



Forestry, Wildlife & Fisheries Update Newsletter

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

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Website: <http://fwf.ag.utk.edu>

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Calendar of Events

Jan. 16 - 17
U.S. Freshwater Prawn & Shrimp
Growers Association Annual Meeting
Tunica, MS

Feb 3 - 4
Tenn. Agricultural Products Assoc.
Contact: Hugh Savoy
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Feb 22 - 24
Annual Meeting of the Southeast Deer
Study Group Meeting
Lexington, KY

Mar 1 - 5
Aquaculture 2004
Hawaii Convention Center, Honolulu
Contact: worldaqua@aol.com

Mar 3 - 5
Annual Meeting of the Tennessee
Chapter of The Wildlife Society

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Notes From the Web

Samuel W. Jackson, Extension Forestry

This month I want to feature a couple of fun and useful activities on the web. The first of these is the online "Frogs" program that a San Francisco Science Museum, the Exploratorium, hosts at <http://www.exploratorium.edu/frogs/index.html>. The site provides a host of interesting information about frogs, including their development, habitat, and histories. However, the best part of the site is called the Frog Tracker. When you click on this link, it takes you to a page where you can view and hear different species of frogs. Once you click start, you are in control of a "flashlight" with your mouse and as you shine the light on a frog, you automatically hear its call. You can also click the frog to keep the sound on as you move to find another. If you press the control key and click on the frog at the same time, a new webpage will open that gives you specific details about that particular species. This page is a fun way to learn about frogs and their calls. Kids will especially like finding a frog by "flashlight." Another interactive tool is called "Disappearing Act" and teaches us about the use of camouflage by animals, especially frogs.

The other web activity I want to make you aware of is the interactive tree key provided online by the National Arbor Day Foundation. This simple, easy to use key can be found at: <http://www.arborday.org/trees/treeID.html>. Divided into two regions, Eastern-Central and Western Trees, the key uses both pictures and text to guide you through the process of identifying a tree based on its leaf characteristics. Based on your responses to the questions, the key will eventually lead you to the name of your tree. Also, there are links to tree information throughout the Arbor Day Foundation website, including planting and care information.

Management Calendar for December

Forestry

Establish needs for herbicides, now is a good time to plan and buy

Consider “day-lighting” wet spots

- mud holes may be in the shade
- remove trees causing shade to allow sunshine in to dry wet areas

Continue to observe roads for drainage problems, make notes to fix roads in summer

Consider re-vegetation on exposed areas

Wildlife

Disc firebreaks around fields and woods (if it's not too wet) before the ground freezes

Begin planting trees/shrubs for wildlife

- use as a hedgerow to break up fields into sections
- use soft- and hard-mast producers (see PB 1633 for list of species)

Erect boxes for wood ducks and bluebirds

- 1 box per 100 yards of shoreline is adequate for wood ducks
- clean out old wood duck boxes and put in fresh wood shavings (about 4 – 6 inches)
- bluebird boxes should be no closer than 80 yards apart
- up to 9 or more bluebirds may roost in a single box during the winter

Continue Timber Stand Improvement activities

- select good mast producers and release their crowns by girdling and spraying competitors

Build brushpiles

- put large stems on bottom, small stems on top

Keep bird feeders full

- black-oil sunflowers are a favorite of many birds
- thistle seed is preferred by goldfinches
- suet provides energy for lots of birds during the winter

Strip-mow dove fields

- don't mow it all – leave some for later!

Continue dormant-season planting of native warm-season grasses, if not too wet

- don't plant too deep – no more than ¼ inch!

Duck numbers should be rising – watch the weather!

Fisheries

Seal Leaking Ponds

- investigate and spot problem areas
- sealing by compaction is the simplest and least expensive method
- Benonite has been used successfully to seal ponds, especially where leaks cannot be detected
- if large quantities of calcium are present in soil, use an application of sodium carbonate (soda ash)
- if you have a problem with fluctuating water levels....don't give up!

Stock trout in your pond?

- trout can be grown successfully in the winter months - November - April
- eliminate wild fish from pond before stocking trout
- stock with 6" or larger trout - growing season is only about 5 months - not much time left in this season
- start fishing as soon as fish are 8-9 inches long
- all trout should be out of the pond by April when water temps get over 70 F.

2003 FACE Contest Winners

Craig A. Harper, Associate Professor, Wildlife Management

First Place

Will Rhodes -- Coffee County

Award -- \$400

Second Place

Adam Brown -- Gibson County

Award -- \$300

Third Place

Tyler Bruhin -- Sevier County

Award -- \$200

Fourth Place

Garrett Davis -- McMinn County

Award -- \$100

These 4-Hers should receive their monetary prize from TWRA within the month of January. In addition, all county winners receive a subscription to *Tennessee Wildlife* and a FACE shoulder patch. Congratulations to all the winners.

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Winter is for the birds!

Craig A. Harper, Associate Professor, Wildlife Management

Winter can be stressful for birds. Keeping a bird feeder well-stocked during this time of year is a good way to ensure your feathered friends have the energy and fat resources needed to make it until spring. Several types of feeder designs and seeds are available. Specific birds have specific preferences. By knowing the type of feeder and seed (or other food) that different bird species prefer, you may enjoy your backyard visitors even more.

Fly-through feeders are very popular because most bird species feed readily from them. More selective are the tube-type or cylindrical feeders used to offer thistle seed to goldfinches and pine siskins. The table below lists different seeds and other types of food that may be offered to attract certain bird species.

SPECIES

mourning doves

woodpeckers, chickadees,
titmice, nuthatches

blue jay

PREFERRED FOOD

black oil-type sunflower seeds, white proso millet

black-oil type sunflower seeds, cracked nuts, shelled and broken peanuts, bread crumbs, suet

sunflower seeds (all types), peanuts, cracked nuts, shelled and cracked corn, suet

mockingbirds, brown thrashers, robins, thrushes, catbirds	cut apples, oranges, raisins, bread crumbs
cardinals	sunflower seeds (all types), cracked corn, shelled and broken peanuts
Eastern towhees	white proso millet, sunflower seeds (all types), cracked corn, shelled and broken peanuts
evening grosbeak	sunflower seeds (all types), cracked corn, shelled and broken peanuts
goldfinches	niger thistle, hulled sunflower seeds, black oil-type sunflower seeds
house finch	black oil-type sunflower seeds, niger thistle
purple finch	sunflower seeds (all types)
sparrows, juncos	white pros millet, black oil-type sunflower seeds, wheat, bread crumbs
grackles	hulled sunflower seeds (all types)

Don't forget to try suet feeders, fruit halves nailed to a tree or post, peanut butter smeared into pine cones or onto the side of a tree, and old breads and cakes. Offering several types of foods will ensure a diversity of birds visit your backyard. Remember to clean feeders periodically with hot, soapy water fortified with a capful of bleach. Bottoms of platform feeders (and others that might hold water) should have small holes drilled into the bottom to allow water to drain after a rain. Finally, beware of cats. House cats are extremely efficient predators and can severely reduce the number of birds and small mammals visiting feeders.

Food is not the only important factor for birds during winter. Cover is often a limiting factor for birds in particular areas. Cover can be provided by erecting birdhouses, planting and maintaining evergreen shrubs and trees, and building brushpiles. Boxes are particularly important for bluebirds during winter. On cold nights, up to 10 bluebirds may be observed roosting in a single box. More bodies make for more heat! Evergreen shrubs and trees block cold winds and precipitation at night for many songbirds. A lush fat eastern redcedar can hold 50 or more birds of several species in a single night. For information on building bluebird boxes, which trees and shrubs to plant, and how to construct brushpiles for wildlife, pick up a copy of *Improving Your Backyard Wildlife Habitat*, PB 1633, at your county Extension office.

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U. S. Freshwater Prawn and Shrimp Growers Association Meeting

Tom Hill, Professor, Fisheries Management

The U. S. Freshwater Prawn and Shrimp Grower's Association (USFPSGA) Annual Meeting will hold its' Annual Meeting January 16-17, 2004 at the Grand Casino's Veranda Hotel in Tunica, Mississippi. Program presentations which will provide the latest research and developments in this young aquaculture industry will be in the Convention Center. Registration will begin at noon on January 16 and the meeting will adjourn by noon on January 17. If more information is desired, call the USFPSGA president, Steve Fratesi or Dolores Fratesi, secretary to the association at (662)686-2894 or (662) 390-3528. For those who have computers available, check on the web page www.freshwaterprawn.org for more details.

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Tricks for Making Tree Seeds Grow

David Mercker, Extension Assistant, Forest Management

It is interesting and even comical to watch squirrels and other wild things in your yard during the fall and early winter. There seems to be a clear focus, envious to most of us, as they go about their work. It's with a tone of surety that each nut or acorn is lifted, examined, stuffed, stored, buried or if deemed a bad nut, "thrown to the birds."

They seem to be picky too. Did you ever stop to wonder why? After all, a seed is a seed. Or is it? Have you ever taken on the project of collecting tree seeds with the intent of starting your own seedlings, only to have none of them survive? "Nothing to it," you'd think, "after all, each spring new young trees seem to pop up everywhere in the yard. Surely if squirrels and birds can do it, then I can too."

Wildlife are experts at this subject, and somewhat reluctant to share their knowledge. They know that many seeds which drop to the ground, indeed most, are not viable, healthy or sound. In some cases, up to 90% of the seeds could be rejects. That's because throughout the growing season, opportunistic insects have feasted, boring small holes through the seed coat leaving an cavity inside. Through quick examination, wildlife can tell by the weight and smell whether their valuable time should be spent on this or another nut. In addition, prolonged droughts can make seeds useless by causing them to abort early, crack or develop improperly.

Assuming that you desire to start some trees from scratch and that you have the nose and touch to ascertain which seeds still contain life, there's still more science that you'll need to be schooled on. Understand that in order to germinate, seeds need these three: moisture, oxygen and temperature. Many seeds, because of their thick or rigid seed coat, will not easily allow water and oxygen to reach inside them. Others may have adapted to require a "pre-treatment" to break their dormancy and begin growth.

For these types of seeds, processes called stratification or scarification must occur. Stratification, also called "chilling," is exposing the seeds for a time to temperatures close to freezing. Wrapping seeds in moist paper towels, placing in an unsealed zip lock bag in the refrigerator though the winter is an example of chilling seeds. Some common tree seeds that need chilled include: walnut, hickory, red oak and ash.

Scarification, is a scratching or breakdown of the protective seed coat which will then allow moisture and gasses to permeate the coat and continue growing. In the environment, this is done either by the seeds falling on rocks and being carried by wind and water across abrasive surfaces, or by being swallowed whole by animals, whose stomach acids break the seed coat down, preparing it for germination upon passing. You can scarify a seed coat by scratching the surface with a finger nail file. Some trees requiring scarification include: locust, cedar, redbud and baldcypress. Many species require both chilling and scarification.

For technical details on how to properly collect, store, treat and plant seeds, refer to the book Seeds of Woody Plants in the United States, U.S. Forest Service. Or, if you prefer, find a naive squirrel willing to surrender his tricks of the trade!

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Disturbances in Aging Pine Stands Can Favor Oak Regeneration

David Mercker, Extension Assistant

Throughout the 20th century, forest acreage in Tennessee increased 5.3 million acres (Winistorfer 1999 and Schweitzer 2000). Some of this gain resulted from tree planting programs that occurred throughout the period (such as the Civilian Conservation Corps, Land Bank, Conservation Reserve Program, Forest Incentives Program). However, much of this increase resulted from abatement of farming practices on marginal fields and pastures. The restoration of these sites through natural vegetational succession is of interest to landowners and natural resource professionals, particularly as management decisions arise with forest maturity. Many of these retired sites are dominated by early successional, shade intolerant, pioneer species such as Virginia and shortleaf pines and yellow poplar. Oak representation is low.

An informal study was conducted by the University of Tennessee (Mercker and Gartner 2002) to determine stand structure and successional trends of a forest stand that originated on such a site, specifically in 1942, following field abandonment. Results suggest that where adjacent oak seed sources are present, oak species can gradually become established on these abandoned agriculture sites, particularly as natural and human-caused disturbances occur.

The forest in this study had previously undergone two disturbances. In 1970, the shortleaf pine were harvested, leaving yellow poplar and Virginia pine as overstory residuals (of the same age). Reproduction following the harvest was strongly white and red oaks. A second disturbance occurred in 2000, with an outbreak of Southern Pine Beetle (SPB). Most of the remaining pines were eliminated with that disturbance. As with the first disturbance, the second disturbance again favored oak regeneration.

Increased removal of pine throughout Tennessee, through both harvesting and SPB-induced mortality, could be lowering residual basal areas enough to stimulate shade intermediate oak regeneration. On this property, this hypothesis was determined to be significant ($p = .05$) after the 1970 harvest. Given a few more growing seasons, it is hypothesized to also be significant following the 2000 SPB attack.

If this proves to be a reliable trend, it will shed encouragement to both natural resource professionals and private forest land owners who share common concern for oak regeneration. In this forest study, through both natural and human-induced disturbances, the gradual reintroduction of oak is occurring naturally.

A final application of this could be with tree planting efforts for agricultural areas. Planting of pine seedlings in tight spacing has been common. Instead, consideration should be given to plant pine seedlings at wide spacings. This could allow oaks to reinvade soon, prior to disturbances.

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Are Your Roads Ready?

Larry Tankersley, Extension Specialist, Forest Management

Didn't get your roads ready before winter set in? It's not too late to start observing and making notes to get roads whipped back into shape during the upcoming spring and summer months. Walk your roads, draw your maps and make notes! We have a reasonable expectation that we will experience rain, sleet and snow this winter. If we need access to the woods during these months, we need our roads and trails to be protected and usable all year.

Forest roads should drain and dry quickly to support traffic. We have very little control over the soil texture and we expect compaction will limit infiltration of the road surface. Vegetation however limits the formation of a crust and "helps" water into the road surface. Vegetation also transpires some water drying the area. Careful selection of plants also enhances habitat for certain wildlife.

With limited surface infiltration we expect the road surface will shed water. This water will be shed in any direction depending on tilt, whether that tilt is historical, coincidental, or carefully considered. In an ideal situation we like a road that is generally high on the landscape, on the shoulder of a "ridge" with gentle grades that "naturally sheds water downhill. As reality of the site becomes apparent, no one has the perfect situation. Often building a new road is cost prohibitive. Property lines compromise engineering and crossing water when necessary requires savvy.

Forest owners in Tennessee have a variety of options that can be used to enhance drainage and drying of their roads. Deadening or removing trees provides sunlight to the road surface providing energy for drying (and growing the vegetative cover).

Always remember that flats don't drain and often drain along the road surface forming rills and gullies that are exciting to use. Tilting the road slightly down slope is helpful when the land is not too steep. Where the ground is steep, tilting the road slope inward may require occasional culverts to move "dammed" water on downhill.

When moving up or down slope (changing grade), consider draining the surface at regular intervals to limit the energy of flowing water. Engineered dips and other water control structures can limit the amount of soil moving around on exposed road surfaces. Rills and gullies are typically deeper toward the bottom of a hill because moving water along a long slope "gathers steam" in flows which can carry more soil. Dips, as opposed to bumps, slow the water and direct it downhill without significantly impeding vehicle speeds.

Road maintenance can be stressful, but is doable. Often a shovel or other equipment you have at your disposal can be very effective before considering introduction of larger equipment. The real trick is careful consideration of what you need/want from your roads, the site you're working with and the road surface. Deadening key trees and spreading some seed may be all that is necessary to reduce soil movement and allow better use our roads.

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Current Issues of Private Forest Landowners

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

The National Woodland Owners Association (NWOA) develops a list of its top ten private forestry issues each year. The list is determined by a survey of the 32 state forestry chapters of NWOA. Those 10 issues ranked in priority order for 2003 are:

1. Fair Income, Inheritance and Property Taxes
2. Right-to-Practice Forestry
3. Private Property Rights
4. Extension Education and Service Forestry
5. Markets, Mills and Fair Trade
6. Wildfire and Forest Health
7. Cost Sharing and Incentives
8. Landowner Liability
9. Certification of Loggers, Foresters and Practices
10. Forestry on Wetlands – Best Management Practices

Taxes and property rights have always been an overriding concern of landowners as more forestry regulations come to the forefront. Providing educational information and on-the-ground professional assistance continues to be a priority as more people own forestland and average tract size is smaller. Concerns with the import of Canadian lumber brought greater emphasis to marketing and free trade. Certification and landowner liability dropped considerably in this year's survey (certification from #6 to #9 and liability from #4 to #8), while the prominence of the President's Healthy Forest Initiative probably increased the priority of wildfire and forest health. New federal cost-share programs, primarily associated with the Forest Land Enhancement Program (FLEP), probably put more importance on cost-share programs.

Although forestry still has many vocal critics, the backbone of forestry in Tennessee continues to be the more than 4 million forest landowners who control 80 percent or about 14 million acres of forestland. These are the folks who are striving for more information and options to evaluate when making land management decisions to fulfill their ownership goals.

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

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Beech Bark Disease

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

Beech bark disease is a canker disease caused by the *Nectria* fungus. Entry of the pathogen is facilitated by the beech scale insect in which the scale insect inserts a stylet (needle-like mouthpart) into the bark and into the underlying live tissues where sugars and other nutrients are consumed by the insect. These wound sites are then available for colonization by the *Nectria* fungus which produces spores that are transported passively by insects or wind. Generally 3 to 6 years after the scale insects invade the tree, the *Nectria* cankers become evident. The scale insect and the fungi work together to kill patches of wood tissue, slowly weakening the tree. The

cankers can expand and join together to girdle the tree resulting in death of the tree. Trees that do not die will remain weak and become more susceptible to wind damage.

Thus, when evaluating the causal complex of beech bark disease, the dynamics of the beech scale insect populations, the environmental conditions that perpetuate the *Nectria* fungus and the health and proportion of beech trees in the forest must be considered.

Prevention is the best control for beech bark disease by keeping forests with beech trees in a vigorous, thrifty and healthy condition or by creating conditions that are not conducive to the insect or the fungus. Older stands with a high component of large beech trees are most vulnerable. Large, old beech trees have bark fissures as well as decay and large broken branches which are preferred entry points for the fungus and scale insect.

Damage by beech bark disease can be minimized by reducing the proportion of beech in a stand, discriminating against large, overmature trees with roughened bark and signs of decay, and removing heavily-infested trees. Larger trees (more than 10 inches) appear more susceptible than smaller trees.

Scale on high-value ornamental trees can be controlled with insecticides. The disease in forest stands cannot be controlled at a reasonable cost. Timely salvage cutting can reduce disease losses. Trees free from the disease are often found in heavily affected areas. Recent trials have shown that some trees are resistant to the scale, offering hope that methods can be developed to increase the levels of resistance in affected forests.

However, the lack of preventative management or the prompt salvage of diseased trees has created a few silvicultural problems with birch, maple, and beech stands in New England. Beech is a prolific root sprouter and once a beech has died from the disease, a thicket of beech sprouts occur. This thicket is so dense that it precludes establishment of birch and the highly desirable sugar maple. With time, the stems in these stands gradually acquire the spatial habitats for beech scale again, eventually succumbing and resprouting. Overtime, the stand is moving toward a beech monoculture, excluding other species. The beech trees do not get large enough to be commercially valuable. Research has shown that the beech sprouting should be controlled by herbicides to insure that other species continue to develop.

Beech trees infected with beech bark disease have been found in Great Smoky Mountain National Park and in the Appalachian Mountains. Although beech is not a major component of the hardwood forest in Tennessee, it can occur in almost pure stands on small acreage because of the historic influence of fire. Beech is also one of the species that was left during the harvests 50 to 60 years ago. Forest managers should be aware that the disease has a potential to change forest composition and discriminate against other species because of prolific root sprouting of beech. As with most forest insect and disease problems, keeping forests healthy and productive through active management is the best prevention against beech bark disease.

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Timber Investment

Timber is defined by the IRS as real property. That is investment property or income-producing property. How then does it compare with stocks that I invest in?

Liquidity– Markets are reliable in most places even if the products transacted are limited in some areas. Income from Timber sales is periodic as opposed to annual for most timberland owners.

Tax Treatment--Proceeds receive capital gains treatment, typically long-term treatment as timber is a long-term venture for most folks.

Risk– risk can be high. Meteorological, Biological risk, can be managed but may require additional costs for operations removing unmerchantable trees. Regulatory risk is perceived as some as a risk. Human caused problems such as timber trespass and other intrusions can also be managed for a profit with effective use of hunting/recreational leases.

The folks at *Timber Mart-South(TMS)*, a timber price reporting service, recently compared \$10,000 investments in five vehicles: the NASDAQ, the S&P 500 Composite Index, the S&P Paper and Forest Products Index, pine sawtimber and mixed hardwood sawtimber. Timber values used in the analysis were from TMS south-wide average standing timber prices. Biological growth was incorporated with price appreciation or depreciation for the timber assets only. The land portion of the timberland investment is not considered in this analysis.

From early 1993 to the beginning of 2003, an investment in pine sawtimber more than tripled. At 12.3 % annually, this was greater than the S&P 500 which was up only 9.3% during the same period.

The mixed hardwood sawtimber investment had a steady growth rate of 8.8% per year with the \$10,000 doubling in the ten year investment. The NASDAQ and the S&P Paper and Forest Products Indexes performed at 7% and 4% respectively.

It is very important to note the importance of price trends and growth potential of forest investments. For example, pine sawtimber prices increased at 3.1% over the past ten years. Added to the biological growth of 6.5% these numbers approximate the 12.3% growth in the investment. Hardwood growth was assumed at 3.5% annually.

Investments in timber can be, and in most cases, are profitable. Tree growth is much like dividend reinvestment, without the tax consequences. Tree growth often also responds to management.

Thanks to Tom Harris and Sara Baldwin at TMS for conducting and sharing this perspective.

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture,
and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.

Agricultural Extension Service

Charles L. Norman, Dean