



Forestry, Wildlife and Fisheries Update Newsletter

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

October 2002

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/pine.html>

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Calendar of Events – 2002

November 6 -7

Tennessee Vegetation Management Association
Annual Meeting - Marriott Hotel
Knoxville, TN

November 14

Forest*A*Syst Inservice
Cumberland District Office

November 29-30

Freshwater Prawn (Shrimp) Conference

Faculty:

George Hopper, Natural Resources
Wayne Clatterbuck, Forest Management
Craig Harper, Wildlife Management
Tom Hill, Fisheries Management

Sam Jackson, Coordinator, Natural Resources
David Mercker, Forest Management
Larry Tankersley, Forest Management

New National Web-based Learning Center

Sam Jackson, Coordinator

The UT Dept. of Forestry, Wildlife, and Fisheries is proud to announce that it has been selected by the United States Department of Agriculture to lead the development and implementation of the new National Web-based Learning Center for Nonfederal Forest and Range Lands. The National Center will provide a central destination for Internet users interested in forest and range land management and issues. Region-based information covering the entire country will be available for landowners and other interested persons to access through interactive online tutorials, articles, and references.

Plans for the Center include developing web-based learning, correspondence-type courses, and interactive, online instruction. Users will be able to take online courses or quizzes, or to obtain certificates in programs similar to the Master Woodland Owner or Master Naturalist programs online. The use of the Web-based Learning Center will allow educational programs to be delivered to landowners via the web in a cost effective and timely manner, leading to an increased knowledge in and better management of nonfederal forest, wildlife, and range resources.

The National Web-based Learning Center for Nonfederal Forest and Range Lands will also utilize interactive technology and resources to increase the teaching capacity of Extension educators. A secure portion of the Center will be available for Extension personnel to download information to prepare for programs, share their information with other Extension educators, and take online continuing education courses. The information available will include prepared presentations, handouts, and other related materials. A discussion board and listserv will also be established to allow Extension educators from around the nation to share ideas or to discuss problems and issues they encounter.

The National Web-based Learning Center will certainly be a valuable tool in natural resource management for both landowners and educators. We are excited to have such a great opportunity for the Department of Forestry, Wildlife, and Fisheries. We hope you will look forward to visiting the National Web-based Learning Center for Nonfederal Forest and Range Lands. If you desire more information or have an idea, please contact Sam Jackson at samjackson@utk.edu.

For more information contact: *Sam Jackson at (865) 976-1123*
samjackson@utk.edu

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Tree Planting Procedure for Small, Bare Root Seedlings

David Mercker, Extension Associate, Forest Management

**“It is better not to have planted,
than to have planted incorrectly.”**

Tree seedlings receive foremost care while growing in a managed nursery: fertile soil, ample moisture and weed/insect and disease control. Lifting seedlings out of this comfort zone shocks them. Consider: soil is dislodged from their roots, they are handled several times, packaged, shipped, exposed to threatening wind and heat, placed in planting bags or machine buckets, roots unveiled to open air, replanted in often very harsh soil, then left to high temperatures with the *hope* of adequate precipitation for sustenance through the first few growing seasons.

If planting steps are not very carefully followed, mortality rate rises. Seedling survival is more likely, if attention is given to the following:

1. Plant in late fall or early winter - In Tennessee, November, December and January are ideal months for planting seedlings. Tree roots grow during cooler months. By planting well before the growing season, roots will settle into their new environment, elongate and begin preparing to supply water to the foliage when warmer temperatures arrive.
2. Plant on cooler days - Temperatures ranging between 35 - 60E F are ideal. Higher temperatures could cause transpiration rate to increase and dry the roots (transpiration is the process by which water vapor leaves a living plant and enters the atmosphere). Lower temperatures could freeze the roots, causing mortality.
3. Protect seedlings during vehicular transport - Transporting seedlings in an enclosed vehicle is preferred to open-air transport. If open-air must be used, cover the bags of seedlings with a tarp. High winds increase transpiration rate, rapidly drying the roots. It is best to transport on cool days or at cooler times of the day.
4. Proper seedling storage - Seedlings will remain healthier if they are stored in an enclosed cooler where temperature and moisture are regulated. Keeping the air temperature low and humidity high will slow transpiration. Maintain air temperature at 35 - 38E F. Find a place to store your seedlings well ahead of their arrival from the nursery. When stacking bags of seedlings for long storage periods, criss-cross them, leaving large air gaps for better ventilation. Otherwise, heat will build near the center of the bags. If controlled facilities are not available or if the seedlings will quickly be planted in the field, store the seedlings in a cool, dark location, away from the wind (cellar, barn, etc.) Periodically inspect the roots and needles to determine if watering is necessary.
5. Seedling treatment at the planting site - Once on-site, seedlings can deteriorate rapidly. High air temperature and wind place stress on seedlings (particularly when humidity is low). Park your transport vehicles in the shade, in lower spots, shielding the seedlings from destructive elements. Insulation tarps provide desirable protection. Avoid opening seedling bags until nearer the time of planting. Avoid exposing roots to the open air for very long. If air temperatures reach 75E F, planting should cease.
Large portable coolers are ideal for field storage of seedlings (a good consideration when selecting a contractor).
6. Methods of planting - Two methods are used for planting tree seedlings: hand planting and machine planting. Both are acceptable. Hand planting is more common on steeper terrain or in forested areas that have recently been harvested. Hand tools are used to penetrate the soil and create an opening for the roots. Once the seedling is planted, the hole is resealed with the tool and foot pressure. A machine planter is normally pulled behind motorized equipment with a 3-point hitch. The planter has a coulter (slicing through the soil), a foot (pulling the machine below surface level), trencher plates (opening the soil for seedling placement) and packing wheels to re-close and compress the soil. Machine planting as compared to hand planting, generally: has slightly better survival rate, delivers more consistency in spacing, and works best when converting old fields or pastures to forest.

Care should be taken not to “J” root seedlings, but rather leave the root in a natural, vertical position. Plant seedlings deep, at least to the original level planted while in the nursery (as noted by the darkened ring where the lower stem meets the roots). It’s better to plant slightly too deep than too shallow. Make sure that all air pockets are sealed by applying pressure to the soil surrounding the seedling. Straighten seedlings as needed.

7. Conduct a survival check - For the first two summers after planting, conduct a survival check. If cost-share funds were used to establish the planting, it may be necessary to maintain a certain level of live seedlings. The original planting plan should have specified this minimum survival level. Your forester can assist with your survival check.

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Southern Pine Beetle Status

David Mercker, Associate Extension Forester

The following is a summary of a recent conversation with Bruce Kauffman, entomologist with the Tennessee Department of Agriculture Forestry Division, regarding the status of Southern Pine Beetle (SPB) in Tennessee.

- < We've had a reduction in population in the valley area of eastern Tennessee. The resurgence anticipated last July and August did not occur;
- <
- < SPB activity in the mountainous area and southern middle Tennessee (Coffee county area) continues;
- < Areas west of Nashville contain low activity level;
- < Most activity statewide has been restricted to south of I-40;

The intensity of activity for this coming season, a function of a number of conditions, will be less if we incur the following: extended cold spells (which could bring mortality of over-wintering beetles), cool April (which could reduce the number of beetle generations), ample rainfall next summer (allowing sap flow to be sufficient enough to repel boring beetles) and higher populations of parasites (such as the checkered beetle which feed on SPB).

SBP is here to stay and outbreaks will cyclically continue. Landowners are advised to maintain healthy forests with rapid growth rates by thinning their stands as recommended by their professional forester. Such forests are more likely to withstand SPB attacks.

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Be Careful Burning Leaves

Larry Tankersley, Extension Assistant, Forest Management

Falling leaves cause many of us to moan at the chore of raking up and disposing of “tree litter”. What do we do with all those leaves??? For most of us, we decide to rake and burn. We burn the leaves cause what else are we gonna do with ‘em? We have always burned ‘em!

Debris burning is the second leading cause of wildfire in Tennessee behind arson. Have you ever had a leaf fire get away from you? Another thing you might want to consider is the air pollution. Burning forest litter produces a higher concentration of particles which pass directly to the lungs. These particles are not a gas as opposed to the other parts of smoke.

To minimize the potential for cause problems of leaf disposal consider not burning the leaves. Composting is a great alternative to burning. Why let all that good organic matter go up in smoke? Compost for mulch and many other purposes is becoming expensive. You can create you own! Contact your local Extension agent for details.

If you must burn set the fire under these conditions. Low wind speed less than 10 MPH, preferably less than 5 mph. Some wind is actually good to feed oxygen to your fire and to quickly disperse and dilute your smoke. Be certain the wind direction is away from sensitive areas like your house, your neighbors house or a busy road.

The relative humidity should also be low. Hardwood leaves are somewhat sponge-like and their water content is directly related to the moisture in the air. Dry leaves burn the best! The best time to burn is as soon as the leaves are raked. After they have dried for a day or so following the last rain. Wet leaves smolder and smoldering causes the most obnoxious air pollution. Ideally the leaves should be consumed in flames to minimize air pollution.

Of course the area adjacent to the fire should be free of flammable material including other leaves. Rake an area around the flames to create a firebreak..

When ready to set the fire, set the fire on the down wind side of the pile. The flames will back into the wind causing the flames to linger much longer on the fuel and allowing the fire to burn more efficiently creating minimal air pollution.

Be careful! It is always advisable to let your local fire prevention authority know that you are planning to burn.

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2002 Freshwater Prawn Research

Tom Hill, Professor, Fisheries Management

Freshwater prawn research was continued this summer and we learned several important things that are worth passing along. These observations have to do with stocking densities, use of substrate, feeding and number of culture days. Our data is not fully analyzed yet, so these are preliminary results.

We raised our stocking densities to 24,000 prawn per acre. Even with this increase, the prawn average weight at harvest was 30.5 gm. This was the same as the average harvest weight in 2001 when the stocking density was 15,500 per acre. Harvest weight of 3- gm. (15 prawn per pound) is quite acceptable in the market place.

Research at several institutions has shown use of substrate to be very beneficial to survival in prawn production ponds. The substrate material most used have been orange plastic mesh fencing like that used on construction sites. Typically, the 4-foot mesh is suspended vertically between posts for support in prawn ponds. Our study this year compared production using 4-foot substrate in three ponds with 2-foot substrate in three ponds. Survival and production with both heights of substrate were similar with overall survival of 77.5% and production of 1,250 pounds per acre, respectively.

This year we fertilized our ponds and put in alfalfa hay to establish a base of natural foods before stocking prawn. We fed 32% protein sinking catfish feed from the second week after stocking until harvest. The feed conversion ratio was 1.98:1 or one pound of gain for each 1.98 pounds of feed. The ponds were fed twice daily on week-days and once daily on week-ends. The feeder was very conscientious to make sure the feed was distributed over the entire surface of each pond and is likely responsible to a large extent for the very good feed conversion ratio.

When stocking juvenile prawn weighing 3 to 5 per gram, 120 culture days has typically been cited as the time required to reach a good harvest weight. This time period when favorable temperatures for prawn culture is June 1 - September 30. Ideal water temperatures of 80 -85 degrees Fahrenheit may only be available during July and August with lower temperatures on the front and back ends of the culture period. In 2001, our prawn had only 104 days in the ponds and in 2002 only 111 days. Since they did reach acceptable average weights, 30 grams both years, the culture period can apparently be shorter than 120 days.

Once this research is fully analyzed, we will be sure the results are distributed. These practices when implemented make us optimistic that yields by producers can be significantly larger.

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Checking Raccoon Rabies in East Tennessee

Craig Harper, Assistant Professor, Wildlife Management

An oral rabies vaccine targeting raccoons is being distributed aerially by low-flying fixed-wing aircraft in 7 counties of upper east Tennessee, including rural portions of Grainger, Hamblen, Hancock, Hawkins, Sullivan, and Washington Counties. USDA Wildlife Services will lead this effort to stop the spread of the raccoon rabies variant into Tennessee along the Tennessee-Virginia border. The drop began October 14 and will be completed in 7 – 10 days, dependant upon weather. The vaccine was distributed in urban/residential areas by ground crews in August 2002.

The oral vaccine, Raboral V-RG (Merial, Ltd.), is placed inside fishmeal bait, which consists of square blocks made from a compressed mixture of fishmeal and fish oil that readily attracts raccoons. The public is advised to leave the baits alone if found, but they may be moved if found where children or pets play. It is recommended to wear gloves or use a rag if handling a bait. The bait may be thrown into a fencerow, woodlot, ditch, or other area where raccoons might occur. The vaccine will not harm pets if consumed; however, if the animal eats several baits, vomiting or diarrhea may occur. If you have questions concerning the oral vaccination project, call Wildlife Services at (615) 741-7247.

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Global Trends in Forest Products

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

The challenges facing the forest products sector are (1) meet the needs for wood and non-wood products, and (2) at the same time fulfill demands for environmental and social services from the forest. Efforts to find an acceptable balance between production, protection and conservation drive much of the debate surrounding the forest sector today.

The overall patterns of production and consumption of wood products are very different between developed and developing countries. Developed countries account for 70% of the total world production and consumption of industrial wood products. Developing countries produce and consume 90% of the world's fuelwood and charcoal, which are the major household energy sources in many of these nations. More fuelwood and charcoal are consumed each year in the world than industrial roundwood. Demand for fuelwood is expected to continue to increase at a rate of about 1.1% per year until 2010, while demand for industrial roundwood is expected to increase at a rate of about 1.7% per year over the same period. Factors expected to influence the ability to meet increasing demand include increased sources of wood (e.g., plantations, better management of natural forests), technological improvements in wood processing, which will increase efficiency of use of raw material, and increased use of recovered and non-wood fiber (recycling). Trade will continue to help balance wood deficits in one place with surpluses elsewhere.

While wood is the predominant commercial product from forests, increased attention is being paid to the actual and potential economic role of non-wood products. The importance of these non-wood products to household and local economies, particularly among developing countries is increasingly recognized, as is the need to consider them in forest management planning and in forest policy.

Wood energy is another area that is raising new interest. While fuelwood and charcoal remain significant sources of energy in developing countries, especially for domestic use, their potential to contribute to the modern energy sector as an alternative to fossil fuels is being investigated in several countries.

Source: *State of the World's Forests 2000*

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It's Firewood Time Again

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

As the leaves change and the football games commence, many of us are either using or preparing to use firewood as a way to chase away the chill of the season. Fuelwood can be an economical and enjoyable way to heat our homes, but it must be used with a few precautions.

When cutting and hauling firewood, know how much the wood weighs as well as the load capacity of the truck or trailer hauling the wood. It is common to see overturned trucks and trailers due to overloading. Common species used for fuelwood, such as oak and hickory can weigh as much as 75 lbs. per cubic foot when cut. Compact trucks can hold approximately 30 cubic feet and full-size trucks as much as 60 cubic feet of wood volume equating to loads of 2,250 to 4,500 lbs. respectively. Thus, a truck's weight capacity can be exceeded easily.

If purchasing wood from a vendor, one must know how the firewood is measured. Firewood is generally sold using a volume measurement such as cord, face cord, fireplace cord and rick. A cord is a neatly stacked pile of wood measuring 4 feet by 8 feet with each piece of wood 4 feet in length. A face cord has the same general measurements, but the depth of the pile is the length of the firewood logs; not 4 feet, but 4 feet by 8 feet by 20 inches if each log is 20 inches long. A rick and fireplace cords are often regarded as the same and refer to one-third of a cord.

Remember that all these volume measures are not exact. The size and shape of individual logs, how carefully they are stacked, and if the wood is split all influence the actual wood volume. One should also be familiar with the density of wood purchased. All species of wood have a similar energy content per unit weight. The problem is that wood is purchased on a volume basis. Therefore, a cord of pine or yellow-poplar will yield far less warmth than a cord of oak or hickory.

Once the firewood is home, it should be dried for optimum burning. Freshly cut wood can easily contain close to half its weight in water. If not dried prior to burning, much of the energy released will go toward drying the wood. This can lead to problems such as smoldering and creosote build-up in the fireplace. Inefficient burning can also lead to poor draft up the chimney. By burning dry firewood (less than 25% moisture), many of these problems can be avoided.

Drying firewood is as easy as letting wood sit outdoors, but protected from water. Splitting firewood helps expose more wood surface area and speed the seasoning process. Firewood should not be stored or seasoned indoors. If a cord of red oak was brought indoors (unventilated garage, etc.) at a moisture content of 70%, then nearly 1,400 pounds of water would be released when drying the firewood to 20% moisture. This extra water can result in increased condensation on the windows as well as mold and mildew growth. In addition, insects inhabiting the wood may find your home an attractive place to reside. Firewood should be seasoned for at least 6 months to a year in an outside location that is elevated off the ground, but protected from precipitation. Old pallets make a good platform to keep firewood off the ground and a tarp works well as a weather shield.

Sitting around the fire taking the chill from the air on a cold winter's day is a comforting image. Taking a few precautions when procuring and storing firewood can realize this image.

For more information contact: *Wayne Clatterbuck at (865) 974-7346*
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Websites For Your Convenience

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

Extension Publication (SP529) on Leaf Color

<http://www.utextension.utk.edu/spfiles/SP529.pdf>

Timber Price Report (Delivered Prices), Tennessee Dept. of Agriculture, Forestry Division

Tennessee Forest Products Bulletin (quarterly)

<http://www.state.tn.us/agriculture/forestry/tfbp>.

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