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Forestry, Wildlife, and Fisheries

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Department of Forestry, Wildlife and Fisheries

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Forestry, Wildlife & Fisheries Update Newsletter

Department of Forestry, Wildlife and Fisheries
George Hopper - Professor and Head

March 2003

Home Page - <http://fwf.ag.utk.edu>

Fisheries/Aquaculture - <http://www.utextension.utk.edu/aquafish>

Southern Pine Beetle Management - <http://fwf.ag.utk.edu/sites/spb/pine2/welcome.htm>

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Calendar of Events - 2003

Mar. 18	Master Wildlifer Short Course - via Satellite
Mar 21, 22	Logging Expo at Jackson Fairgrounds
March 24	Forest Marketing for Landowners, Summertown, TN Contact: Richard Groce, Maury County, 931-388-9557
March 28	Native Warm Season Grass Workshop in coordination with Natural Resources Conservation Service, 9:00 - 12:00 Central Jackson, TN
March 29	Turkey Season Opens
April 12	Humphreys Co. Forestry Field Day Contact: Mike Wright
May 12	4-H Forestry Contest
May 13	
May 14	
May 15	

Faculty:

<i>Wayne Clatterbuck, Forest Management</i>	<i>George Hopper, Natural Resources</i>
<i>Craig Harper, Wildlife Management</i>	<i>David Mercker, Forest Management</i>
<i>Thomas Hill, Fisheries Management</i>	<i>Larry Tankersley, Forest Management</i>
<i>Sam Jackson, Web Coordinator</i>	

Burn Old Fields Now for Renovation!

Craig A. Harper, Assistant Professor, Wildlife Management

The single-best way to improve old fields for enhanced wildlife habitat is prescribed burning. Late winter is an excellent time to burn because spring green-up is coming soon and the reduction in cover (consumed by the burn) for wildlife is short-lived. Prescribed fire reduces the litter layer (e.g., dead leaves and grass) and enables seed in the seed bank to germinate. This promotes plant diversity. **Burning old fields is highly recommended over bushhogging.** Burning consumes the dead thatch and allows increased movement through the field by brood-rearing quail and turkeys. After plants mature, seed are available to birds because bare ground is present (as opposed to a thick layer of thatch). By rejuvenating and stimulating herbaceous growth, insect availability for upland game birds is increased and forage for deer, rabbits, and groundhogs is improved. Burning old fields every 2 – 3 years will continue to set back succession and keep the field from becoming a thicket of small trees.

Burning also is recommended when preparing a field to be sprayed (e.g., a field of tall fescue being converted to native warm-season grasses). Oftentimes, planting isn't even necessary. An application of 12 ounces of Plateau herbicide (salt of imazapic) per acre following a prescribed burn (pre-emergence application) is all that is necessary to create favorable wildlife habitat in most fields.

Burning in woods—both hardwoods and pines—also consumes litter, which is fuel for a wildfire. The effect of burning in woods is greatly influenced by the amount of light entering the canopy and reaching the forest floor. Generally, the best effect for wildlife is realized after a stand has been thinned.

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A Good Day For a Burn

Larry Tankersley, Extension Specialist I, Forest Management

That's what my supervisor said when I was a young forest technician. I didn't know what he was talking about at the time, all I knew was that it was a beautiful spring day. The sky was nice and blue. A gentle breeze was steady from the northwest. The air was dry and cool; almost cold. It had been a couple of days since the last soaking rain. The top layer of leaves was dry but the ground was still moist. A perfect day for a burn.

What makes the preceding conditions good for a burn? Blue sky indicates an unstable atmosphere. An unstable atmosphere encourages warm air to rise and keep rising. Smoke generated from a fire needs to disperse quickly. Forest fuels typically generate a lot of pollution, particularly particulates. These are small particles which pass into our lungs. This pollution needs to dilute and disperse quickly. Low clouds indicate a reduced mixing height and tends to keep smoke close to the ground where people are breathing.

A gentle breeze is helpful in dispersing smoke. It also helps to provide a steady supply of oxygen to the flames. This oxygen assists in complete combustion of fuel. Complete combustion reduces the production of particulates/pollution, and increases the heat which is needed to reduce the fuel and raises the temperature at the base of plants that we are trying to control with our burn. Reducing particulates also limits "fire brands" which can ignite wildfires outside the prescribed area.

Dry cool air is important for a couple of reasons. Dry air or low humidity means also that the fuel is relatively dry. Most vegetation is fairly porous, which means the interior moisture is related to the atmospheric moisture. Moist fuels waste heat drying the fuel thus reducing complete combustion, and increase smoldering which in turn produces more particulates/pollution. Heat used to drive away moisture also reduces heat available for reducing the fuel and controlling target vegetation.

Cool temperatures protect non target plants especially the crowns of "crop" trees. Heat rising into tree crowns damages buds, needles and twigs. This damage although not usually lethal, must be repaired by the

plant reducing valuable growth on our future wood products. This damage also weakens trees rendering them more susceptible to opportunistic fungi and insects. Many insect outbreaks have been traced to fire damaged timber.

A couple of days after a good soaking rain provides a moist barrier against mineral soil. The objective with a prescribed burn is to reduce fuel not to expose soil. Exposed soil can be damaged and is prone to erosion. Exposed soil also indicates high temperatures at the soil surface where a majority of crop's roots are. Damaged roots are often the cause of tree death following a hot fire. This damage is not as conspicuous and brown topped crowns but is just as important in reducing tree growth and assisting opportunistic pests.

Burning is useful in forest/wildlife management. It really is impossible to know too much about it. Fire is a fundamental force in nature. Most of us are rightly cautious when it comes to a fire, but fire is a rejuvenating force when it comes to plants. In fact many plants require fire to perpetuate their life cycle. Contact your favorite natural resources professional and ask them about a "good" day for a burn.

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Cowpeas and Lablab for Quality Warm-season Forage Plots

Craig A. Harper, Assistant Professor, Wildlife Management

White-tailed deer are considered browsers because a large portion of their diet is comprised of leaves and twigs of woody species. Their diet, however, changes with the seasons. During summer, the majority of a deer's diet is comprised of various forbs—broadleaf herbaceous plants. Many forbs are considered weeds (e.g., ragweed, pokeberry, and morning glories), but some are planted (e.g., beans, peas, and clovers). Least preferred at this time of year are grasses. For this reason, grasses should not be included in warm-season forage plots for deer. In addition, some of the worst warm-season competitors are grasses (e.g., crabgrass and johnsongrass). Planting legumes and other forbs allows grass-selective herbicides to be used when managing warm-season forage plots.

Top-quality warm-season forages contain relatively high levels of protein and have a high percentage of total digestible nutrients. To meet the demands of lactating does and rapidly growing fawns, warm-season forages should contain 20 – 25 percent protein and be readily digestible. In addition, warm-season forages should be drought tolerant as they are expected to grow during the hottest part of the year with prolonged dry conditions common in many areas. An ideal forage for warm-season plots also should be resistant to browsing and capable of producing abundant forage throughout the growing season, persisting into the late summer and early fall when naturally-occurring forages have matured and become stemmy, less nutritious, and less palatable.

Iron-clay cowpeas and lablab are 2 warm-season forages that meet all of these requirements—nutritious drought-tolerant forbs resistant to browsing pressure and able to produce abundant forage throughout the growing season, including late summer/early fall when they are needed most. Other forages that should be planted along with cowpeas and lablab include buckwheat, dwarf essex rape, and sunflowers. Buckwheat germinates extremely quickly, providing soil stability and forage while the cowpeas and lablab develop. Dwarf essex rape also germinates relatively quickly and provides highly nutritious forage through early- and mid-summer. Peredovik sunflowers are included to provide structure for the cowpeas and lablab to climb upon later in the summer, which enables more forage to be produced on a given area.

Recommended seeding rate per acre:

- 20 lbs iron-clay cowpeas
- 20 lbs lablab
- 2 lbs dwarf essex rape

20 lbs buckwheat
5 lbs peredovik sunflowers

A major advantage to iron-clay cowpeas and lablab is their ability to grow in relatively nutrient-deficient soils. However, in order to grow top-quality forage plots providing deer with maximum nutrition, soil pH should be amended to 6.0 – 6.5 with 75 pounds of phosphorus (P) and 240 pounds of potassium (K) available per acre. Liming corrects soil acidity, improves availability of nutrients, and improves nitrogen fixation by legumes (e.g., cowpeas and lablab). Nitrogen should not be added to the plot initially, especially if grasses and other weeds are a problem. If weeds are not a problem, warm-season forages may be fertilized after they become established with 100 pounds of ammonium nitrate (34-0-0) per acre just prior to a rain event. This fertilizer application should increase plant growth and available protein. It is important to realize this application will not produce the desired results until the pH has been amended and the appropriate amounts of P and K incorporated into the soil.

To ensure nitrogen fixation occurs, cowpeas and lablab (as well as all other legumes) should be inoculated with species-specific inoculant prior to planting (unless pre-inoculated seed is sown). Properly inoculated seed may allow bacterial growth to produce up to 200 pounds of nitrogen per acre.

The warm-season forage mixture listed above is planted easily. After incorporating the appropriate amount of lime and fertilizer into the soil, the seed may be broadcast and covered approximately 1-inch deep by disking. After planting, it is critical to watch the plot for encroaching weeds, especially grasses. If grasses begin competing with desired forages, the plot should be sprayed with a grass-selective herbicide (e.g., clethodim or sethoxydim). If broadleaf weeds (e.g., spurge, dock, pigweed, prickly sida) become problematic, imazethapyr may be used.

Deer are not the only wildlife species to benefit from warm-season forage plots. Rabbits and groundhogs will also feed upon the forage, while wild turkeys and bobwhite quail benefit from the seed and insects present. Food plots are only one component of habitat management and are intended to augment the quality and quantity of naturally occurring vegetation. Managing all available habitat, including woodlands and old fields, should be a top priority if wildlife is of interest.

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Banks and Buffers

David Mercker, Extension Associate II, Forest Management

Banks and Buffers: A Guide to Selecting Native Plants for Streambanks and Shorelines, is a new guide produced by the Tennessee Valley Authority. The guide was developed to support comprehensive efforts to improve water quality in the Tennessee Valley through watershed protection and restoration activities.

The guide consists of a publication and a CD ROM containing a Riparian Plant Selector software application. It contains a description and printed copy of the plant database, and the software provides a computer-based tool that will help you identify plants that match your site conditions and preferences. Over 117 plant species are included, consisting of trees, shrubs, vines, grasses, herbs and ferns. All this with a goal of ecological restoration of banks and buffers.

This could be a useful tool for working with and/or educating adults and youth alike. To order copies, call the TVA Water Management at 423-751-7338

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Establish Cover on Fish and Prawn Pond Banks

Thomas K. Hill, Professor, Fisheries Management

With newly-built or renovated ponds, the freshly exposed earth where construction machinery has worked needs vegetative cover as quickly as possible. Fertilize and sow both sides of dams and levee areas that will be above the water line. Include seed of both permanent grasses and fast growing annual grasses. Mulch with straw or old hay - - even into areas of the pond that will later be covered by water. The dead plant material will decay over a period of time, will add nutrients to the pond, and may even help with turbidity problems in the water should any develop. Waterways either entering or exiting the pond may need sod placed in them to avoid scouring.

Other sources of erosion which may cause muddy water and silt in ponds are farm roads, plowed fields and livestock. Runoff water from these areas may need to be diverted. Livestock should be fenced away from ponds and provided an alternative source of drinking water. A pipe through the dam that delivers water by gravity to a trough downhill is a practical and efficient method to do this.

Muddy water can either eliminate or severely reduce fish and freshwater prawn production in ponds. Sunlight cannot penetrate the water to promote phytoplankton production. There is no need to fertilize a muddy pond as food production which is so essential will be much less.

It takes both effort and money to establish good vegetative cover around ponds. Once established though, maintenance is fairly easy and inexpensive. The good looks of a mowed, well-kept pond along with the increased fish or prawn production from a bountiful supply of natural foods make it all worthwhile.

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Examining Common Forest Management Mistakes

David Mercker, Extension Associate II, Forest Management

Sometimes misguided by traditions of the past or the lack of adequate science-based information, forest landowners occasionally make mistakes with regard to their forest management. What seems logical at first, once implemented could prove problematic, particularly if repeated through generations.

Based on observations made assisting and advising private forest landowners with their hardwood management, there are a number of common errors made repeatedly, that are addressed here:

1. Maintaining a closed canopy through a selection harvest is always good forestry. Single tree selection can be an excellent tool if used to thin younger stands or remove undesirable trees, particularly when overcoming mistakes of the past. For instance, thinning sweetgum and elm from a small sawlog stand of oak or harvesting older residual fire-damaged trees from the same, are beneficial practices. But they are intermediate practices used to prepare the stand for a future, more valuable, stand regenerating harvest. Essentially all hardwood forests, if managed for quality timber production, must undergo a heavier, regenerating harvest which allows adequate sunlight to reach the forest floor.

2. A stand marked with paint means responsible forestry is being practiced. This depends. Under what parameters were the trees chosen for harvest? If size or species were the only considerations, then responsible forestry was likely not practiced. Harvesting only the largest trees or the valuable ones will leave a residual stand of poor quality or low value. Instead, harvest consideration should also be given to include the “D” trees: dwarfed, dying, diseased, deformed and undesirables. This is the necessary part of weeding the stand and eliminating unwanted seed sources.
3. The forest soil will take care of itself. Don’t be so sure. We tend think of fallen and decomposing leaves and twigs as soil in the making, rather than the organic matter and nutrient recycling they are. True soil is derived from weathering of subsoil rocks, from wind-blown particles that escaped from distant places, or from alluvial sediment deposited after transport via water. All are processes which can take centuries to occur. Stresses placed on forest soils during logging are normally restricted to skidding lanes, haul roads, log landing areas and stream crossings. Concerted effort should be made to protect soil and water resources by following accepted best management practices (BMP’s).
4. Harvest timber only when you need the money. Saving timber as a security to hedge against off years of other sources of income is not advisable. Trees are a crop. Though somewhat unique in that they can be retained on the stump for years, doing so could sacrifice considerable production and income. Annual growth rate and return on your forest investment will eventually peak then decline. Harvesting your crop at or near the peak, then converting those funds to a more favorable alternative investment, is a more prudent decision. Also, it is wise to track timber markets. If you wait to sell your timber when your other sources of income are lower, timber markets may also be lower.
5. This has always been the “assumed” property boundary. Landowners beware. The penalty for timber trespass can reach three times the fair market value. Be certain of property boundaries. Study the deed, reach agreement with your neighbors and seek assistance from a professional forester or surveyor.
6. Small trees will grow to be big trees. Some will, some won’t. If a tree has for too long been suppressed by growing in the understory of larger trees, it will not likely release and grow vigorously once the taller tree(s) are removed. Such trees should be harvested concurrently with the larger ones.
7. Knots on the trunk of a tree will cover up and make fine lumber. This depends. On younger, vigorously growing trees, knots often will become concealed and produce quality lumber, particularly if the knots are small-sized. However, large knots or knots formed on slow growing, decadent trees may heal superficially, but never produce clear lumber.

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Ornamental Garden Fish Ponds Are Popular

Thomas K. Hill, Professor, Fisheries Management

Ornamental garden fish pools for many years common in the Orient, have become very popular in the United States. If you’re thinking about building one here are ideas for consideration.

Location of the pool is critical, not only where it can be seen for your enjoyment, ut for maintenance and biological performance. Put the pool in a location where it will receive at least six hours of sunlight daily. Sunlight is needed by pool plants in order to produce oxygen in the photosynthesis process.

Since garden pools are relatively shallow, locate your pool to avoid direct sunlight at midday during the warmest months. Fish can become stressed by high water temperatures. Shade provided for them by aquatic

plants can be a tremendous help.

Pool depths can vary, but 18 - 20 inches deep is about right. Pools that are at least two-thirds below ground level retain heat in winter and keep the pool water cooler in summer.

Pools may be either irregular or geometric in shape. Irregularly shaped pools have a natural look, whereas geometric shapes appear more formal. You can try designing different shapes by using a garden hose or perhaps a rope to outline the pool edges. This will also help you visualize how the pool will fit in your planned space.

Before you start to dig, plan how water lines and filters will be concealed. Decide where both electrical and water lines should be placed for night lights, pumps, fountains and waterfalls. This is also the time to determine sites for foundations, stepping stones, bridges and fountains.

Pools without drains are common, but drains allow for easier management. Of course, pools can be emptied by pumping or siphoning. Make sure the bottom slopes at least one percent so the water will move to the drain. A catch basin 6 to 12 inches deep in the lowest part of the pool will help concentrate the fish during drawdown.

Pools can be relatively expensive to build and maintain. For this reason, plastic liners in many sizes and shapes are very popular because of their versatility and lower cost. Liners make for relatively quick and less expensive construction. They also allow future changes in size and shape of the pool to be made more easily.

In building a garden pool, remember that the water will be level, but your construction may not be. Unless leveling is accurate during construction, you may have an exposed area at one end of the pool and water will overflow at the other end. Make sure that the shoreline of your pool is level.

Ornamental garden fish pools once in place will provide beauty to your property as nothing else can. Like most things that are worthwhile, some up front planning can pay large dividends. Most of the larger building supply companies have booklets with fish pool construction information.

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