



Forestry, Wildlife & Fisheries Update Newsletter

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

February 2003

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Calendar of Events - 2003

Feb. 4 - Mar. 18	Master Wildlifer Short Course - via Satellite
Feb. 23 - 26	Southeastern Deer Study Group Meeting Chattanooga
Mar 21, 22	Logging Expo at Jackson Fairgrounds
April 12	Humphreys Co. Forestry Field Day Contact: Mike Wright
March 24	Forest Marketing for Landowners Summertown, TN Contact: Richard Groce, Maury County, 931-388-9557

Faculty:

Wayne Clatterbuck, Forest Management
Craig Harper, Wildlife Management
Thomas Hill, Fisheries Management
Sam Jackson, Web Coordinator

George Hopper, Natural Resources
David Mercker, Forest Management
Larry Tankersley, Forest Management

Urban Forestry Grants Available

David Mercker, Extension Assistant, Forest Management

The F.Y. 2003 Urban Forestry Grant Information and Application packet is now available. The Tennessee Department of Agriculture, Division of Forestry will accept Urban Forestry project proposals from local governments, private nonprofit organizations, and educational institutions. Project categories for 2003 are: urban forestry personnel, program development of education/training, and site specific (tree planting) projects.

Additional details on the types of projects along with application forms and proposal instructions are available in grant information packages.

Proposals must be received in Nashville office of the Division of Forestry by 4:30 p.m. on Thursday, April 17, 2003. To request a grant information packet or get more information about the urban forestry grants, please call:

- Bruce Webster at 615-837-5436
- Kay Fermann at 615-837-5437
- Tom Simpson at 865-908-4434
- Christy Pepper at 901-754-5185

Grant information packages are also available on the internet at www.state.tn.us/agriculture.forestry/tdfuf.html

These funds are provided by the U.S.D.A. Forest Service and are administered by the Tennessee Department of Agriculture, Division of Forestry.
(Ref. Steven G. Scott, State Forester)

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Paulownia: An Invasive Exotic???

Wayne K. Clatterbuck, Associate Professor, Forest Management and Silviculture

Paulownia is categorized as an invasive exotic. Although there is little doubt that it is an exotic from the Orient, the question of its invasiveness is open to conjecture. The many small seeds of Paulownia are wind-blown. However, the seeds do not germinate and survive unless the seed falls on sterile soil. New germinates of Paulownia have a high rate of mortality from damping-off disease caused by a variety of soil fungi. Generally, Paulownia does not colonize open areas unless sterile soil is present as in construction activities and road cuts. Rarely, does Paulownia colonize fields because of the ever-present fungi. wnia does not compete with other trees because it does not maintain a terminal leader. Requiring full sunlight for continued development, it is often overtopped by other species and succumbs. Paulownia is usually found on the edge of a forest where sunlight is more available rather than the forest interior.

Due to the strict sunlight and soil requirements, the observation of the author is that the amount of Paulownia has declined in recent years. Seed dispersal from Paulownia plantings does not appear to increase the amount of Paulownia outside the plantations.

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Acorns to Trees

Wayne K. Clatterbuck, Associate Professor, Forest Management and Silviculture

The following was excerpted from the Knoxville News-Sentinel, January 27, 2003 from a syndicated column from The Motley Fool, 123 N. Pitt Street, Alexandria, VA 22314

Shortly, after we were married, 40+ years ago, my wife purchased four shares of stock from a privately held company where she worked. As a result of mergers, splits and reinvested dividends, her \$160 investment grew to over 2,200 shares of stock. When the stock was trading around \$53 a few years ago, our shares were worth \$118,000. With shares now worth around \$24 each, the 2,200 shares are worth about \$53,000.

Moral: Small acorns grow into large oak trees. However, you should not be reluctant to cut down trees at the right time.

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Salt Damage to Roadside Trees

Wayne K. Clatterbuck, Associate Professor, Forest Management and Silviculture

Although salt may not come immediately to mind when considering a list of tree enemies, salt can be detrimental to tree health. Large amounts of sodium chloride were used this winter to de-ice roadways in Tennessee. All trees affected are affected by salt to some degree, but some species are more tolerant than others. White pine, hemlock, beech, dogwood and red and sugar maple are the most sensitive, while oaks, ash, hickories, locusts and walnut are more tolerant.

Trees seem to be more seriously injured by de-icing salt spray that drifts onto them than by salt that accumulates in the soil. On evergreens, the injury appears as browning of the needles, progressing from the tip to the base of the needle. Browning is evident in February and March and becomes more prevalent through the spring and summer. As injury continues, needles drop prematurely and the branches become bare. Trees become one-side as needles and branches are killed usually on the road side of the tree where the salt accumulates. As the needles die, the photosynthetic capacity of the tree is reduced. Over several years the amount of new growth is reduced, causing the tree to weaken, dieback and perhaps die.

On deciduous trees, salt spray affects opening of buds and twigs in the spring, with the flower buds being the most sensitive. Injured buds are slow to open or fail to open. Factors that influence salt sensitivity include bud size, nature of the bud scales, twig thickness and bark covering. Trees with thin bark, such as beech, are highly susceptible. Trees with resinous buds, such as cottonwood, are fairly resistant to injury as are those trees whose buds are submerged in the twig such as black and honey locust. Generally, trees with naked buds are injured more than trees with scaly buds. Salt symptoms on deciduous trees include reduced green leaf coloration, smaller leaves with scorched margins, thin crowns with dying twigs and branches, early fall coloration and leaf fall, tufting and clumping of foliage and sparseness of leaves, and small growth rings. The irregularity in foliage thickness from year to year reflects both the growth conditions and differences in the amount of injury each year.

The degree of damage to trees from salt varies considerably from year to year. Fluctuations in the quantity and frequency of frozen precipitation determine the amount of salt applied to roads each year. Weather conditions such as wind and temperature will influence the amount of salt taken up by plants. Damage to trees is also affected by climatic factors such as frequency of freezing and thawing.

Although alternatives other than salt are available to de-ice roads, salt remains the preferred method because of its lower cost, availability, and efficiency in melting snow and ice in providing a higher level of motoring safety. Assuming that the use of salt to de-ice roads will not change greatly, there are some management techniques that can be used to minimize damage to trees from salt.

1. Plant trees that are relatively tolerant to salt
2. Irrigate soils to leach sodium and chloride before spring growth. A saline soil condition is relatively easy to correct since most salts are water soluble
3. Apply gypsum (calcium sulfate) to soils that are high in sodium. The addition of calcium will displace the sodium.
4. Avoid planting trees on sites of high risk from salt injury such as salt spray zones and areas where salt-laden brine and slush are likely to accumulate. Plant trees at least 60 feet from the roadside.
5. Plants that are injured and exhibit dieback should be watered, pruned and fertilized.
6. Design or engineer sites to keep salt spray, runoff and plowed snow away from trees. Grade salt-treated areas and install barriers so that surface drainage water does not accumulate near plants.

Deicing salt is detrimental to vegetation, especially trees and shrubs. Most of the injury results from the salt spray that is deposited on trees during the winter as well as increased salt in the soil solution. Evergreens are particularly vulnerable, but developing buds of deciduous trees are also affected. Species do vary in their sensitivity to salt damage. Management prescriptions for roadside plantings should use techniques that minimize salt injury and select trees for planting that are more tolerant to salt

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Drying Lumber for Gun Stocks Blanks

submitted by George Hopper, Professor and Dept. Head

We got a request from Rick Mathenia , Leader in McNairy Co, about drying lumber for gun stocks blanks. The article below was composed by Bill Moschler, Wood Physicist with the Tennessee Forest Products Center.

My Suggestions for Drying Blanks for Muzzleloaders

Bill Moschler, Wood Physicist, Tennessee Forest Products Center

I had a friend when I was in college that built muzzle loaders and now he is the head gunsmith at Colonial Williamsburg. Gary used to hunt curly maple in the summers and dry his own stock. Here are a few suggestions from my conversations with him and my own experience.

Air dried is sometimes preferred for gunstocks. In walnut it preserves a little more color and it maybe gives a little more strength. Nothing wrong with kiln dry, but nothing wrong with air dry either.

The main problem with thicker stock is drying it too fast and getting checking. Start with fresh, green stock with nicely trimmed ends. Coat the end grain with melted paraffin, commercial wax end coater, thick coats of aluminum paint, or something to well seal the ends to keep it from drying out through the ends. You can try to control some of the warp by clamping the blanks together or you can stack them and maybe put a few

cinderblock on top. Gary clamped his curly maple together in groups of 2 to 4 wide. Put 3/4' thick stickers or spacers in between the blank, using one at each end and 2 in between. Either stack with the stickers or take 4 to 6 bar clamps and stack the whole stack together.

You need to place them somewhere where they will dry a little but not a lot. Not by a heater or something that blows dry, hot air. Not in a barn loft in the summer. But not in a damp basement where they will mold. An unheated or lightly heated garage is ideal. Watch carefully for any signs of surface checking or mold. If mold, you need dryer air or a small fan on them. If checking starts you need to slow the drying down. Drying time depends on species. Not many problems with walnut. Maple can develop a stain if it dries too slowly, so be careful to get at least some surface drying going at first with maple.

You can go to the trouble of weighing one piece or every piece initially and then re-weighing them every so often to monitor drying progress. You would like to lose no more than 2% per day wt. That should not be a problem except in very warm, dry areas like my office today. If you get the pieces started drying pretty well with no checking and still losing some weight just leave them. At some point when they are about 1/2 way dry they will start to shrink and the clamps will come loose if you are clamping. Then you need to tighten the clamps every few days. After they are pretty well dried you will need to bring them inside to a warm, dry area and put a fan on them to finish drying down to about 8% MC. All in all, about 9 months should cure walnut and maple pretty well.

If you want to speed up drying you have to be a little more careful with weighings, control, and maybe some idea of the relative humidity. If you want to dry a number of blanks, or to do it faster, then we need to talk about building a small kiln, either a dehumidification kiln or with an electric or gas heater and a fan.

My email is bmoschle@utk.edu if anybody wants to contact me directly with a drying related problem.

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Forest Provisions of the 2002 Farmbill

David Mercker, Extension Assistant, Forest Management

The 2002 Farmbill proved to be generous to private forest landowners. Private forestlands, when managed responsibly, extend countless benefits to society. Legislators realize this and could justify funding a number of programs aimed at improving the productivity and health of private forests. Among these programs are the following:

CRP - conservation reserve program; a tree planting program with a goal to protect highly erodible crop land, marginal pasture land and other environmentally sensitive farm land; This program includes cost-share for establishment plus an annual rental payment; CRP is funded at \$1.5 billion over 10 years.

WHIP - wildlife habitat incentive program; WHIP assists landowners in development of upland and wetland wildlife habitat, fish habitat and habitat for endangered species; typical agreements last for five to ten years; WHIP is funded for \$700 million over ten years.

EQUIP - environmental quality incentives program; this program assists landowners in compliance with local, state and national regulatory requirements that can include soil, water and air; EQUIP is well funded at \$9 billion over ten years.

FLEP - forest land enhancement program; FLEP replaces the old FIP and more recent SIP programs; FLEP is designed to encourage a number of forest-related management activities with special emphasis on hardwood management; cost-shared activities will focus on establishing, managing, maintaining,

protecting, enhancing and restoring private forest lands; This program is funded at \$20 million each year for five years.

WRP - wetlands reserve program; provides for the establishment or improvement of existing wetlands and includes \$1.5 billion over ten years.

These programs are administered (often jointly) through the Natural Resource Conservation Service, the Farm Service Agency, the TDA Forestry Division and Tennessee Wildlife Resources Agency. Contact them for more information. Landowners should closely evaluate both the benefits and restrictions associated with enrolling in the programs.

(Reference: Mortimer, Michael et. al. Nov. 2002. The 2002 Farmbill: Panacea or Pitfalls. Forest Landowner Magazine.)

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Conservation Easements Could Gain Popularity

David Mercker, Extension Assistant, Forest Management

Financial gains for land development can far out-perform the returns of growing trees and supporting wildlife. Thus, pressures for landowners to develop their land have increased significantly over the past few decades. This leads to forest parcelization (dividing large forest tracts with one ownership into smaller tracts with several owners). Small forest tracts further divide into yet smaller ones. This can create a problem for forest and wildlife management because it is commonly accepted that these practices are best exercised on larger, contiguous tracts. To address this parcelization problem, *conservation easements* are gaining in popularity.

“A conservation easement is a legal tool to maintain land in an undeveloped state (Siegel 1998), a voluntary agreement between a property owner and a qualified organization, such as a land trust or government agency, that limits the activities and uses that can take place on the property. Landowners (grantors) can enter into a conservation easement with an easement recipient (grantee) by selectively giving up some rights to their property, either through sale or donation,” (Journal of Forestry, April/May 2002).

Essentially a landowner donates the development rights to a favorite organization for the land’s fair market value. This value is then deducted off taxable income over a number of years. Landowners still retain ownership of the property. Normally with conservation easements, forest and wildlife management activities are allowed and encouraged, however, land development is not. Landowners may choose to exclude certain areas of their land from the easement prior to the agreement to retain a home setting.

With conservation easements, forests remain forested; landowners remain landowners; saw and pulp mills remain supplied with logs and society benefits by the protection of soil, water, air and wildlife resources. This could be a invaluable program for some forest landowners. Consultation with your attorney and accountant is necessary prior to entering into a conservation easement.

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Alkalinity Considerations Are Important in Fish Ponds

Thomas K. Hill, Professor, Fisheries Management

Alkalinity is an important water quality parameter that should be considered by pond owners. Total alkalinity is expressed as parts per million (ppm) calcium carbonate. The desirable range of total alkalinity for fish culture is 75-200 ppm even though good pond productivity can be gotten as low as 20 ppm.

The role of alkalinity as a buffer in controlling high daily pH fluctuations is critical to fish production in both commercial and recreational ponds. The pH of well-buffered water normally fluctuates between 6.5 in the mornings to 9.0 in the afternoons. In waters with low alkalinity, pH can reach dangerously low levels in early morning and dangerously high levels in mid-afternoon. By stabilizing pH at or just above 6.5, alkalinity improves pond fertility by increasing soluble phosphate concentrations.

Liming ponds with agricultural lime is the best way to increase and maintain alkalinity levels. **Since agricultural lime takes several months to react with bottom muds, it needs to be applied in winter, so time is getting short!** If applied in the warm months, the lime causes the available phosphate to precipitate out of the water and be unavailable for producing phytoplankton.

Liming rates are determined by testing pond bottom muds. Take about ten samples from each pond bottom with a can on a stick. Dry, pulverize and blend the samples, fill a soil sample box and send it to the Soil Test Lab in Nashville. The lime requirements will be determined and the results with a recommendation returned to you.

New ponds should have the required amount of lime spread evenly over the bottom before filling with water. For ponds already full of water, spread the lime over the entire pond surface. A single application of lime may last several years depending on the amount of water that flows through.

Simply liming a pond will not result in increased production. However, the addition of lime coupled with regular fertilization during the summer months can result in greatly increased fish production.

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Liquid Fertilizer for Farm Ponds

Thomas K. Hill, Professor, Fisheries Management

With the sub-freezing temperatures experienced across the state recently, fishpond fertilization is likely one thing most people are not thinking about. However, spring will be here before we know it and ponds will need to be fertilized for them to reach their potential.

Liquid pond fertilizers have been available for several years and do a wonderful job of stimulating plankton booms. In fact, research has shown that concentrations of phosphate are available in the pond water sooner and remain available longer than comparable analyses of granular fertilizer. A gallon of liquid 10-34-0 yields slightly more than 4 lbs. of phosphate. The researchers recommend 4 lbs. of phosphate (P₂O₅) per acre in ponds with light fishing and 8 lbs. in ponds where heavy fishing is expected.

The first application of fertilizer should be made in early March and then as often throughout the summer as needed to maintain a good plankton bloom. Usually, 8 or 9 applications will be needed per year. Liquid fertilizers are heavier than water (they weigh about 12 lbs./gal) so they should be diluted with water before application. Pond fertilization should be stopped by mid-October.

Liquid fertilizer is available at most farm supply stores and will cost \$17.50-20.00 for 5 gallons. This means you can fertilize an acre pond for a summer for around \$50. Considering the increased fish production and the resulting control of aquatic plants, this would be money well spent.

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Habitat is the Key to Increased Bobwhite Populations

Craig Harper, Assistant Professor, Wildlife Management

It is human nature to want a “quick fix” to problems, including those (or wishes) related to wildlife management. A prime example is wildlife damage. The quest for a “spray” to repel all unwanted animals is never-ending! Another example is the quest to increase certain wildlife populations, such as bobwhite quail. Unfortunately, there is no quick solution. One thing is for sure—**releasing pen-raised birds and supplemental feeding is not the answer**. Years ago (1930’s – 1950’s), state game agencies in the South and Midwest hatched, incubated, and raised millions of bobwhites. Upon release, they were to bolster and re-establish quail populations. **All of these efforts failed**. Wildlife managers learned a lot in the process. We, also, should learn from their experiences.

The biggest reason for failure was the extraordinary mortality rate among pen-raised birds when released into the wild. In most areas today, tremendous mortality rates are related to poor habitat. If an area does not currently support quail or if the wild population is dwindling, there is a reason. Ever wonder why native birds are no longer present?!? In addition, past researchers learned the characteristics for survival (escaping predators, finding food, nesting and rearing young) among pen-reared birds were lost. In most cases, when quail were released in late summer or fall, 100 % mortality was realized before the nesting season. When released closer to the nesting season, most females wouldn’t nest and those who did rarely incubated their clutch. In the rare instance a female incubated her clutch, upon hatching, she would simply walk off and leave the brood. Without the hen, the chicks died quickly, either from exposure, starvation, or predation. In short, pen-raised quail will not reproduce and survive at the level needed to sustain a population. Moreover, in areas where some wild birds exist, it is not uncommon for pen-raised birds to transmit diseases into the local wild population, which leads to increased mortality for native birds.

Many factors have contributed to declining quail populations: 1) habitat destruction (quail can’t live in shopping centers, parking lots, and subdivisions so there is less area available), 2) changing land-use practices (large “clean” farms with no cover; conversion of row-crop farming to tall fescue-dominated pasture), and, yes, 3) increased numbers of predators (nobody traps anymore and raccoon and skunk populations are at all-time highs). Over the past few years, several research projects have studied what needs to be done in order to bring quail back to appreciable numbers. Every study points to habitat—improving habitat conditions to once again favor the year-round needs of bobwhite quail is the key to restoring their populations. And in every case, the limiting factor is cover. Quality cover for nesting, brood rearing, and escaping predators. Not pen-raised birds or supplemental feeding.

For information on how to improve habitat for bobwhites and receive cost-share assistance, contact your county Extension office.

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Tennessee Forest Products Market Report - 3rd Quarter 2002

	EastWestStatewide		
	<u>Tennessee</u>	<u>Tennessee</u>	<u>Average</u>
<u>Stumpage</u>			
Pine Sawtimber \$/MBF Doyle	184	323	253
Oak Sawtimber \$/MBF Doyle	203	302	253
MXD HDW Sawtimber \$/MBF Doyle	185	175	180
Pine Pulpwood \$/Ton	4.69	7.1	5.9
HDW Pulpwood \$/Ton	4.37	2.53	3.45
<u>Delivered</u>			
Pine Sawtimber \$/MBF Doyle	303	416	360
Oak Sawtimber \$/MBF Doyle	481	491	486
MXD HDW Sawtimber \$/MBF Doyle	288	276	282
Pine Pulpwood \$/Ton	20.70	21.43	21.06
HDW Pulpwood \$/Ton	20.93	19.75	20.34

Note:
This information is for educational use only by the University of Tennessee Agricultural Extension Service. Price information is adapted by permission from *Timber Mart-South*, a copyrighted publication by F.W. Norris, Highlands, NC. and is not to be copied for public distribution.

Explanatory Notes:
Prices: Prices given in this report are average prices in the current issue of *Timber Mart-South*. Prices for specific timber stands or products may vary significantly from the average prices listed due to location and accessibility of the timber, volume per acre, area included in the sale, restrictions placed on the harvest, size, quality and species of the stand or delivered product, and local demand.

Stumpage price is the price of timber standing in the woods.

Delivered price is the price of harvested products paid at the mill or the loading point (with no freight included).

Prices for sawtimber are given in dollars per thousand board feet (\$MBF) based on the Doyle log rule. The Doyle rule is the predominate rule for measuring tree and log volume in Tennessee. To convert prices to International rule, multiply the price by .61. This rule is for average values and cannot be used to convert individual log or tree volumes.

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Trees are Valuable

Larry Tankersley, Extension Assistant, Forest Management

Landscapes and individual plants appear to enhance property values and represent tangible assets. Recent studies have measured the contribution of vegetation to property values. One study revealed that shade trees contributed 19 percent of the total appraised value. A U. S. Forest Service study showed that real estate appraisers estimated that trees contributed as much as 27 percent of the price of the land. A survey completed by a mortgage company revealed that 84 percent of real estate agents believed that selling prices for homes on lots with trees were as much as 20 percent higher than comparable homes on lots without trees.

The inherent dignity and beauty of plants and their interactions with other organisms are profoundly valuable. In addition, the spiritual and mystical contributions of vegetation are important to humans. Trees and landscape plants also contribute basic architectural, engineering, and environmental functions such as shelter, climatic modification, and animal habitat.

Research indicates that well maintained landscapes can contribute to the value of residential property and that mature, well-placed trees can increase property values when compared to undeveloped properties.

As spring approaches, look around your property and make plans to increase the value of your property and enhance the environment.

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