resulting shrubs began outcompeting native species. In addition, because autumn olive, in particular, can withstand acidic soils and salt, they began to alter the unique plant commu-

A great alternative to Japanese honeysuckle is our native scarlet honeysuckle (pictured). Credit: John D. Byrd, Mississippi State University, Bugwood.org

nities in these types of habitats. Autumn olives have root nodules that fix nitrogen in the soil and can therefore change the soil composition. Native fruit-bearing species that should be considered instead when looking for a replacement include dogwoods, winterberry, chokeberry, blackhaw, serviceberry, American beautyberry, highbush blueberry, smooth sumac, and native plums.

Vines can also be a problem. I can't believe that wildlife biologists, including myself, once advised transplanting Japanese honeysuckle (*Lonicera japonica*) onto a property to provide deer browse and cover! The plant spreads wildly through seeds, ground runners, and underground rhizomes. It climbs up native vegetation, overtopping them. This changes the understory composition as light and underground resources are consumed. Thankfully it does not tolerate severe winter temperatures or prolonged droughts so this has helped limit its spread north and west, respectively. Native alternatives to encourage instead include virgin's bower, Virginia creeper, scarlet honeysuckle, smilax, American bittersweet (NOT oriental bittersweet).

One of the most common wildlife food plot grasses, perennial ryegrass, can also be considered an undesirable species. Actually, it is fine to use in food plots if you aren't planning on putting anything else in the plot long term as ryegrass can be hard to eradicate once it has been established. Prolific reseeding and dense turf formation are problems that can arise. There are two varieties of ryegrass (not to be confused with rye which is a cereal grain); one is annual ryegrass (*Lolium multiflorum*) and the other is perennial (*L. perenne*). Both are from Europe and have been used as a food plot crop because they are hardy, easy to plant, cheap, and easily digestible by wildlife. The seeds are eaten by birds while the vegetation is browsed by deer. A native alternative is Virginia wild ryegrass. However, most wildlife biologists now advise that if you have decent soil as well as the equipment and money to buy a higher quality, more nutritious mix, you would be better served to do so. Some deer biologists point out that if deer in your area are readily consuming ryegrass then good natural forage is probably lacking. Wildlife seed mixes are unregulated so check labels carefully to make sure you aren't getting a "quick green" product loaded with ryegrass. Another alternative is to allow native grasses and forbs (e.g. Florida pusley, a preferred deer browse) to colonize an opening.

Another grass that was once highly valued for turkey habitat was bahia (*Paspalum notatum*). It is now known to form a dense sod that can become impassible to quail and rabbits. Because of the grass's invasive nature, it can outcompete native plants, thereby decreasing diversity and valuable native cover and food sources for wildlife. Alternatives to bahiagrass include any of the native warm season grasses inter-

Butterflybush (Buddleja) may attract butterflies, but their larva cannot survive on it.
Credit: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Strip disking for quail can enhance the habitat by encouraging native forbs and warm season grasses to recolonize.
Credit: Jonathan Smith, IWMS.

spersed with native forbs like wildflowers, partridge pea, ragweed, and beggerweed. These will not only provide seed and cover but also will attract insects for bugging opportunities.

Recent attention has focused on sawtooth oak (Quercus acutissima) as having a potential to become invasive. It has been found to sprout near parent trees so some ecologists fear it could become established in nearby woodlands. Another concern was that it may hybridize with other white oak species. However, because it is in a different classification than native oaks, this is highly unlikely. Many state Wildlife Management Areas still utilize the tree for its fast growth, insect resistance, and early acorn crop. A smaller acorn producing variety, 'Gobbler Oak' is also used. Biologists now suggest using native alternatives such as shingle oak, water oak, willow oak, and other oak species where applicable, although maintenance of existing sawtooth oaks is fine.

Wildlife plantings have not been limited to those that benefit game species. Another shrub that is still planted for its attractiveness to butterflies and for its beautiful flowers is the Asian *Buddleja davidii* or butterfly bush. Although it is true that butterflies are drawn to its nectar, their larva cannot survive on the plant, making the bush what we call an "ecological trap." In addition, the plant has escaped butterfly gardens through its wind-dispersed, dust-like seeds. It readily invades riparian areas and disturbed sites. Butterflybush is not the only pollinator plant to steer clear from when making a butterfly garden or wildflower meadow. Queen Anne's lace (wild carrot), dame's rocket, orange daylily, and rocket larkspur are just a few of such species that may show up in seed mixes. Good native replacements include black-eyed Susan, bee balm, purple coneflower, coreopsis species, and milkweeds.

The bottom line is if you have any of the above mentioned species on your property, simply manage them appropriately to limit their spread off-site. When they die, replace them with native species. If you notice certain plants are becoming a nuisance to you or neighboring landowners, or sensitive habitats are being invaded, do the ethical thing and remove them using an appropriate method or at least prevent them from going to seed. Nurseries specializing in wildlife foods provide plenty of safe alternatives that are just as effective at attracting wildlife and are often more nutritious.

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Conducting a burn in Florida during the growing season (July) to promote native plant communities. Credit: USFS, 2012.

Wildlife Trends Journal Management Calendar

By Dave Edwards

December 2012/January 2013

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Doe harvest is essential to ensure quality deer herd conditions exist

Ensure doe harvest goals are met

Due to abundant mast crops throughout much of the southeast the past 2 falls, most deer herds experienced increased fawn production and survival over the past couple years. This means that increased harvest may be needed on some properties to maintain deer populations at desired levels. A very simple law of nature taught in our college Wildlife Population Dynamics course is that Population Growth = Births minus Deaths. Thus, with an increase in "births" (more fawns), managers will need to increase harvest rates unless growth is desired.

Ideally, it is best to harvest does early in the season and/or before the rut. Doing so will save food resources for remaining deer and immediately improve the sex ratio for the upcoming breeding season which will conserve energy for your deer herd. An unbalanced sex ratio will result in extended breeding seasons where bucks can loose up to 30% of their body weight from excessive breeding activities. Consequently, under these conditions bucks enter spring trying to recover. The highly nutritious spring food then goes towards body maintenance verses body/antler growth for the following year. The extended breeding season associated with an unbalanced sex ratio also results in poor hunting due to the

lack of breeding competition. That is, there are so many does that bucks do not need to compete. In this case, hunters generally don't see a lot of breeding activity such as chasing, rubs or scrapes. We often refer to this as a diluted rut.

By the time you get this issue of *Wildlife Trends* it will be late in the hunting season. If you have not met your doe harvest goals, get to work. If needed, recruit the help of friends. Holding a "doe harvest weekend" is a great way to get participation from club members or friends. Make a big deal out of it by having a cook out at the camp with "awards" for those who harvest the largest doe, oldest doe, or most aggregate weight. These events can sometimes be the most memorable hunts of the year.

If the property you hunt is rolling, 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. I have been fortunate to have worked with hunters who harvest trophy bucks every year. These are the guys you see in magazines standing under a barn wall full of mounted bucks. The common strategy that they all have is that they hunt the wind. That is, they only hunt areas when the wind is right. 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 treelines it is diverted and results in the wind changing directions at given points on the property. 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. You may be surprised that a true north wind can generate a south wind in some locations on a property. Something else to consider is large bodies of water such as a lake or river. In the morning, cool air in 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. 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 have more successful hunts.

If possible, collect fetal data from harvested whitetail does

If your breeding season or rut occurs before or around Thanksgiving, and your hunting season extends into late December or January, you should be able to find and measure fetuses. The age of the fetuses is determined by their

Favorable Winds for Food Plot Stands

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⊕ = Best Wind for Stand
X = Do NOT hunt stand
□ = Margin Conditions

	NW	N	NE	E	SE	S	SW	W
RR								
Super Cross			X	X	⊕	⊕	⊕	
Upper Powerline		X	X		⊕	⊕	⊕	
Upper Duck Pond	X			X	⊕	⊕		X
Dove Field ladder	X	X	X		⊕	⊕	⊕	
Corn	⊕			X	X		⊕	⊕
Robs Corner	⊕	X	X		X		⊕	⊕
Hidden	⊕		X	X	X		⊕	⊕
Turkey Trot	X	X	X		⊕	⊕	⊕	
Trot Line		⊕	⊕		X	⊕		X
Pine Flat	X	X	X		⊕	⊕	⊕	
Pop Knot	X	X	X		⊕	⊕	⊕	
Middle	⊕	⊕	⊕		X	X	X	
Lost Pond	⊕			X	X		⊕	⊕
Backbone	X	X	X		⊕	⊕	⊕	
Pond Dam	X	X	X		⊕	⊕	⊕	
Lower Powerline	⊕	⊕			X	X		
Cemetary Spoke	⊕	⊕	⊕		X	X		X
Cadillac	⊕	⊕	⊕		X	X	X	
Funnel Spoke	X	X	X		⊕	⊕	⊕	
Funnel	X	X	X		⊕	⊕	⊕	

Creating a wind chart will help hunters make wise choices when selecting stands to hunt and will result in successful hunts.

length. A fetus scale is very helpful in determining the age of the fetuses. Once you know the age of the fetus and the date of the harvest, you can determine the day of conception. This information can provide much insight to your deer herd's reproductive performance as well as the length and peak of the rut in your deer herd. This not only helps you determine when to put in for vacation next year, but the length of the breeding season will shed light on the adult sex ratio of the herd. A tighter sex ratio will result in a shorter, more intense rut due to increased competition for mates, while an unbalanced sex ratio will likely be represented by a long, weak rut due to less competition and the length of time it takes bucks to "service" the abundant doe population. This information, along with hunter observation data, is a great and free way to assess the status and success of your deer management program.

Calibrate sprayers in preparation for early summer uses

Although you probably won't use them for a couple of months, late winter is a good time to overhaul sprayers. By overhaul I mean check all hoses, tubes, connections, filters, nozzles, etc. This is also a good time to calibrate sprayers so that everything is ready when early summer weeds become a problem in food plots. We commonly use the pistol nozzle of our sprayers to assist in prescribed burns. Be sure to check all parts and test the pistol nozzle, hoses, etc if you plan to use them this winter during burning activities. Working on sprayers is a great mid-day activity while hanging out at the camp during a weekend of hunting.

Assess progress and create a plan for improvements in 2013

With the 2012-13 hunting season coming to an end, it's time to revisit the wildlife management program on your property to assess whether or not your management strategies are working and helping you achieve desired goals. Doing so may reveal limiting factors that may be preventing you from reaching your management goals or maximizing your efforts. Addressing limiting factors and implementing improvements where needed will help you succeed in reaching goals. Unfortunately many landowners and hunting clubs keep doing the same thing and expect different results. Depending on the wildlife species you are managing for, late winter or early spring is generally a great time to assess habitat needs, review current management strategies and how wildlife or habitat has responded to these strategies, and devise a plan for addressing needs. While a general property assessment is easily done by a landowner, I recommend getting the assistance of a professional experienced wildlife biologist to help identify less obvious and often times overlooked strengths and weaknesses of your property or wildlife management program. I can't tell you how many times I have been helping a client where I made what I thought was an obvious recommendation that they had never thought about or recognized as a limiting factor. My point is that it is always good to get another set of

Don't keep doing the same thing and expect different results. Plan improvements now for 2013

eyes when assessing your property, particularly from someone that does not see the property often and/or someone that is an experienced wildlife/land manager. With the property wildlife management goals in mind, and from this assessment, you and/or your wildlife consultant can develop a list of several to many management activities that will address limiting factors identified. Depending on the property, this can be a relatively short list or a very long list of activities that need to be addressed. Many of you have heard me say this before, but consistent good hunting doesn't happen by accident. It takes planning, hard work, patience and an understanding that Mother Nature is dynamic and things are constantly changing requiring adjustments in management strategies to reach desired results.

Prepare for last phase of duck season

If you have multiple duck ponds and hunt waterfowl through the season, strategic/staggered flooding schedules help maximize hunting opportunities by extending the food supply in ponds. That is, by not flooding some ponds or areas early in the season you essentially "save" these ponds and their associated food for later in the season. Thus, if you've "saved" ponds on your property for the late phase of duck season, mid-late December is the time to initiate flooding of these areas. Maintaining water depths of 12"-18" is ideal for puddle ducks such as wood ducks, mallards, gadwall, teal, etc.

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 habitat. 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

Staggered flooding strategies will extend the availability of food sources across duck ponds and create additional hunting opportunities.

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 of 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 U.S. 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 who has experience burning.

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 marked or flagged include small bedding areas that will be created with chainsaws (you 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.

Strip disk areas to promote natural, desirable weeds for wildlife

Strip disking is simply one of those management practices I firmly believe in. It is one of the cheapest management strategies to implement and it works, often resulting in high quality food and cover for wildlife. Strip disking is as simple as it sounds. To strip disk, you merely drop the disk far enough into the soil to lightly break the surface of the ground. Lightly disking the ground will provide enough disturbance to stimulate the natural seed bank of wildlife friendly weeds the following spring and summer. Heavy disking like you were preparing a clean seedbed for planting a food plot is not needed. One pass is generally enough to stir the ground up and expose bare soils that will promote germination of desirable weeds. While not necessary, I often mow areas I plan to strip disk ahead of time. This makes disking more effective if vegetation is relatively thick or tall. It also knocks back/reduces competition of the undesirable or overgrown plants I am trying to replace. Strip disking at different times of the year will result in different plant communities. While disking can be conducted anytime of year, it is normally done in spring or fall. Fall/winter disking normally results in a broadleaf plant response, while spring/summer disking will result in more native grasses. Altering the season in which you strip disk will add diversity to your property. Strip disking can be done in thinned pine plantations, relatively open mature pine stands, along the edges of food plots, or in open fields. Basically anywhere sunlight can reach the ground will work. To optimize the benefit of strip disking, avoid disking straight lines. A serpentine pattern that winds through the habitat will provide the most edge and diversity.

Tree planting activities - start planning, ordering supplies, and planting

Besides actually planting the trees, site preparation is important to reduce competing weeds to enhance tree seedling survival during the first growing season. Depending on the situation, an initial mowing may be needed to provide a clean working area and reduce weed competition. There are many species and varieties of soft (e.g., fruit trees) and hard mast (e.g., oaks) trees available that will benefit wildlife on your property. I generally like to plant a diversity of trees that will provide various food sources throughout the year. Supplemental tree plantings not only provide additional food resources for wildlife on your property but can provide exceptional enhancements to the aesthetics. Areas commonly planted in fruit trees include road intersections, roadside management areas, and in or along the edge of fields or food plots. The key is to plant them in areas that will receive sunlight. Some trees require cross-pollination to produce fruit so, if needed, be sure to plant them in small groups. I recommend contacting your tree supplier/nursery, such as the folks at The Wildlife Group, well ahead of planting time. They can help you determine which trees will grow and produce best on your property, help you develop a planting plan based on your goals, and ensure the trees and other supplies are ready when you are.

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