



# Wildlife Trends

## JOURNAL

MARCH/APRIL 2014

VOLUME 14, ISSUE 2



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## Earl Says...

I was privileged last month to attend an important and timely gathering of deer hunters, hunting industry executives, Academia, State/Provincial Wildlife Agencies and landowners to discuss the future of deer hunting and identify and rank issues threatening the future of deer hunting. This was the first meeting of the North American Whitetail Summit organized by the Quality Deer Management Association.

The following are the top 10 issues identified by the group:

- Hunter Retention and Recruitment
- Education and Outreach to support current and potential hunters
- Hunting land access
- Political influences on deer hunting and management
- Captive deer industry
- Deer diseases
- Public concerns for deer population levels – too high or too low
- Landscape changes/habitat loss
- Connecting hunters with accurate scientific information
- Impacts of predators, feral hogs and invasive species

The ranking of these issues is debatable but everyone attending agreed that we all must work to guarantee the future of deer and deer hunting. We are always interested in your thoughts on these and other issues concerning your hunting rights and the management of deer and other wildlife on your property.

Andy Whitaker  
Publisher/Editor



## Wildlife Trends JOURNAL

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Wildlife Trends Journal is published to provide landowners, land managers and wildlife enthusiasts the latest research-based information in wildlife and game management. Article authors are carefully selected for specific expertise in their respective fields. Subscribers receive six bi-monthly issues and a handsome library binder to save their past issues.

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Cover photo by Andy Whitaker



# Forest Management for White-tailed Deer in the Southeast



By Steve Demaris and Bronson Strickland

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## *Hardwood Forest Thinning*

Acorns dropping from oak trees receive a lot of attention from nearby deer. And, anything that draws the attention of deer will certainly be of interest to deer hunters planning their next hunt and to landowners planning habitat or timber management. Oak trees and their acorn crops are great to have as part of deer habitat, but sometimes too much emphasis is placed on oak trees. They are great to have around as a “dessert” for deer and a commercial timber product, but presence of oak is not “required” for an effective deer management program. To fully understand this statement, you need to understand some biological background that determines what deer need nutritionally and when they need it. Additionally, you need to place habitat management efforts in the correct context.

## **Deer Physiological Demands and Related Nutritional Needs**

The annual physiological demands of deer determine their nutritional needs and thus their habitat requirements. Demands differ for bucks and does, so we'll describe them separately.

Adult bucks have two primary demands each year: the rut and antler growth. For bucks, the breeding season (or "Rut") is characterized by increased daily movements and decreased feeding rate. The result is up to 25% loss of body weight. This loss takes place even in research pens with unlimited high quality forage, so our ability to mitigate it with food is limited. The post-rut period, in February to early March, is critical for bucks to recover from their rut losses and prepare for antler growth. The physiological and nutritional demands of antler production last from March through August. Generally, nutritional management for optimum antler production at a variety of ages should strive for an average intake of 16% protein. It is generally accepted that most

southeastern deer forages that fulfill the animal's protein requirement will also fulfill their energy requirement.

Adult does also have two primary demands each year: gestation and lactation. Demands of gestation are most critical from March until fawning. Lactation demands are critical from birth until fawns are weaned at about 3-4 months of age, which takes them into October in most of the South. Gestation and lactation protein requirements are adequately supported by a 16% crude protein diet.

To summarize this physiological and nutritional information, the most demanding and potentially limiting periods nutritionally for whitetails are from February through October. Habitat should provide an average diet quality of 16% crude protein during this period.

## **Deer Habitat Quality**

Whitetails have amazingly flexible habitat requirements that allow them to live in a wide range of habitat types, from areas dominated by agriculture, to

those with mostly forests, and even in semi-desert environments. The primary habitat requirement of concern in most areas is adequate quality and quantity of forage below 6 feet (i.e., food). Hiding and escape cover for fawns are also important. Both of these needs are best made available in forested areas through the process of timber harvest. Canopy removal during thinning and/or clear cutting makes sunlight available at ground level, which leads to deer forage production. Deer consume between 3-5% of their body weight every day and the best way to ensure year-round forage production is allowing the sun and soil to produce it naturally. If you can manage the forest such that sunlight can reach the ground, Mother Nature will take care of the rest.

Diet selection by deer changes in response to seasonal changes in forage abundance, quality, and metabolic needs of the animal. Deer eat a variety of food types throughout the year, including browse (leafy parts of woody plants), forbs (herbaceous broad-leaved



*Food plot with oats, wheat and clover.*



*Food plot with oats, wheat, rape and clover.*

plants, including agricultural crops), hard mast (acorns, pecans) and soft mast (persimmon, muscadine, blackberries), grass and mushrooms. As a general rule, we like to say that deer “need browse, prefer forbs, and relish mast.” They “need” browse because it is the most stable forage supply due to its relative independence from rainfall. Deer “prefer” forbs because they are more

palatable and higher in protein than browse. Deer “relish” mast just like people relish dessert because it is highly palatable with moisture included. Typically, the most important dietary need that is often absent is forbs. Most of the forbs needed and desired by deer are classified as “shade intolerant,” which is fancy word for “can’t grow in the shade.” Think about the forest areas

you hunt and if the canopy is closed, very little sunlight will reach the forest floor and production of forbs will also be low, if not absent altogether.

Acorns and other hard mast provide valuable energy supplies during autumn that contribute to building fat reserves for the winter, but typically provide only about 6% crude protein. The autumn energy source provide by acorns is extremely important in some areas of the country, such as the Appalachian Mountain Range (Alleghany Mountains, in the Southeast). In such relatively infertile soils where deer must deal with limited food during a relatively harsh winter, a bumper acorn crop can make the difference between twin fawns and a singleton, healthy birth weights and neonatal mortality, and even survival and death. However, more fertile soils preclude such dire situations for local deer populations. Autumn fat reserves are certainly important, especially up north, but in the South it is not as important as providing the 16% protein needed by deer during the remainder of the year.



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Habitat that provides a steady supply of high quality forage (like forbs) year-round will certainly take care of any energy needs of the deer population. So how do we ensure our forests maintain a steady supply of forbs?

### **Forest Habitat Management**

Aside from population control, forest management has the most important influence on deer populations over much of their range. The production of understory vegetation is related directly to a number of factors including site quality, forest type, and stand age and structure. Abundant deer forage is produced only when sunlight, space and nutrients are available. Timber harvest allows sunlight to reach the forest floor, creates soil disturbance and stimulates the production of desirable herbaceous vegetation, woody vines and other browse species which are of high nutritional value to deer and provide escape cover.

Young clear-cuts may provide abundant forbs, vines, woody browse and soft mast for a limited time, depending on the type of site preparation and release procedures used during planting. The type of stand establishment will affect available forage, and this effect is not necessarily consistent in all areas. For example, in the Lower Coastal Plain of Southeast Mississippi, removal of low quality woody vegetation by applying a chemical site preparation made sunlight, space and nutrients available for higher quality forbs, which increased forage production for deer. However, in a similar study in the Coastal Plain of North Carolina, forbs did not respond positively to woody browse removal. Additional relationships may be evident in other soil regions, depending on soil and plant quality.

Production of understory forage declines dramatically with canopy closure. For example, in loblolly pine plantations in the Mississippi Coastal Plain nutritional carrying capacity declined from a high of 10-13 deer-days per acre at 1-3 years post establishment to only 1/2 deer day per acre following canopy

closure at year 7. Carrying capacity will remain low until the stand is thinned for pulp wood, which typically occurs first at 13-17 years in southeastern pine plantations. Prescribed fire application following initial and mid-rotation thinning improves germination and growth of high quality herbaceous plants, further increasing food production for deer.

However, forage production, and thus habitat quality, will increase again when pine forests are thinned for their first commercial product at about 15 years (in loblolly pine). Greater forage production is promoted with additional thinning as trees reach saw timber size and as natural mortality thins the canopy. Silvicultural practices which emphasize interspersed and juxtaposition of different age forest stands generally optimize deer habitat. What this means for the deer manager is to stagger timber harvest and thinning in space and time across the property. This keeps the entire property from being in the same stage of timber growth, and avoids a boom-bust cycle of deer food. During stand establishment, and after a thinning, there will be increased deer forage, however, prior to the thinning and

prior to the final harvest deer forage will essentially be absent from the forest. Thus, it's best to have a patchwork of different timber stand ages to ensure you will always have some good deer forage on the landscape you hunt.

Where they occur, acorns can be an important component of the fall and winter diet of deer. Because most naturally occurring oaks do not produce substantial amounts of acorns until they are at least 40 years old, rotation lengths of 100 years or more may be appropriate for some stands. Selection cuts that promote desirable mast production and crown growth of white and red oaks, persimmons, pecans, and other mast also are desirable.

In certain forest types, controlled or prescribed fire can be an important management tool. For example, in Southern pine types, fire can increase browse production and palatability, soft mast production, nutritional value of some forages, and the abundance of some important forbs. Controlled burning also may reduce parasite abundance, particularly immature stages of ticks. Most pine species and some oaks, such as post oak, have thick bark or cambium





*Food plot with perennial white clover.*



*Soybeans*

layers that allow them to survive mild understory fires without damage.

### **The role of a food plot program**

Many hunters and deer managers don't have the ability to implement the forest management techniques we have discussed simply because they don't own the property they hunt – they are lease hunters. The authors of this article fall into this category – we know what needs to be done to produce good deer forage, but because we don't own the land we are at the mercy of the landowner. In these cases habitat management becomes a combination of deer

population control and a good year-round food plot program.

So how many deer need to be harvested on your property to keep the population in check with the available habitat? Well, there's no good answer because it varies from place to place and over time, but here are some general guidelines. First, enlist the help of a deer biologist if you have one available. They can typically do a browse survey (evaluate relative foraging pressure on deer forages) one afternoon and look at your deer harvest data and use this information to provide you with some general guidelines. Second, examine the

deer harvested on your property and make note of body condition – do they have a layer of fat? Also, use your food plot program to determine if you have too many deer.

The success of a food plot program goes hand and hand with deer numbers. There's just no way to accomplish your objectives of improving deer diet quality if you have too many deer! If year after year you fail to establish a warm- or cool-season food plot you have too many deer. Make sure every food plot has an exclosure cage so you can determine how much forage was produced versus how much is being consumed – this will usually tell you all you need to know.

To raise deer diet quality on a property and to fulfill all the seasonal requirements we described earlier in the article you need to establish a year-round food plot program. Simply having some "green fields" in the fall and winter is not enough. These plots are good for seeing and harvesting deer, but not for improving diet quality, and subsequently deer body weight, antler size, and reproduction.

There are a myriad of food plot plants to match just about any situation in terms of deer density, soil quality, etc., but here are some choices that have worked well for us. In the fall, a good mix is oats, forage wheat, and crimson clover. This is a very economical mix that will work in most every situation and will provide deer forage from November thru March. The addition of brassicas (like forage rape), Austrian winter peas, and red or arrowleaf clover are very good plants to include in the mix too.

Good warm-season food plot choices include forage soybeans, cowpeas, lablab, deer vetch, alyceclover, corn and milo. Keep in mind that if you have a high deer density or smaller plots (<10 acres) soybeans can be difficult to establish. If this is the case you may want to consider cowpeas, lablab, or deer vetch (American joint vetch) as they are more browse tolerant. Alyceclover may be the best choice for heavy deer densities and smaller plots



because it is the least preferred of these warm season forages.

The best perennial food plot is likely alfalfa, but this plant can be very difficult to establish and is very time consuming to maintain if you want to get several years of good production (which is the very reason to plant a perennial). The most common perennial food plot choice in the Southeast is white clover because it is relatively easy to establish and if you continue to fertilize with P & K and keep the weed competition low with timely herbicide applications you can get many years of production. Forage chicory is another good plant and is often planted in combination with white clover.

For planting rates please refer to the publications listed at the end of this article or download our free iPhone app “DeerPlotApp” from the iTunes store.

### **Habitat Management Context**

Deer need a seasonally and annually stable supply of food that fulfills their protein requirements. Opening of the

forest canopy via timber harvest is the primary mechanism for production of the forages that will provide a nutritionally adequate and stable deer habitat in regions dominated by forests.

Where present, oaks and other hard mast producers are an important component of timberland and wildlife habitat from the perspectives of future timber values and landowner preferences. However, from a deer biologist’s point of view, in most regions we are more concerned with the year-round availability of forage within the reach of a deer than about acorn production.

So, let’s place “acorn management” within the proper context. When planning your deer habitat management program, prioritize your efforts to produce year-round natural forage quantity and quality using timber harvest and old field management. During timber harvest, every effort should be made to promote and retain oaks and other hard and soft mast producers where they are present. Then, consider a mix of seasonal and perennial food plots. And, if

you have the extra money available, you can also include some special plantings of oaks for hard mast and fruit trees for soft mast. So, remember, the foundation of your deer habitat management program is production of a year-round supply of palatable, high-quality forage. While doing the timber management needed to produce quality forage, manage for oaks and other mast producing species to provide deer a palatable source of energy during the fall and winter months.

### **References**

- Food plot reference material – all are free for download on the web
- A Guide to Successful Food Plots, University of Tennessee*
- Effective Food Plots for White-tailed Deer in Alabama, Alabama Department of Conservation*
- Supplemental Wildlife Food Planting Manual for the Southeast, Mississippi State University*



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# Exotic and/or Invasive Aquatic Plants



By Scott Brown

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*Primrose can grow out over the water and look like a vine or as a bush/shrub onshore or in shallow water.*

Lots of anglers and lake owners over the years have expressed their likes and dislikes for different kinds of aquatic plant species. You can always start an argument at any boat ramp or with a landowner over what's the best aquatic vegetation (aka lake weeds) for largemouth bass. Back in the 80's I met people who moved Hydrilla around from public lake to public lake and even took it back to their own ponds. They knew it grew big bass, but they didn't know the other issues and expenses it brings. And don't even ask a waterfowl biologist or duck hunter (which I am) about Hydrilla, they both give a resounding "Hydrilla is great" when talking about waterfowl habitat.

There are **Non-Native** (exotic) aquatic plant species all over the United States, and not just limited to the South. There seems to be more exotic warm climate plant and animal species than cold, and warm climate plant species also have the benefit of a longer growing season. Some exotic plant species have started becoming immune to

traditional herbicides used over decades and show little response to treatment, for example, Sonar (fluridone) resistant hydrilla. But new herbicides are being developed and this generally equates to rising treatment costs. Some exotic plant and animal species were deliberately released with a purpose, before testing or long term effects were thought through. Some were released from pet owners, either the animal itself, or plants used in aquariums for fish and reptiles. Even the first attempt at the grass carp, which is used to reduce unwanted submerged aquatic vegetation, was flawed as it reproduced quickly and could eliminate all aquatic vegetation from an ecosystem hindering fish production and survival and promoting erosion. That's why it is only legal to stock triploid grass carp, which do not reproduce. And even that has been challenged that not all the fish lack reproduction capabilities.

Some native plant species are classified as *Invasive*. These are native plants that become a problem in fish and and/or wildlife habitat management, or waterway navigation. This category is not as black and white, because a beneficial plant in one ecosystem may be a nuisance in another. There is not a duck painting known without cattails in the background. Cattails are native, and are considered by most as invasive. They can get out of control quickly and costly to control. However, in certain situations they stay in check and are beneficial. I never use the term eradicate, because it is almost impossible to eradicate an animal or plant species. Once you get an Invasive Exotic plant in your waterbody, keeping it controlled is the objective. Lots of plants disappear for a while, but due to seeds, tubers, roots or upstream re-infestation that continually feeds your waterbody, they eventually come back.

The first thing in exotic weed control is *Prevention*. Not getting the plant introduced into a lake or pond is the best defense. Aquatic plants are trans-

ferred most commonly by boat trailers and boats. As a private consultant we always guard against this. We know none of our clients want any of our other client's problematic vegetation. To prevent the transfer of plants, always pick your trailer clean at the site you are pulling out. Don't go home or to the next lake and pick it clean before launching. The "Hitch Hikers" can be washed down the street drain, off the shoreline or boat ramp into an uninfected waterbody. In some instances we have pressure washed the boat and trailer, and even sprayed it with herbicide and allowed to dry before the next launching. It does take time, but it does work at not transferring plants. One of

our client's 160 acre lake is inside a housing development, only 20 miles from a 4,000 acre public lake known for its high quality bass fishing and infestation of Hydrilla. Anglers would go straight from the public lake, back to the lake at home and launch. Hydrilla first appeared around the boat ramp, then at the two best fishing spots in the lake and continued to spread from there. This is generally the pattern an invasive plant takes that has been introduced to a waterbody by boats and trailers. If the plant was washed in from upstream it first appears at inflows (creeks or drainage ditches) or even drain pipes from nearby property and streets where trailer cleaning may



*Pickerelweed is a desirable native to some, and to some it is an invasive and not wanted in their waterbody. This plant is also frequently confused as water hyacinth, an exotic, invasive species.*

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occur. Some plants can be easily transplanted from only stems or leaves to re-establish themselves, while others need the root system to be moved and are a lot harder to accidentally establish. There is some proof that birds (wading and waterfowl) can move small pieces of plants and relocate them, but the biggest culprit is human activity.

Once you get an exotic species, you need to be diligent and thorough with the response/treatment. Identifying the exotic species, researching the treatment options and knowing the plant's biology is important. Miss-identifying a plant or applying a herbicide that does not work on that particular species can be costly. We recommend the Texas A & M University and University of Florida's plant identification web sites for identification, biology and treatment recommendations. If your lake is in northern climates, check your state university, Fish and Game department or herbicide distributor for assistance. Plants can be treated with herbicides, biological treatment (bugs or fish) or mechanically removed. Sometimes a combination of two or all three techniques should be implemented. For Submerged vegetation, such as Hydrilla, herbicide treatment followed by a moderate number per acre stocking of grass carp might be advised.

If mechanical removal is feasible, finding a dump or burial site is required so as to not re-infest the same waterbody, or contaminate waterbodies where the plant does not exist. Knowing the biology of the particular plant you are dealing with is important. Some plants can be removed by taking just a thin layer off the lake bottom, while others may require a deeper scrape to insure all seeds, tubers and root fragments are removed. Mechanical removal sometimes requires drawing the water down, and sometimes all infected areas can be reached from shore. This adds to the expense, time and work factor whether a drawdown is required or not. Again, know your plant, do your homework and read the literature regarding success stories from various states, universities and government agencies working on aquatic exotic plant control.

The second technique is **Biological Control**. The most common is the stocking of Triploid Grass Carp. These fish have been widely studied for decades. Stocking numbers range from 5-15 per acre, depending on your location, the plant you are targeting, and depending which biologist, lake manager or hatchery worker you talk to. First, check with your state fish and game agency for stocking rate recommendations and if any permitting is required. Then talk to your pond manager. Grass carp do have a plant preference and identifying where your target plant species rank on that list is important.

Near the top of that list is Hydrilla and near the bottom is filamentous algae. We use a grass carp food preference paper by Dr. Martin W. Brunson from Mississippi to determine if grass carp will work on a particular species. We like to use a combination of herbicide, followed by a low number stocking of grass carp to maintain and control the plant after chemical treatment. We have witnessed exotics disappear from waterbodies for as long as seven years after chemical treatment, only to come back after years of dormancy.

The final and most common technique used on exotic and invasive plant species is **Chemical (herbicide) Treatment**. Some exotic and invasive plants are fairly inexpensive to treat (\$100/acre), and others are very expensive (\$1,500/acre) for herbicide only. There are state and federal programs



*Here is a new stand of bulrush transplanted after a large area of torpedograss was chemically treated amongst the maidencane and Spadderdock.*

that assist landowners with costs to treat exotic and invasive plants. If your waterbody experiences an exotic infes-

tation and it drains into uninfected public waters, some funding may be available through your state's agricultural or



*This mixture of water lily, coontail and bladderwort may or may not be a problem. All are native species, but to different people it may be too much or just the right amount of vegetation in the water.*

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environmental protection agency. It only takes a few minutes to call, and it could help defer costs. When performing a herbicide treatment, always follow the label. When herbicide like Sonar (Fluridone) is used the manufacturers offer a water test several weeks after treatment to see if concentration levels remain acceptable. It's advised to pay for this service as it may save on herbicide costs by not requiring a follow-up treatment or tells you more herbicide is needed so the first application is not wasted and doesn't perform as desired. Another issue occurring with some exotic plants is they are becoming resistant to particular herbicides successfully used in the past. There is now a genetic test for hydrilla, to be done prior to treating with Sonar. If you have heard of Sonar resistant hydrilla in your state, it is advisable to have this test done prior as to not waste money if it turns out your hydrilla has this genetic make-up. There are tricks to reduce herbicide costs such as drawing the water down during or prior to treatment, which reduces the amount of herbicide needed. Plants may be susceptible to more than one herbicide, with the long term results being different. A **Contact Herbicide** will kill the plant it touches, but if it doesn't touch it, the plant survives. A **Systemic Herbicide** is throughout the water and is absorbed into the plant over a long period of time. This treatment is generally more expensive, but has longer lasting benefits. This type of herbicide application can be less selective and may kill non-target, desirable plant species in or around the waterbody. Here is where the combination of all three techniques could be applied with a fall herbicide treatment (chemical) and draw-down, followed by scraping (mechanical) and stocking of grass carp (biological) later on to help maintain.

There are too many exotic aquatic plant species to mention here. You or your lake manager need to check with your state Game and Fish, Agriculture and Environmental Protection Departments or local universities for exotic plant identification and treatment, and possible supplemental funding sources. Some of the more common exotic plant species we have seen include hydrilla, water primrose, alligatorweed, water hyacinth, Brazilian Elodea, Eurasian watermilfoil, Brazilian pepper, water lettuce, Salvinia and torpedo-grass. As stated earlier, each state has its own lists of exotic and/or invasive plants. Knowing what plants are good and bad before purposely or unintentionally relocating is required. If you are faced with removing a large area of exotics, trying to replace them with more desirable native species is advised.

**Native Invasive** plant species are more difficult to identify. For example, in a large waterbody, some cat-



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tails may enhance habitat and help clean water by removing excess nutrients. In a small pond or lake, they are generally discouraged from growing because they can take over quickly. One example, such as along a lake dam, they may be allowed to grow as they are an excellent defense against wave erosion by their strappy leaves and holding dam dirt in place with a spongy root system. In this situation, the slope at the dam should be so that they can only grow out so far before it gets too deep, which keeps them limited to a band in front of the dam. Once they start spreading to other shallow areas, you may decide they need to be treated, removed or occasionally thinned, but still left for habitat. Some native species in some states are looked upon as desirable, while the same plant is viewed invasive in other states. This is where consulting a professional is advised to help you decide if a plant in your waterbody is beneficial both short and long term, and how it should be managed.

It is very common for new lake owners to want to establish shoreline habitat as soon as possible once their lake is complete. On occasion we direct them or we do it ourselves to find donor sights for local, native plant species. Maybe a friend nearby has a plant species that really holds bass in his pond, so you want some and he's willing to let you take some. Be very accurate on your plant identification and knowing the plant biology of species in question before moving any plant species. And check with state agencies because some plants can be transplanted in this fashion and some are illegal for you to have in your possession during transport. Make sure you are moving exactly what you want and make sure no laws are being broken doing it. Transplanting someone else's headache is not good for your new lake. Even when you purchase aquatic plants from an accredited nursery, make sure there are no unwanted plants mixed in the bare root or potted plants. I have seen people move lots



*This boat trailer just pulled out of a lake with hydrilla. Some time needs to be spent cleaning it off to insure those plants don't start growing in another waterbody. Also, I wonder if that hydrilla is resistant to Sonar?*



*These cattails were not being monitored, and now are an issue around this three acre pond. The owner regrets not calling someone sooner, as treatment was extensive and mechanical removal was required to open up shorelines for bank access and to remove large amounts of decaying plant matter.*

of torpedograss thinking it was Maidencane, only to be disappointed when they asked us to spray it later.

Sometimes we run into problems where exotics might be all the lake has for habitat, so what should the landowner do? We try to thin the exotics and see if any native desirable plants come in. If not we will try and start reducing the exotic plant in the same areas and gradually introduce desirable

native species to hopefully take over and out-compete the exotic.

When managing aquatic plants, it's not always black and white and it's definitely not easy, even for a professional. When faced with an exotic and/or invasive plant species do your homework and respond quickly. The earlier a plant problem is addressed, the better the outcome and cheaper the solution.

# Bug Conservation: The Big New Habitat Management Priority

By Randy Seymour

Randy Seymour is co-founder of Roundstone Native Seed with his son John. He is the author of Wildflowers of Mammoth Cave National Park and spends his spare time working on botanical survey projects in Kentucky and Mississippi. Please visit us at [www.roundstone-seed.com](http://www.roundstone-seed.com) or call 800-531-2353 for more information.



**Y**ou didn't read the headline wrong. It said, "Bug Conservation", as in conservation and protection of insects. And this conservation initiative may be the most effective habitat management tool introduced in recent years. This sound a little squirrely? Don't worry, you'll become a believer when you read the fine print.

But first, please understand that this does not mean someone is trying to tell you that you need to stop slapping and killing mosquitos, deer flies, and gnats or to quit using repellants to protect yourself from chiggers, ticks, and biting flies. Let me be clear; the blood sucking, nasal clogging, hide chewing, eye burning, blister raising, claw-your-leg-off itch causing insects are excluded from this save-the-insect plan.

The "Bugs" we are talking about are our Pollinator Insects. Native pollinators are declining at an alarming rate with potentially devastating consequences for both humans and wildlife. Did you know that 80 to 90 percent of the world's plant spe-



cies are pollinated by animal pollinators (mostly insects) and that 25 to 35 percent of the food that you eat daily is dependent on these same pollinators?

In the US these pollinator insects include over 4,000 species of native bees, 30,000 species of beetles, and all the butterflies, moths, flies, wasps, and ants. Then, of course, there is the introduced Honey Bee that is so important economically, especially to so many fruit and vegetable crops that are also introduced into this country such as apples and peaches. Pollinators are critical to sustaining biodiversity and natural ecosystems and their conservation and protection is paramount in diverting a global food crisis.

What is causing this alarming decline in native pollinators? Basically, with a few exceptions and additions, it is the same things that are causing declines in other wildlife. For the pollinator insects it is loss of habitat, degradation of habi-

tat, and abusive use of pesticides and other environmental poisons. It is the expansive fields of monoculture crops resulting in no food, or only food for a short period for only a few species of pollinators. Herbicides remove other plants in and near crop fields that could supply food, nesting sites or cover for the pollinators. Urban sprawl and the vast areas denuded of vegetation for homes, factories, businesses, roads and the other land uses of urban life destroy plant diversity. Introduced and often invasive species unsuitable for native pollinator needs are replacing or severely reducing native vegetation in dwindling habitats. Mowers, weed eaters, herbicides and other land-management practices promoting “clean” farming, manicured lawns, and mowed roadsides destroy or degrade native habitats. Habitat fragmentation prevents less mobile native pollinator movement to suitable sites. Pesticides kill pollinators directly and

many pesticides degrade slowly providing a long lasting lethal hazard. Pesticide spray drift has dramatic unintended killing power on native pollinator habitat often far from agricultural fields. Domestic lawn and garden pesticide use rivals agricultural use in destroying native pollinators. On top of all these threats to our native pollinators there is the unexplained and poorly understood calamitous die-off of Honey Bees in what has become known as Colony Collapse Disorder. At risk are billions of dollars in agricultural production.

Pollinator insects are obviously vitally important to humans. What may not at first seem quite as obvious is how fundamentally critical these insects are to wildlife. Without insect pollinators there would be no seeds, no berries, no fruits, and, actually, most plant species could not continue to exist. No pollination means no seeds and therefore, no plants. Without many affected plant spe-



cies the forage most wildlife depend on is gone, which also means the prey species are gone for wildlife that don't forage directly on plants. Even the insects and their life cycle stages are gone if there is no pollination to provide life cycle needs. Think about how indispensable these insects and their larva are to the young of both game birds and song birds. This high protein food is absolutely essential for the development of baby quail, pheasant, and turkey. The hens are nearly as dependent because of the increased protein needs during egg production, incubation, and post-hatch care of the young.

Management for wildlife has evolved into the central concept of habitat development and protection. This means the food, water and protective environment that provide the life cycle needs of specific or collective wildlife species. What has only recently become clear to many of us is that the habitat requirements necessary for the conservation and protection of our native pollinators is the habitat we have been trying to establish

and protect for an abundance of wildlife species. The only real difference is that really good pollinator habitat is usually an important enhancement to conventional habitat establishment.

Look at what pollinator insect needs are and some of what makes up really good pollinator habitat. Pollinator habitat includes foraging sites for food. Food for pollinators is mostly nectar and pollen, which requires a succession of plant species that provide flowers in a variety of colors from early spring thru late fall targeting a variety of pollinators. Pollinator insects need a large diversity of plant species and plant communities. They need species native to your area that evolved with your pollinators resulting in their specialized feeding mechanisms and preferences. They need species that provide protection and food for insect larvae. Good pollinator habitat provides shelter, nesting, egg-laying, predator protection, and overwintering habitat. It includes varying heights of cool season and warm season grasses as well as varying height

flowering plants. It provides dead stems, snags, and leaf litter for nesting sites and plant species that will leave bare ground for nesting sites. Good habitat needs to be established near woodland edges, close to water, and include pockets of shrubs and successional plants.

A quality seed mix for establishment of Pollinator Habitat contains a minimum of three grass species, including a cool season bunch grass, a tall warm season bunch grass, and a short warm season bunch grass. It will have at least 3 to 4 species of flowering plants in varying colors for each of the 5 seasonal periods of early spring, late spring and early summer, mid-summer, late summer and early fall, and mid to late fall for a total plant diversity of 20 to 25 species. In addition to a variety of color in each of these five seasons the plant species should be of varying height, have an array of landing platform types, and provide food sources for insect larva. The plant species chosen should include some night flowering plants for

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nocturnal pollinators and have flower physical characteristics suitable for a variety of insects. Small amounts of seeds of shrub species should be added to the seed mixture. The seed should be sown on a site near water and adjacent to woodland edge or successional species. Commercial mixes of native pollinator habitat seed are available but caution is advised to make sure the seed vendor has built the seed mix around the science of pollinator habitat needs and not around introduced species, showy garden species, or with high percentages of annuals. Flowers such as Cosmos, California Poppy, Dame's Rocket, Cornflower, Chickory, Ox-Eye Daisy and other cheap annuals are often included in mixes to hold down prices, and some are not even native to the Eastern United States. Many of these species are introduced from other countries and may become weedy, invasive problem plants, and some are included

in state noxious weed lists. Local pollinators will often not use introduced species and many garden species are bred for large flowers, multiple petals, and other aesthetic characteristics to the extent that they no longer produce pollen or nectar.

When you examine the recommended seed mix for pollinator habitat you will easily see that pollinator habitat is just simply great wildlife habitat. It provides food for young and adults during all seasons; nesting and bedding sites and material; bare ground and camouflage for easy and secure movement; sites for loafing, resting, and preening; and cover and protection from predators and the elements. In short, good pollinator habitat provides the life-cycle needs for a wide variety of wildlife.

Many land owners who enjoy managing their property for wildlife currently have, or have in the past, used USDA Farm Bill Conservation Initiative pro-

grams to establish wildlife habitat or wildlife beneficial vegetative cover. In the past, these programs usually limited the number of plant species required or recommended to two or three grass species and rarely more than five to seven legume and forb species. Such limitations in species diversity dramatically restricts the development of self-sustaining plant communities and severely reduces the quality and effectiveness of the wildlife benefits. Good habitat provides all the Life-Cycle needs of wildlife. Only plant species diversity can accomplish this. The forb and legume component of a quality Pollinator Conservation seed mix can transform a marginal Farm Bill Program habitat planting into a great habitat planting providing Life-Cycle needs.

Each Farm Bill wildlife habitat program requires periodic maintenance, which usually means burning, disking, or mowing. For grasslands, burning is



certainly the most effective. Disking too often invigorates weeds that have been hard fought to remove and mowing does nothing to remove the smothering thatch build-up. This maintenance provides the ideal opportunity to tremendously enhance your existing habitat efforts and to make a big impact for pollinator conservation.

The high diversity flowering forb and legume portion of a quality Pollinator Conservation seed mix can be seeded into your existing grassland and the ideal time is following a burn when all vegetation has been removed and ample bare ground is exposed. No-till drills can accurately place seed at the right depth following a burn and not disturb the soil. Drilling can be done in the late fall or winter, which will provide a nat-

ural cold/moist stratification for the seed to aid in germination. Native seed do not need fertilizers to get started. The only downside to this method of enhancement is the competition the new seedlings may have from the established plants; however, this can be mitigated by top clipping early in the season to allow the seedlings to get started.

Where burning is not possible, disking is a possible, but problematic, alternative opportunity to establish pollinator conservation species in existing grasslands. Disking disturbs the soil to the extent drilling is difficult and accurate seed depth placement is rarely possible. In addition, disking usually promotes a flourish of weedy growth. Admittedly, some annual weeds such as ragweed have food value, especially for

quail and turkey. But, if your goal is Life-Cycle management, your progress toward your goal will be much better served with planned native species that not only provide food, but will also contribute to the development of stable plant communities. Seeding in disked ground is best accomplished by broadcasting. When broadcasting in disked ground it is recommended that seeding rates be increased by about one third to compensate for seed that will be buried too deep to germinate.

Now, here is the best part. Pollinators are so important, and the effects of their decline so potentially devastating, the United States Congress has deemed protection efforts to be a national priority. Numerous USDA Farm Bill conservation initiative programs promote pol-

linator habitat creation and conservation. The Farm Bill makes pollinators and their habitat a priority for every USDA land manager and conservationist. Programs such as CRP, SAFE, EQIP, and others offer significant financial incentives and assistance for pollinator conservation. For information and details on available aid you need to contact your local NRCS office.

Helping endangered species, protecting world food resources, creating great wildlife habitat, and Uncle Sam helping to pay for your efforts. Why wouldn't you get involved?

There's just this one small thing. Pollinator or not, that nest of red wasps in my deer blind has simply got to go!





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# Integrating Wildlife Considerations Into Forestry Operations

## Part 2 of a 4 part series: Pine Stand Management



By Ted DeVos and Rod Bach

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

*After correct herbicide application, you can change the understory plants to a more wildlife friendly composition of grasses, forbs and legumes.*

**P**ine stands. The backbone of southeastern forestry, but can it also be the backbone of wildlife management in the South? We believe so. More wildlife habitat can be created in pine stands and the associated reforestation techniques than any other habitat type. Well managed pine stands can be the epitome of true wildlife habitat management while providing good, periodic income for the landowner.

We have already covered the importance of breaking up, or diversifying, a property with stands of different species, ages and sizes in your management scheme, so let's discuss management techniques utilized in pine stands and cover the different species a little.

Three major pine species are used in the Southeast for forestry and wildlife management purposes. Loblolly, Longleaf, and Slash pine are the most popular. All can provide good timber income, good growth and good wildlife habitat if managed properly. Historically, Longleaf pine occupied the drier upland ridges and slopes

where well drained soils occur and natural fires burned regularly. In wetter flatwoods along the coast and Florida, both Longleaf and Slash pines occurred. Lower slopes and bottoms where fires were less intense or sporadic, Loblolly pine dominated. Changing forestry practices, burning regimes, genetic improvements, and reforestation techniques have made Loblolly the dominant pine planted north of the coastal plain and Slash pine dominant south of the coastal plain because both of these two pines exhibit speedy growth rates and fast returns. Longleaf has seen a resurgence in interest in recent years due to improvements in genetics and reforestation techniques, and therefore better survival and increased growth rates. With these improvements and changes in pine product markets, Longleaf has begun to appeal to landowners who are willing to forego short-term income (pulpwood rotations) for longer-term rotations like sawtimber

and poles for which Longleaf is well known as a superior producer.

As far as Wildlife management goes, Longleaf is more often selected because it is more tolerant of earlier and more frequent burning, and grows with a more “open” crown allowing ample sunlight through the canopy and therefore allows understory plants to flourish underneath. Any pine stand grown with a “closed canopy” and pine straw groundcover is lacking wildlife habitat. If timber production is the only goal, closing the canopy with pine needles is perfectly appropriate as this allows all the productivity on the site (sunlight, moisture, and nutrients) to be captured by the pines and turned into merchantable wood. As the degree of wildlife priority increases, more and more of the site productivity needs to be allowed to grow understory weeds, grasses, forbs, and legumes by opening up the canopy of the overstory pine and hardwood. Similar to a garden, this is why full sunlight openings are so

important in a wildlife management scheme. The difference however is that many highly nutritious and beneficial plants and weeds grow better in an open, burned pine stand than in an opening. There is also the tendency for landowners to disturb openings regularly with mowers and disks, changing the species composition. For instance, Dollar weed (a high protein woodland legume and excellent deer browse and quail food) occurs primarily in burned pine woods, but does not occur commonly in fields, nor does it like soil disturbance or mowing. Most native warm season grasses are similar, they respond well to sunlight and burning, however do poorly in shade or when disked.

That being said, how do we maintain this open nature in pine stands (even Longleaf which CAN close canopy and develop a pine straw dominated understory!)? We will cover initial planting density and site preparation techniques in the last installment of this series so



*Longleaf is often favored in plantings due to its ability to tolerate burning early in its life*

looking at established pine stands, both pre-commercial and commercial thinning are the main techniques used to open up the canopy. High density naturally regenerated stands can often have 1,000 or more stems per acre and to keep trees growing and healthy, as well as provide understory plants, thinning to < 700 trees per acre (tpa) in pre-commercial stands, or < 250 tpa in commercial stands is necessary. The more wildlife benefit you want, the fewer trees per acre you can carry. As noted before, crowded trees are stressed trees which become susceptible to disease, insects and exhibit poor growth characteristics.

### **Pre-commercial thinning**

In pre-commercial stands (those with average diameter less than 5”), thinning can be accomplished occasionally by prescribed burning. Two or three careful burns can often kill the smallest stems and leave the dominant trees growing well, but it can be hard to adjust the amount of kill and you can easily kill more than you

wish. It is VERY feasible but usually recommended for experienced burners.

A more consistent technique is to use hand crews which either cut down undesirable stems with machetes or power saws, or inject the undesirable stems with herbicides. Leaving an evenly-distributed stand of 500 – 700 dominant trees per acre will allow good growth and a stand that can be thinned commercially once the trees reach an average of 7” diameter.

### **Commercial thinning**

Early thinning in commercial pine stands is important to maintain healthy growth rates, keep stands less susceptible to disease and insects, as well as promote understory plants. These thinning also allow the landowner to remove diseased, poor growth form and suppressed trees from the stand. Thinning the stand back and leaving 100-250 of the best “crop trees” upgrades the value of the stand and concentrates growth on the best trees which will grow into higher valued products.

Obviously, if wildlife habitat is the priority, thinning to a lower tpa (trees per acre) range will be necessary. From a quail management standpoint, 100 trees per acre (in a 14-18 yr old stand) is still a well-stocked stand, and 200 tpa is way too many! While lower density pines will grow faster and healthier, there is an opportunity cost because carrying fewer trees per acre will leave fewer harvestable trees in future thinning operations. It may also adversely affect the quality of the residual timber by reducing the natural pruning that pine trees undergo in a more heavily stocked stand. In other words, thinning heavy and early leads to shorter and limbier trees in future years, allowing trees to grow thicker for longer results in a taller, less limby, straight tree. It is wise to consult your forester/biologist for assistance in marketing your timber, monitoring the logging job and making recommendations on residual density. Many variations on thinning are available from 3rd, 5th, and 7th row as well as corridor thinning in natural stands.



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Future thinnings should be conducted as necessary to maintain the stand open enough to grow your target understory. Assuring that 50% or more of the ground under a pine stand has direct sunlight on it at mid-day is usually a target goal for quail management objectives. This usually equates to a 30 to 50 square feet of basal area. Re-entering the stand for thinnings every 4-10 years also lightly disturbs the understory changing the plant community somewhat and promoting different, disturbance-dependant plants for a few years. The larger and older your pines, the more value each individual tree has, so quality in logging and product merchandizing becomes extremely important. Timing of the sales to take advantage of markets as well as weather and soil conditions of the individual tract make a huge difference and the services of a professional forester can make a landowner money and give him peace of mind!

## Mid-rotation management techniques

### Herbicides

*Wildlife Trends* has had several articles dealing with utilizing herbicides in woodlands and openings. The brunt of using herbicides in pine woodlands is that young hardwood saplings compete for sunlight and nutrients in a pine stand just as the pines (which we want to grow well) and the understory weeds do (which we also want to grow well). In many scenarios, sapling hardwoods like sweetgums, oaks, ash or shrubs like salt-bush and wax myrtle can completely take over the understory of a pine woodland after thinning, reducing its wildlife value to zero, just like if the pine stand was a fully closed canopy and the understory was pine straw. While there is some nominal value for cover for deer and turkey, these mid-story hardwoods shade out all of the valuable food and nesting plants wildlife require. Interestingly enough, burning in these pine stands rarely controls these hardwoods adequately and only keeps a portion of the



*Often after thinning and burning, sweetgum becomes the dominant understory plant in pine stands*



*Regular burning is beneficial for both wildlife values and to keep pine stands relatively free from competition and allow faster growth*

stems from growing into trees.

The simplest way to manage a wildlife property with diverse stands of both hardwood and pine is to keep them separate. Leave your hardwoods concentrated in the bottomland and pines on the uplands! While a hardwood bottom with some scattered big pine is wildlife friendly as is burned pine stands with scattered white or post oaks, but most managed stands are more easily managed separately. Removing low-quality/value hardwoods from pine stands with

selective herbicides allows understory weeds to flourish as long as the pine canopy is thin enough for good sunlight penetration. Once sprayed, the benefits last for years. Advances in herbicide technology have allowed for highly selective herbicides which kill selected groups of plants while promoting others. Selective herbicides such as imazapyr do a good job of killing hardwood stems and research has shown that wildlife friendly plants like beautyberry, blackberry, ragweed, partridge pea, as



*Mulchers are often used to follow up behind thinning jobs and logging crews to “clean up” the look.*

well as all native legumes are undamaged, however, it can damage things like longleaf pine and native grasses. Other herbicides like Triclopyr do an excellent job of killing hardwood sprouts while leaving native grasses healthy; however, they are tough on forbs and legumes. The point is that depending on what you have and what you want, there are often selective herbicides that will do a good job of establishing the plant community you are looking for.

### **Mowing/mulching**

When sapling hardwoods develop in the understory and mid-story for too long without control, they become a heavy management problem. Stems that are too small for commercial harvest, but too large for conventional equipment like mowers need to be addressed with

other means. Large, tree-cutter type mowers are available which can be tractor mounted and backed up into larger stems (up to 8”) and cut down. Any smaller stems that the tractor can run over can also be mowed down. This equipment is good for smaller acreages and is a slow operation. Woodland grinders have become more popular in recent years and can conduct this “cleanup” in short-order. They are available in larger equipment and have cutting heads up to 8’ wide and with 200 +/- Horsepower. These grinders can cut down larger (10’+) stems and can grind them into mulch on-site. They can be used as an alternative to a bulldozer to clean-up woodlands and have the additional benefit of not disturbing the soil and leaving the woodland plants and grasses free to grow. Herbicides are often used as a fol-

low-up treatment to permanently remove these hardwood stems.

### **Fertilization and Pruning**

Forest fertilization has become more popular in recent years. Fertilization can provide for rapid growth of pines if soil conditions are lacking and can yield good returns on investment in the right soils. Once pines are thinned to desired density and the best “crop trees” are left, fertilization concentrates growth only on those trees deemed to become high-value. Fertilization with nitrogen and phosphorus is the most common application and the results of this technique also apply to the understory food plants wildlife management targets. The only negative consequence can be in very open pine stands with fertile soils that occasionally develop understories too thick for species like quail to move

through and negotiate. Fertilization in this scenario may not be desirable.

Pruning has also become more popular for pine stand management. Pruning is especially helpful in pine stands grown at lower density at a young age. Low density plantings (250-400 tpa) typically do not limb themselves well and often grow thick lower branches which lower quality of marketable products. Pruning can help alleviate this problem by removing the lower limbs manually. Pruning prior to first thinning should concentrate on the best trees expected to be left once the stand is thinned and they can be pruned to @ 8' by a hand crew with saws and machetes. After a few years and once pine stands have been thinned to desired density, the best "crop trees" can be selected to have additional lower limbs removed to @ 16' leaving the first log clear of limbs and knots.

#### Prescribed burning

Prescribed fire is one of the most important and reasonably priced tools available for wildlife management in

pine stands for the forest landowner. Conducted correctly, fire helps keep pine stands open, limbs up lower branches on pines, cleans up heavy accumulation of fuels and grasses on the ground, stimulates good wildlife plants like legumes, etc, and helps control small amounts of hardwood growth. Varying season of burning changes the amount of hardwood control and plant species composition. For the best wildlife productivity, all burnable pine stands should be regularly burned, but broken up so that plenty of upland, unburned cover remains after the fire. Even very young loblolly stands (6 years or so) can be successfully burned, helping remove excess pine and hardwood, limbing young pines and opening the stand to allow better wildlife movement through the stand. Although Longleaf can and should be burned at young ages (2 years), care must be taken when burning Longleaf which is 2' - 5' in height as this is the one stage where they can be damaged by fire. Using an experienced, professional pre-

scribed burner is always a good idea in all but the simplest woodland fires.

The opportunities to increase wildlife value in pine stands are great. By manipulating stand density and understory composition, well-managed pine stands can create some of the best available wildlife habitat in the Southeast. Each of the above topics could have an individual article written on it, and all can significantly increase wildlife habitat and timber value. While the amount of openings on a property and what is planted in them can have a significant impact on wildlife, many if not most properties in the Southeast have a significant portion of pine. These areas can easily compose the backbone of the wildlife habitat on the property if properly managed. The measure of true Wildlife Management is not necessarily in what, how much, or where you plant things. It can more readily be measured in how well your pine woodlands are managed.

In the next issue, we will examine opportunities for integrating timber and wildlife considerations in Hardwood stands.



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# Wildlife Trends Journal Management Calendar

By Dave Edwards

April/May 2014

Dave Edwards is a certified wildlife biologist and regular contributor to *Wildlife Trends Journal* and other hunting/wildlife publications. Dave was honored as QDMA's 2007 Deer Manager of the Year and nominated in 2011 as Alabama Wildlife Federation's Wildlife Conservationist of the Year. Dave is General Manager for Cabin Bluff Lodge and President of Tall Tines Wildlife & Hunting Consultants, Inc. Contact him at [Dave.Edwards@CabinBluff.com](mailto:Dave.Edwards@CabinBluff.com) or 912-464-9328.



*Hardpans in food plots can be easily detected using a soil probe*

## **Subsoil food plots**

Soil compaction, also called hardpan, may limit or constrain forage production and plant survival in food plots. A hardpan is a densely compacted layer of soil that lies between the topsoil and the subsoil. Generally speaking, depth of hardpans vary but are often 4"-12" below the surface of the soil and are caused by the weight and pressure of tractors (and other equipment) on the soil and repeated disking/tillage over

several years that loosen top soil allowing the finest particles of the soil (clay) to migrate downward, accumulate, and bind creating a very dense layer. This dense layer is "the hardpan". Imagine it as a layer of concrete below the surface of the soil. As you would expect, water and oxygen do not travel well through hardpans, thus during periods of adequate rainfall, water may lie in puddles on the surface of the compacted soil and evaporate before it can seep down

into the soil. Similarly, during periods of low rainfall, the topsoil of food plots that have a hardpan dries out quickly due to the shallow layer of topsoil and inability to draw moisture from subsoil resulting in stressed or dead food plot crops. Hardpans can be easily detected in food plots using a soil probe, which is a 2' to 4' metal rod - sharpened on one end to penetrate the soil, and a handle on the other end to assist in pushing the probe through the soil. You can



*Subsoiling is a method used to break hardpan (compacted layer of soil) that restricts water and nutrient movement through the soil. Where needed, subsoiling can result in significant improvements in food plot success.*

make a probe out of rebar or purchase one from a forestry supply company ([www.forestry-suppliers.com](http://www.forestry-suppliers.com)) for about \$75. The best time to check for hardpans is when the soil is not extremely wet or dry. Insert the probe at various locations across the food plot. As the probe is inserted, the force required to move it through the soil should remain about the same until a hardpan is reached. Upon hitting a hardpan, it will take much more effort to push the probe. From my experience, hardpans in food plots are often 4"-6" below the surface, which is the depth at which most disks plow, and may be 2"-10" thick depending on soil type and age of the field. Breaking the hardpan is often referred to as "subsoiling" which breaks up the soil to depths of 6"-12" and fragments compacted soil allowing water and roots to penetrate into the subsoil. To subsoil, you will need to use a subsoiling chisel plow – simply referred to as a subsoiler. Subsoilers do not invert or turn the soil like a plow used to prepare the field to plant; they are simply heavy duty steel shanks tipped with blades that drive deep into the soil and are pulled along to break the hardpan below the surface. As you can imagine, subsoiler plows cause significant soil drag and require a tractor or dozer with at least a 50 horsepower engine. A good rule of thumb is 10-15 additional horsepower is required per shank on the chis-

el plow. Most plows have 1-5 shanks that are set 9" to 12" apart. Generally speaking, subsoiling every 2-3 years will benefit soils, keep hardpans from developing, and enhance plant growth in food plots. If you do not own a subsoiler, many companies rent them. However, it is a valuable food plot implement I recommend owning if you manage many acres.

### **Delay mowing to increase wildlife value**

The notion that a field or roadside is unkempt if it is allowed to grow up continues to cause landowners to begin mowing as soon as the growing season starts. Others simply like to keep a manicured look and mow every place a tractor and mower can get. Where wildlife management is a goal, grown up

areas are valuable habitats and provide many benefits. Late April through early June is the peak nesting season for wild turkeys and several other ground-nesting birds. These species prefer to nest in overgrown pastures, hay fields, road edges, and ditch banks, which can make them vulnerable to mowing and haying. In order to avoid impacting these species, delay mowing of these areas until after July 1st if possible. Deer will also benefit from delayed mowing as fawns use these same areas for concealment to protect them from predation.

### **Allow annual clovers planted in your fall food plots to seed out.**

If you included fall annual clovers such as crimson, arrowleaf or other red clovers in your fall food plots, you will notice a strong burst of growth during



*Allow annual clovers to "seed out" through early summer. The seeds produced will germinate and recolonize the clover next fall.*

spring and early summer. These clovers will provide excellent wildlife value through early-mid summer. Deer, turkeys, and other wildlife will eat the nutritious foliage of these clovers until the clovers die in summer. Another benefit of annual clovers is that insects are attracted to the flowers produced as the clover produces seed. Insects are an important source of protein for turkey poults and quail chicks. If properly managed, these clovers will produce seed that will germinate next fall and produce another good stand of clover. To ensure this happens, do NOT mow your food plots before the clover produces seed. We generally leave these fields alone and let them go fallow through late summer. After the clovers die, many weeds will begin to take their place. On many properties, these weeds

provide some wildlife value. The next management we apply is early fall when we mow the plots as low as possible, allow the existing weeds a week or so to start growing again, then apply a glyphosate herbicide (RoundUp type herbicide) to prepare the ground for fall. When fall planting time arrives, apply needed fertilizer, lightly disk (or burn), then broadcast or drill cereal grains such as winter wheat and/or oats. So, if you want to regenerate annual clovers and take advantage of the free seed produced by the crop you planted last fall, do not mow your food plots before the clover seeds out.

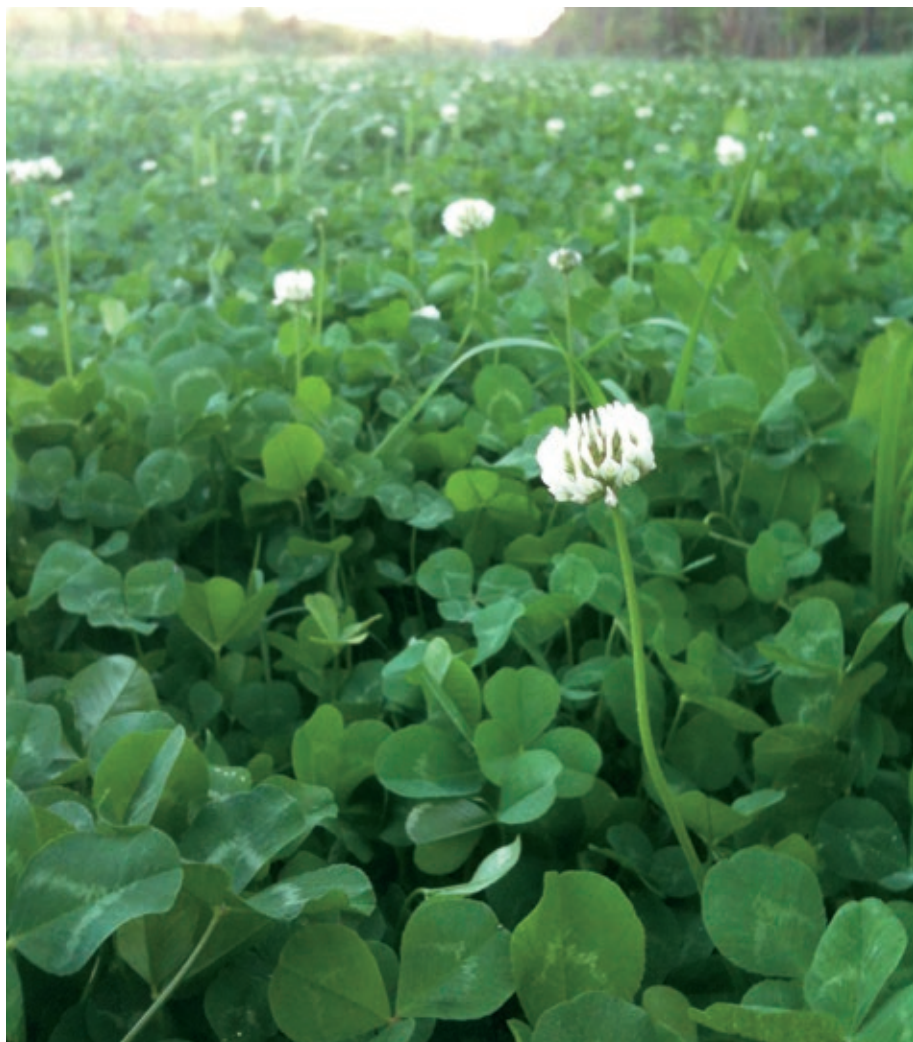
### **Fertilize and control weeds in perennial clover food plots**

Perennial clover plots will start growing rapidly once daily temperatures

exceed 65 degrees resulting in warmer soil temperatures. Apply a fertilizer that does not contain nitrogen, such as 0-20-20, during early-mid spring to provide adequate nutrients for clover growth. Clover produces its own nitrogen. If you add nitrogen, you are simply feeding competing grasses. A standard fertilizer application rate for clover in the spring is 200 lbs./acre. Once the growing season begins, monitor the plot for weeds and grass. Mowing will help reduce undesirable weeds. Do not mow too low. Your mower should be set to cut just over the clover leaves. However, if weeds and grasses persist, apply selective herbicides for control. I often use Poast Plus for grasses and 2-4-DB for broadleaf weeds, or Pursuit for both broadleaves and grasses. All of these herbicides will not harm legumes such as clover. Although herbicides are more expensive than mowing, they are often the most effective. Mowing is used to give the clover a better chance to out-compete the weeds while herbicide kills the weeds.

### **Create and/or recharge mineral licks for deer.**

If minerals are lacking in the native habitat (or in the soils), deer will readily use mineral licks throughout the growing season (spring/summer). There are many commercial products available to use in mineral licks that are pre-mixed or you can create your own. A recipe I often use is mixing 50# Dicalcium Phosphate, 50# Calcium Carbonate, and 50# Trace Mineral Salt. These ingredients can be found at most farmers cooperative stores. To mix the minerals simply add each to a wheelbarrow or 3-point spreader and mix well using a shovel. This mix will be enough to create about 3-4 mineral licks. A good rule of thumb is to establish 1 lick per 200 acres. Rather than simply stirring minerals into bare ground, I prefer to create mineral lick sites using a small stack of half rotten logs and pour the minerals over the pile. Using this method the rain will leach



*Fertilizing perennial clovers in early summer will result in an abundance of leaf production and quality forage. Monitoring and addressing weeds through the summer will ensure clover fields produce the maximum amount of food.*

the minerals into the logs. It is also a good idea to dig a small trench around the stacked logs to contain the minerals and prevent run-off. The dirt can be added to the mineral mix and added to the pile. Deer will simply eat the rotten wood that is saturated in minerals. As the pile deteriorates due to deer use, simply add a few more logs and minerals to the pile. If deer on your property do not use the licks, don't worry. This probably means that they are acquiring adequate minerals from native plants and do not need supplemental minerals.

**Drain hardwood areas (aka – greentree reservoirs or GTR's) that are being intentionally flooded and managed for waterfowl.**

Managing and flooding hardwoods is a common management practice to attract and provide quality food for waterfowl and/or a way to increase duck hunting opportunities on a property. To be effective, the manager must have the ability to control water levels within the area. Most GTR's are created by building a small dam or levee around the hardwood area being managed that allows you to hold water on the area. Water control structures are used to allow the area to flood, control the depth of flooding, and to release water or drain the area. The timing of the flooding or flooding regime/strategy is very important and, over time, will affect the species of trees that will exist in the area. Ideally, the goal is to have quality oak species that will produce acorns for ducks to eat, along with quality vegetative and aquatic food sources. Most of the desired oak species such as water oak, cherrybark oak, pin oak, laurel oak, and others, are flood tolerant during the winter because they are dormant then, but are not flood tolerant during the growing season. Thus, areas that contain desirable oaks need to be drained before spring green up (which varies throughout the country) to ensure their survival. Areas that are allowed to remain flooded into the growing season will slowly con-



*Ensure quality hardwood areas are fully drained by spring green-up. Allowing these areas to remain flooded well into summer can harm or kill desirable oak species.*

vert to flood tolerant tree species such as tupelo and cypress or other less desirable tree species. Without management, Mother Nature dictates the tree species in an area that floods. Think about areas on your property that remain flooded or only flood during the winter. Areas that remain flooded through summer or year around will be primarily composed of undesirable tree species for waterfowl. Having said this, many of these areas are still attractive to waterfowl due to the aquatic plants and associated invertebrates that colonize in the water. If you do not have a GTR on your property but have area(s) that would lend themselves well to this type of management, spring and summer are the best times to create them. Depending on the situation, constructing a GTR can be relatively easy and inexpensive and will add additional recreational opportunities for you to enjoy. One word of advice that will save you time and money - consulting with a professional is money well spent during the planning stages.

**Inspect and manage planted hard and soft mast fruit trees**

Late spring is a good time to provide TLC to planted fruit trees. By this I sim-

ply mean taking time to inspect each tree to see what it needs in preparation for the growing season. If tree tubes were used, make sure the tree and tube are properly staked and upright. If fire ants have built a mound inside the base of the tube, treat them. Make sure zip ties are secure on stakes and tubes. If trees were mulched, inspect the mulch and add more if needed to reduce weed competition. Speaking of which, late spring/early summer is a good time to spray glyphosate (RoundUp) around the base of each tree to kill grasses and weeds that compete for water and nutrients.

**Prepare and plant food strips for turkeys and quail.**

Food strips are "food plots" for turkey and quail that wind through fields, quail courses, along fire breaks, or wooded habitat. Most supplemental food plantings for quail are warm season crops and established during spring and summer. Food strips are particularly beneficial in years of low native food availability. Plantings of Egyptian wheat, Sorghum-Sudan, grain sorghum, brown-top millet, fox tail millet, and pearl millet are great crops to plant in food strips and will do well in most soil types in



*Planting a blend of seed producing crops result in a diversity of food sources for quail, turkeys, and other wildlife.*



*Spring is a great time to clean and sanitize supplemental feeders. This feeder was pressure washed with a bleach solution and is ready to be deployed.*

the Southeast. Food strips should be planted in a rotational fashion. That is, in successive years place new plots adjacent to previous years plot to create a mosaic of current year plot and stubble/annual weed community from previous years plot. Leaving the food plot stubble (not disking and replanting in the fall) will provide quality cover during fall and winter for game birds.

### **Plant summer food plots for wildlife**

Throughout most of the Southeast,

April and May are the desired planting periods for many summer crops such as millets, sorghum, peas, corn, soybeans, etc. Because many of the seed producing grass type crops that benefit birds are summer crops, wingshooters devote a lot of energy and effort into planting during this time of year. Deer hunters are well aware of fall food plots because they are so attractive to deer during hunting season, which helps hunters observe and harvest deer, but often overlook the benefits of summer crops for deer. If you are not fortunate

enough to have commercial agriculture on your property or nearby, planting summer crops will benefit your deer herd if adequate acreage is planted. Many nutrient draining biological processes such as fawning, milk production, and antler development are taking place in deer at this time. Most summer plantings for deer are very nutritious and high in much needed protein. Commonly planted summer crops for deer include many varieties of peas, soybeans, corn, lab lab, vetch, and clovers. One of my “go-to” summer blends for deer in the Southeast is a combination of clay-iron peas, lab lab, and peredovic sunflowers. One mistake I often see made is trying to plant these crops on small food plots. Because they are so attractive, plots need to be at least an acre, preferably more. Even at low densities, deer can apply too much grazing pressure on small plots and in many cases eat all plants shortly after germination before the crop has a chance to establish. Regardless of whether you are planting for birds or deer, a successful planting starts with testing the soil and applying required fertilizers and lime to ensure good soil quality. Create a clean, smooth seed bed and plant under favorable conditions. Favorable conditions mean adequate soil moisture and a good chance of rain after planting takes place. As you can imagine, weed control poses more problems in summer plantings because of the warmer growing conditions. Therefore, it is essential to monitor summer food plots for weed encroachment and treat as needed for optimal forage production.

### **Move, clean & keep supplemental feeders full for deer.**

For those that implement a supplemental feeding program for deer, you have probably noticed a significant decrease in feed consumption during the spring green-up period. This is a great time to move (in the same general area) and deep clean all feeders in preparation for the upcoming summer. Deep clean-



ing for us means hauling a feeder back to the shop to clean all old feed and debris out, then pressure washing using a bleach solution. As new vegetation begins to mature or “harden up” it will be less nutritious and attractive to deer and feed consumption will increase. Although supplemental feed should be provided throughout the year (or at least when it is legal), May through September is the most critical period to ensure deer have a quality diet.

Supplemental feeding is particularly beneficial to deer herds in poor quality habitats such as coastal plain areas or areas with deep sandy soils. There is simply a larger nutritional gap to fill on these less fertile habitats. Many biological processes such as antler growth, fawning, and milk production occur in deer during this period. Later in summer is also the period in which quality natural food sources are often at their lowest. I recommend providing a quality nutrient rich feed that contains protein, calcium, phosphorus, fiber, etc. Whole corn should be avoided when possible unless you are “training” deer to use

new feeding stations or your goal is purely to attract deer. Lastly, remember that supplemental feeding is just what the name implies – a supplement to properly managing the natural habitat and deer herd. It is the highest hole to “patch” in your management bucket, meaning everything else should be in place before a supplemental feeding program is undertaken or implemented.

#### **Lime and fertilize roadsides.**

Roadsides can account for a great deal of acreage on your property. Liming and fertilizing natural areas along roads during spring will enhance plant growth, attraction and nutrition of these areas for wildlife. These areas not only provide quality browse for deer, but create ideal nesting and escape cover for turkeys and quail. Many landowners concentrate their efforts in the woods or food plots but overlook roadsides when managing the property. Liming and fertilizing roadsides not only enhances the wildlife habitat, but because wildlife are attracted to these areas it also increases wildlife viewing opportunities while riding

around the property. If you have undesirable vegetation or exotic plants along roadsides such as sweetgum trees, privet, cogon grass, etc., consult a biologist or forester to determine the appropriate selective herbicide needed to promote wildlife friendly plants.

#### **Clean and store prescribed burning equipment**

Now that the winter burning season is over, take time to clean and properly store equipment used so that it is in good working order the next time you burn. Burn fuel should be properly labeled and stored in a dry/cool place – actually I try to use up all burn fuel during the burning season if possible so that I do not have to worry about storing flammable material. Take firepots apart and clean/replace wicks if needed. Ensure the rubber seal on the lid is in good shape and replace any parts that show excessive wear. Clean and inspect handles, parts, and screws of fire rakes, flappers, etc. Although I use my herbicide tank/sprayer for fire suppression (water), I generally take time in late spring/early summer

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to clean it up and do general maintenance because I know I will be using it a good bit throughout the summer.

### **Prepare now to reduce deer hunting pressure next fall.**

Hunting pressure plays a significant role in the hunting quality (number and quality of deer seen while hunting) of your property. Hunting pressure does not necessarily mean a lot of shooting that is spooking deer. Most hunting pressure is often applied when hunters do not shoot at all. Examples of this include making full-scale scouting trips through a property during the season, spooking deer while entering or exiting a hunting stand, and hunting stands during unfavorable wind conditions. Most hunting clubs and clients managed by Tall Tines Consulting collect hunter observation data where they record the number and quality of deer they see while hunting. This helps us assess hunting quality which plays a role in our deer harvest decisions and hunting strategy recommendations. Years of hunter observation data from our cli-

ents shows that deer sightings, particularly mature buck sightings, decrease as hunting pressure increases. Therefore, you should make efforts to keep hunting pressure to a minimum. One way to decrease hunting pressure is to screen hunting stands and hunter access areas with evergreen trees or other plantings to allow hunters to enter or exit the stand without impacting deer in the area. While evergreen trees work well for this application, we often plant tall standing crops such as corn or Egyptian wheat where needed to hide hunters. Because these are spring/summer plantings, you need to think ahead. That is, identify hunting stands now that need screening next fall. Strips of corn or Egyptian wheat need to be at least 10 yards wide to be effective since some of the crop plants will fall over after heavy frosts. Obviously wider strips will better conceal hunters.

### **Establish or create field borders where possible.**

Field borders are just as the name

implies – the areas around the perimeter of fields where they meet woods. This area is biologically referred to as an ecotone (where two habitats meet). These areas can be significantly enhanced for wildlife by creating a “soft edge” by planting species that will gradually taper the abrupt edge of a mature forest along a field. A 40-60 foot field border can be established by planting crops such as sorghum and millets and/or brush/shrub species along field edges. These areas provide food, travel lanes, nesting, brood-rearing, loafing, and escape cover for many wildlife species. Field borders can be managed for native grass/shrub species as well. Simply leave these areas fallow and maintain by periodic mowing, burning, or light disking to prevent trees from encroaching. As you may know, most game species thrive and depend on edge habitat. Strategically creating field borders on food plots can enhance bow hunting opportunities as well. For example, creating an hour glass shaped planting area on a rectan-



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gular food plot, by allowing the middle edges to grow up naturally, will “funnel” deer through the pinched portion of the planted area offering bow hunters a close shot. I encourage you to check with your local NRCS office to see if you qualify for the “CP33” program. This is a Conservation Reserve type program (CRP) that offers incentives for landowners to install field borders. There is often a cost share initiative that would help pay for this work.

### **Conduct timber harvests early.**

If any of your timber is scheduled for thinning or harvest this year, early summer is a good time to conduct these activities. Harvesting timber during winter, if your property is dry enough or during early summer will give these areas the entire growing season to re-vegetate resulting in better wildlife habitat. Timber areas that are harvested late in the growing season, say July, do not have much

growing season left to recover or re-vegetate which results in poorer quality wildlife habitat until the next growing season when plants can re-establish.

### **Control feral hog populations**

Feral hogs are very destructive and a nuisance on many properties throughout the Southeast. While hogs add additional hunting opportunities for landowners, they are difficult to control. I often hear “I’d like to have a few hogs on my property to hunt”. I agree and enjoy hunting hogs from time to time. However, if you’ve ever had hogs, you know this is not possible...you cannot have a “few” hogs. A property normally has no hogs or an overabundance of them. The reproductive potential of hogs is extremely high in good habitats. With pregnancies lasting only 115 days, hogs generally produce 2 litters of 1-13 piglets per year, with the potential to have 3 litters! So needless to say, extreme/

aggressive control is needed to simply keep up with or stabilize a hog population. There are many ways to remove hogs. Some of the most common methods include trapping, recreational hunting, and professional hunting/trapping or a combination of all. There have been many articles in *Wildlife Trends* dedicated to successful trapping methods. Hog control should be applied throughout the year or when needed. However, many landowners increase efforts during the summer to reduce disturbance and “hunting pressure” during hunting season. Besides their destructive nature on wildlife habitat, hogs can destroy roads, food plots, pond dams and many other structures on your property. They can do several thousand dollars’ worth of damage in a short period of time. Controlling hogs will save you time, money, and frustration.

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# Wildlife Trends Journal

## Pond Management Calendar



By Scott Brown,  
Southern Sportsman  
Aquatics and Land  
Management

April/May 2014

*Spring time electrofishing generally yields the best sampling results because bass are in water depths susceptible before, during and post spawn. This Florida largemouth bass is 27 inches Total Length and weighs 15 lbs, sampled on March 2, 2014 from a private lake in Central Florida.*

### **Begin or Resume Fertilization**

Resume or start a fertilization program once the water temperatures appear they will stay above 60 degrees. A waterbody with an algae bloom is more productive, meaning it can grow larger fish and more of them than a clear waterbody. Done correctly it also helps shade out light, which helps control submerged vegetation growth. Prior to starting, check water chemistry parameters to make sure pH, hardness,

alkalinity and conductivity are in the desirable ranges for a successful fertilization program. Order enough fertilizer to make it well into or for the entire summer, as you do not want to run out and allow the water to clear while waiting for more to arrive and allow submerged vegetation to grow. A well thought out plan and commitment must be done prior, otherwise results can be disastrous and expensive if it is stopped or neglected. Desired visibility depth

ranges vary by publication, but we advise our clients to keep it between 18 and 30 inches. More visibility allows too much light and submerged vegetation can grow, while less could increase the potential for a fish kill. Check visibility every two weeks and follow fertilizer manufacturer's directions regarding application rates.

## **Start-up Fish Feeders**

Resume or start a feeding program when water temperatures are continuously above 55 degrees. It is recommended to have approximately one feeder per five acres of water. Feed once per day (mid-afternoon) until water temperatures get above 60, and then switch to twice per day (mid-morning and mid-afternoon). Once water temperatures get above 70, feed four times per day. Use floating feed and match the feed size to the target species and size. If it is a new pond with small bream or catfish, then use a small pellet (called Fingerling or Grow-Out size feed). If mid-size to large catfish and bream are the target, use regular sized pellets. If you have an established pond with various sized bream and catfish then mixing the two is an option to make sure all size groups are consuming supplemental feed. Whenever feeding, set duration time so all feed is consumed in approximately 15-20 minutes to reduce waste and not create water quality issues by over-feeding.

## **Remove Largemouth Bass**

Pond management includes largemouth bass harvest, which is necessary to develop a trophy bass fishery. Spring is one of the easiest times to catch bass. If bass harvest is prescribed, get started now. If you get all the bass prescribed out early in the year there is that much more forage available for the ones remaining. Generally, there is a target slot size that fish are removed. If it's 13-16, do not take all 13 inch or all 16 inch bass. Evenly distribute the harvest or take more smaller, than larger fish. Invite family, friends and neighbors over to catch bass and let them take them home or have a fish fry. Check your state's regulations on the number per day that each angler can harvest from private lakes. Some states have no regulations on fish caught from private waterbodies, while others are very strict.

## **Treat Nuisance Aquatic Vegetation with Herbicides**

Any troublesome vegetation the year prior should be treated early (as soon as green-up begins) to reduce issues regarding that plant species later in the year. When using herbicides near or in water you should have a professional, certified, licensed and insured applicator perform the work. Aquatic herbicide use is much more complicated than performing these tasks on uplands. Done improperly, it can result in a partial or entire fish kill, and depending on the

circumstances anything downstream can also be in danger. Fish can perish from direct contact of improperly used herbicides, but more often are affected by decomposing vegetation which can cause low Dissolved Oxygen leading to stress or a fish kill.

## **Conduct an Electrofishing Survey**

Spring is the best time to conduct a fish survey (electrofishing), especially just prior, during or just after the largemouth bass spawn. These surveys pro-



*Not harvesting largemouth bass from a lake can result in overpopulation and stunted growth. Notice the bass's head in relation to its body and the sunken belly.*



*Lots of forage there for young-of-the-year bass and adult bream in the form of mosquitofish. The owner also needs to keep an eye on that filamentous algae and treat in early spring so it doesn't become an issue throughout the summer.*



*Electrofishing samples reveal fish that otherwise might not be known that are present, such as this golden shiner.*



*This landowner did it right by leaving vegetation, opening up a bank fishing access point and installing a fish feeder on the dock.*

vide a starting point and/or assess previous management practices, which results can be used to make sound management decisions and help you reach your goals. Electrofishing allows us to

obtain a snapshot of the entire fish population, not just the species and sized individuals that are caught on hook-and-line. These surveys should be done every two or three years. They are a

critical management tool in the decision making process for your waterbody. Reference *Wildlife Trends Journal* Volume 12, Issue 2, March/April 2012, *Electrofishing: How it Works and What Biologists/Managers Get Out of It.*

### **Stock Fish**

Any stocking prescribed for the year by your pond manager should already be coordinated, but if not, talk to your hatchery and order fish to be stocked for the year. If necessary, put a small deposit down to guarantee you get your fish. Depending on species and size ordered, the fish will be delivered between spring and fall. Almost no private lake requires restocking of largemouth bass. However, forage fish (threadfin shad, golden shiners, tilapia, etc), Morone Hybrids and channel catfish may need to be occasionally restocked.

### **Plant any Desired Trees and Soft Tissue Plants**

Any additional trees around your waterbody should be planted before green-up begins (late winter/early spring). If additional shoreline vegetation is desired, planting soft tissue plants just as the growing season starts is advised so they have the full growing season to take root and become established before the next winter. Shoreline vegetation helps reduce erosion, provides habitat for fish and wildlife and can be aesthetically pleasing. Do not plant any non-native species and develop a well thought out plan on which species to plant where. Consider current water depth at the time of planting and how it relates to the average. Also, consider amount of light and soil type requirements for each species desired to increase survival success. If wildlife is also in your management strategy, planting mast or fruit trees can also be done for various game animals. Reference *Wildlife Trends Journal* Volume 12, Issue 3, May/June 2012, *Aquascaping to Improve Your Pond.*



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