



FORESTRY, WILDLIFE & FISHERIES UPDATE NEWSLETTER

MAY 2013

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TWO BALD EAGLE SHOOTINGS – REWARD OFFERED

Tennessee Wildlife Resource Agency – Crossville, TN

The Tennessee Wildlife Resources Agency and the U.S. Fish and Wildlife Service are investigating the shooting of two bald eagles in East Tennessee. A reward of up to \$22,000 (\$11,000 per eagle/responsible subject) is being offered for information leading to a conviction of the person or persons responsible for shooting these eagles.



Soddy Daisy --- Sometime during the last week of March 2013, an injured bald eagle was found on the northern end of Chickamauga Lake along the Tennessee River in Hamilton County near Thatch Road Gravel Boat Ramp and just south of Eldridge Slough. An examination by a veterinarian at the University of Tennessee Veterinary Hospital determined the eagle had been shot. This was a mature bald eagle with a white head and white tail feathers. It survived the shooting and is recovering at the American Eagle Foundation in Pigeon Forge.

Madisonville --- Sometime during the first week of May 2013, a second injured bald eagle was found in the area of Tellico Lake along the Tellico River arm in Monroe County. It was found on Scenic River Road where it crosses the land bridge approximately 3.4 miles from the intersection of Ball Play Road and 1/10 of a mile from the Clear Water Cove Subdivision. An examination by a veterinarian at the UT Veterinary Hospital determined the eagle had been shot. It survived the shooting and is recovering at the American Eagle Foundation in Pigeon Forge. This was a juvenile bald eagle and it did not have the white head and tail feathers recognized with adult

bald eagles. It had mottled dark brown feathers overlaid with a few messy white streaked feathers. It typically takes an eagle 4-5 years to reach maturity and have adult plumage.

Tennessee currently hosts about 180 breeding pairs, according to Scott Somershoe, TWRA ornithologist. It typically takes four or five years for bald eagles to mature but many do not start breeding until they are much older. They may live 15 to 25 years in the wild. Their primary diet is fish, so most bald eagles are found near rivers and lakes.

Bald Eagles are protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, both federal wildlife statutes. Violations of these statutes carry maximum criminal penalties of up to \$100,000 and/or one year in federal prison.

Anyone with information concerning these cases is asked to call Special Agent Bo Stone at (865) 692-4024, or Hamilton County Wildlife Officer Joe McSpadden or Monroe County Wildlife Officer Joe Pike with the Tennessee Wildlife Resources Agency at (800) 262-6704.

Reward monies for this investigation were donated by the American Eagle Foundation, The Humane Society of the United States and The Humane Society Wildlife Land Trust.

SPRING IS IN THE AIR – TIME FOR FIREWOOD?

Adam Taylor, Associate Professor, Forest Products

As the weather warms up, a nice cozy wood fire in the fireplace is probably far from your mind. However, now is a good time to prepare your firewood stock for next fall and winter. This will give your firewood plenty of time to dry out. Having dry firewood is the most important factor in providing a safe and efficient fire.

Burning firewood provides unique pleasure and satisfaction when the weather is cold outside. And Tennessee has abundant supplies of oak, hickory and other high-density woods that have the potential to be excellent and affordable firewood. However, all wood starts out too wet to make good firewood and oak in particular are very slow to dry out. To make safe and effective firewood, oak and other species need to be cut to length and split for at least three months before they will be good firewood.

When the weather starts to cool off in the fall, many people rush to get firewood. Unfortunately, most of the available firewood is too wet to be useful. Even much of the wood that is sold as 'seasoned' isn't really dry – many vendors count the time after the tree is cut as the 'seasoning' (drying) time. However, practically no wood drying occurs in the log form. The wood must be cut-to-length and split before real drying occurs. It is also difficult to know when you buy the wood if it is dry enough or not. The best thing to do is buy it ahead of time and let it dry over the hot summer. By the time the fall and winter arrive, the wood will be sufficiently dry.

The water in green (un-dried) firewood takes a lot of heat energy to evaporate. This robs your fire of heat that would otherwise be warming up your house! Therefore, buying wood in the spring, for use the following fall, is a wise investment: the fuel value of the wood can increase by more than 50% after it has dried effectively. Dry wood is easier to get lighted, and it burns hotter and cleaner. The result is a safer, more efficient and more effective fire.

HOW CROP TREES RESPOND TO RELEASE

David Mercker, Extension Specialist

Trees growing in forest communities compete for sunlight, water and soil nutrients. These resources are vital for photosynthesis and growth. A tree's ability to capture site resources through crown and root systems ultimately determines the ability to compete and survive. As resources become limiting due to competition from adjacent trees, vigor and growth diminish. If competition becomes too severe and site resources become too limiting, some trees will die. Their death leads to reallocation of site resources among the surviving trees. The sequence of competition followed by mortality and reallocation of resources to the surviving trees is an ongoing process.

When trees adjacent to a crop tree are cut or killed as part of a silvicultural treatment, more resources become available to the crop tree. As a result the crown and roots expand into the free growing space, thus further improving capacity to gather site resources and compete with neighboring trees. Once released, crop trees respond with faster growth in root and crown expansion first, then increased diameter and volume growth later. Tree health is normally enhanced when growing space is increased too.

Releasing crop trees produces little initial visible response - rather the response accelerates with time. The rate of response is a function of: species, site quality, position in the forest canopy, and degree of suppression prior to release.

When selecting crop trees for release (based on financial objectives), focus on selecting trees found on the most productive sites first and release trees that have a long-standing record of high-market demand. Also, select those with both good form and grade, and those in the upper levels of the forest canopy. Releasing crop trees can be commercial or precommercial. If precommercial, seek federal or state cost-share assistance in order to minimize the input costs for such a long-term investment.

TREE TOLERANCE

Wayne Clatterbuck, Professor, Silviculture and Forest Management

The simplest definition of the tolerance of an individual plant is: "The ability of that individual to compete with other individuals within a limited growing space." Foresters usually define tolerance as the ability of a tree to grow and develop in the shade of other trees. However, "shade," in this sense involves more factors than merely light. The influence or competition between trees is ultimately a function of the total site. Thus, competition cannot exist between two individuals until they make demands upon a common site that are in excess of the supply.

Foresters give careful consideration to tolerance when applying silvicultural treatments to multi-species stands, but they frequently disagree on the level of tolerance characterizing different species. Disagreements usually arise because trees vary in tolerance not only among species, but also with age, edaphic site, climate, and the nature and the combination of associated species. For example, some species are relatively tolerant throughout life, some are more tolerant when young than when older, and some are more tolerant when older than when young. Eastern white pine is more tolerant during seedling and small sapling stages than in later life. Usually young trees of most species exhibit greater tolerance than they do when they are old. Tolerance for a species will also vary from location to location based on environmental gradients.

Although there is little disagreement between tolerance extremes, i.e., tolerant and intolerant, disagreements occur between adjacent tolerant classes, i.e., intolerant and very intolerant or intermediate and intolerant. A few generalized observations about tolerance and forest management are listed below.

- Highly tolerant trees can reproduce, grow, form persistent understories and force their way upward through overstories of less tolerant trees (examples are hemlock and sugar maple). Intolerant trees, in contrast, reproduce successfully only in the open or where the overstory is thin. Intolerant trees maintain themselves in dense mixtures only as part of the upper canopy and commonly are not present after one generation unless there is major disturbance.
- Highly tolerant trees form understories that are very persistent with minimal growth of individuals for many years. The ability to recover from long suppression indicates high tolerance.
- Intolerant trees do not persist as an understory, and even if released before death, they usually do not recover or they respond very sluggishly.
- Highly tolerant trees have deep, dense crowns, and the leaves are usually darker in color (more chlorophyll) than those of intolerant trees. The lower side-branches of highly tolerant trees fail or are slow to self-prune even though the trees are in a dense stand.
- Intolerant trees have thin, open crowns of relatively pale green leaves, all of which must receive ample light to remain functional. Most of these trees grow rapidly, self-prune forming a higher percentage of clear wood, and form overstories quickly.
- Fully-stocked stands of highly tolerant trees tend to have more stems per acre than stands of intolerant trees of equal age or height.
- Height growth is more rapid for intolerant trees than that of tolerant trees although tolerant tree usually live to greater ages. Intolerant trees are relatively short-lived.
- Ordinarily, tolerant trees have harder, denser wood, grow more slowly, and live much longer than intolerant trees. Tolerant trees are apparently more efficient at carrying on photosynthesis at low light intensities and low temperatures than intolerant trees. Tolerant trees are also more efficient in the use of water and nutrients under conditions of extreme competition.

Since tolerance of any species is somewhat variable and difficult to quantitatively measure, it has been customary to measure tolerance in relative terms. General scales of tolerance are working tools only, subject to discretion in their interpretation by the practitioner. Five classes of tolerance based on survival, vigor, and growth under living canopies and under normal growing conditions are usually recognized. Common tolerance classifications for species in Tennessee are below.

Very Tolerant	--	eastern hemlock, American beech, sugar maple, hollies, hornbeam
Tolerant	--	blackgum, dogwood, red maple, boxelder, buckeyes, redbud, persimmon, sourwood
Intermediate	--	most white oaks, eastern white pine, hickories, white and green ash, elms, baldcypress, yellow birch
Intolerant	--	most red oaks, yellow pines, sweetgum, yellow-poplar, black walnut, black cherry, river birch, sassafras, sycamore, eastern redcedar
Very Intolerant	--	cottonwood, willow, black locust

Opinions as to the relative tolerance of different species will vary somewhat among different practitioners with different local experience. Commonly, practitioners estimate the tolerance of any particular species to be one category removed, plus or minus, from what is suggested in the previous paragraph.

Generally in silviculture, the more tolerant species can be more easily managed in mixed stands, and especially under uneven-aged conditions, than can the less tolerant species. If intolerant species are managed in mixtures with tolerant species, the intolerant trees are maintained usually as dominants or codominants. Otherwise, trees that are classified as intolerant will not survive in the sub canopy. Thus, intolerant species are manageable for only one generation. Many intolerant species can be managed with considerable success as even-aged groups (group selection) within mixed, uneven-aged stands. If intolerant species are to be maintained across generations, then even-aged systems using clearcutting or shelterwood regeneration methods are recommended.

NEEDLE CAST IN EASTERN WHITE PINE

Wayne Clatterbuck, Professor, Silviculture and Forest Management

A fungal disease, *Lophodermium seeditiosum* (formerly *L. pinastri*) often causes browning and dropping of needles on the lower branches of several pine species, particularly eastern white pine. The disease rarely occurs under forest conditions, but it can cause disfiguration of trees in landscape settings, windbreaks, Christmas tree plantations and tree nurseries. Needle cast disease reduces photosynthetic capability and growth. When severe needle loss occurs, only current season needles remain on the tree. Lower branches are essentially bare. New needle growth appears on the tips of the branches ahead of the brown dead needles. The current year bud elongation and needles are abnormally reduced with a tufted appearance.

Cause -During rainy weather in August, September, and October, windborne spores of the fungus are carried from diseased to healthy needles. Most spore release occurs in September. If weather conditions are favorable, once a spore lands on a needle it will germinate and cause infection; however, needle infection will not be noticed until the following spring when trees begin to brown and drop needles.

Symptoms - The browning of needles on lower branches first appears in early spring (April-May). Small, yellow-brown, bar-like spots with yellow halos form on needles which soon turn brown and drop. It is this stage which refers to the name "needle cast." The current season's growth will not show damage but remain a healthy, green appearance as contrasted to the dead, brown interior needles of previous years' growth. Fruiting bodies of the fungus develop on fallen needles over the summer. They appear as raised, black, football-shaped structures which may be scattered along the length of the needle or form in linear rows.

Management - Early detection and prompt application of control measures can prevent severe damage from occurring. A close inspection of plantings in spring will help locate possible trouble spots where control measures should be focused.

Chemical controls - Both mancozeb (Dithane) and chlorothalonil (Bravo, Daconil) are registered for control of *Lophodermium* needlecast. If mancozeb is used include a spreader-sticker to obtain adequate coverage. A spreader-sticker is not needed with chlorothalonil. Follow all label instructions regarding amounts of pesticide to use, method of application, and safety warnings.

Timing of spray applications is critical. Infected plantings should be sprayed three times, beginning in late July, in mid-August and again in mid-September. In severely infected plantings an additional spray may be required in late September or early October, especially if wet weather prevails during this period. Conversely, in lightly infected plantings, the initial, late July, spray may be omitted if dry weather prevails at this time. Studies indicate September to be the key month in which maximum spore release and infection occur.

Lophodermium Needle Cast Symptoms	
When infections occur	August - October
When symptoms develop	December - April
When needles drop	April - August
Symptom appearance	Brown spots with yellow margins; needles turn yellow, then brown. Defoliation leaves nothing but green tufts at ends of branches
Chemical Control	
Fungicide	Chlorothalonil or Mancozeb
Application of Herbicide	3 or 4 times from mid-July - October

References: University of Kentucky, Cooperative Extension Service, ID-85
 Pennsylvania State University, Extension, Pest Fact Sheets
 University of Wisconsin Extension, A2608

EVALUATING TIMBER

Larry Tankersley, Extension Specialist, Forestry

I am often asked to render an opinion on the “value of a stand of Trees”.

Larry, “what is an average acre of timber worth?” is a very common question in my world. I am always at a loss for words even though I have seen lots of acres of land over the years. I really don’t know what an average acre is?

If we assume that the question is referring to “timber”, i.e. standing trees that can be converted to a wood product, the question can be managed with a few questions. Spiritual value of course would require another set of questions with which we can deal with at a later time.

In determining timber value, I generally start with the Tennessee Forest Products Bulletin, <http://state.tn.us/agriculture/publications/forestry/tfbp.pdf>

This price report generated quarterly by the Tennessee Department of Agriculture Division of Forestry (TDF) provides the results of a survey of several wood buyers in the State and what they voluntarily report they are paying for timber delivered to them. This survey while not scientific does provide a “ball-park” price for the various products that our wood-using industries produce from our standing trees.

Notice that the “Bulletin” splits the state into three regions roughly reflecting differences in timber market depending on where the “average” acre is located.

Another thing that is important in evaluating an acre of timber is the various products that Tennessee Wood-Using industries produce. In the “Bulletin” notice that products listed include: cedar logs, crossties, hickory handles, white staves, hardwood/pine pulpwood and veneer, hardwood and softwood sawlogs.

This list of products is a testament to the variety of wood products produced in Tennessee. It also requires a person evaluating a stand of trees to know what products can be sold from these woods. This requires identifying the species of trees that we are trying to evaluate. It would be very hard to sell pine trees for hickory handles.

We have a great publication, on conducting an Inventory of standing timber, <https://utextension.tennessee.edu/publications/Documents/PB1780.pdf>

When we inventory timber with the specifications from the “Bulletin” that the timber market requires, we should have these in mind as we work in the forest to determine how much timber we have that meets these specifications. We have already noted that knowing the species of trees growing on our “average” acre is very important. Note from the price report the difference between the prices offered for white oak versus maple or even yellow-poplar. The relative amounts of the various species which occupy the average acre make a great deal of difference in the timber value of said acre. One forest may have a large volume of hackberry, which is not very valuable, or it may contain lots of premium oak. The value would vary tremendously.

Another great concern that one should get from looking through the “bulletin”, is the impact that tree “grade” has on the value of timber. Tree grade is the likelihood we have of obtaining premium “clear”, “knot-free” lumber out of the tree when it is sawn into lumber. Our publication, on log grading <https://utextension.tennessee.edu/publications/Documents/PB1772.pdf> is required reading for folks interested in determining the timber value on an average acre in Tennessee.

We can estimate the number of board feet of the various potential products standing on an acre of land by grade and species. This could be presented in a table like this one from the Extension publication on Timber Marketing,

<https://utextension.tennessee.edu/publications/Documents/PB1790.pdf>

Paul Bunyan Timber Summary

Species	Number of Trees	Volume (Board Feet)	
		Doyle Rule ¹	Average Volume per Tree (Board feet)
Red oak	126	40,320	320
Hickory	210	36,120	172
Tulip tree	83	35,790	431
Beech	135	22,410	166
White oak	71	20,365	287
Sweet gum	40	4,200	145
Total	665	159,205	239

Using these volumes and the “bulletin”, one could easily do some “back of the envelope” calculations and arrive at an estimate of “timber value”. However, even then, we would only have a guess as what the product’s value would be when we arrive at the buyer of choice. Recall that the price reported in the “bulletin” is “delivered” prices. These would include the amount that would have to be paid to get the severed trees to the “first point of delivery”.

We would need to consider the “cutting and hauling” fee required to process your standing trees into logs and move them to the purchaser. The following considerations (also from the “marketing publication”) must also be taken into account when evaluating an “average” stand of timber.

Factors Affecting Stumpage Value	Relationship
Size of timber	Large trees bring high prices
Size of tract	Larger acreages are preferred
Skid (log dragging) distance	Dragging logs long distances will increase logging cost and lower the stumpage value
Timber quality	Trees of better form and grade bring higher prices
Access	Tracts easily accessed are preferred, reducing logging costs
Location	Tracts closer to local sawmills reduce haul costs and boost stumpage value
Volume per acre harvested	Higher volumes improve production, thus encourage higher timber bids

Location of the timber, access, volume per acre, distance to the mill, and demand for raw material at the mill, season of the year and a host of other factors account for the value of timber on an average acre. Many times the value of a stand of trees can vary from the morning to the afternoon, depending on lots of very dynamic factors.

I appreciate your patience with this discussion. Timber value is a very important concept for forest owners to understand. It usually pays to have a knowledgeable person helping with the determination. I hope it also helps to understand why an auction is typically the best way to determine timber value at one point in time or place.

WILDLIFE MANAGEMENT CALENDAR FOR JUNE

Craig Harper, Professor, Wildlife Management

Wildlife Notes

Black raspberries ripen in early June

Mulberries ripen in late May/early June

Wild plums ripen through June

Most white-tailed deer fawns are born in June. Do not pick them up, thinking they have been abandoned

Peak hatch for wild turkeys and bobwhites occurs in June. **DO NOT MOW** old-fields!

Ducks and geese molt in June and July and are flightless for a couple weeks

Initial nests of most songbirds have hatched and nestlings are fledging

Box turtle eggs hatch in June

Bullfrog breeding peaks in June and July

Habitat Management

DO NOT MOW old-fields!

- destroys cover for wildlife at a time it is needed most (nesting and raising young)
- stimulates grass and leads to reduced forb cover (which means less food and cover)
- increases thatch at ground level and makes travel through the field much more difficult for wildlife
- manage old-fields by burning or disking in late March/early April; **don't mow them!**
- to reduce woody encroachment, consider burning fields in late August – early October
- refer to Chapter 6 in *Native Warm-Season Grasses: Identification, Establishment, and Management for Wildlife and Forage Production in the Mid-South*, PB 1752, for additional information on managing early successional areas

Instead of mowing early successional areas, spot-spray instead

- this is a great method to improve the composition and structure of early successional areas; it works really well
- drive across field with tractor and sprayer as you would when mowing; spot-spray undesirable species with a spray gun as you see them
- composition of field will change over time, developing into an early successional area with desirable plant species
- Roundup® and other glyphosate products work well
- Garlon 3-A® and Cimarron® work well for undesirable broadleaf plants, such as sericea lespedeza and curly dock
- Roundup®, Garlon®, Arsenal®, Cimarron®, and PastureGard® are good herbicide options for woody competitors, such as sweetgum, red maple, green ash, privet, and multiflora rose

Finish planting native warm-season grasses and associated forbs

- plantings through mid-June will do fine with adequate rainfall later in the month
- existing sod should have been killed before planting
- use a preemergence herbicide (imazapic) when planting bluestems and indiagrass
- plant seed **no deeper** than ¼ inch
- be patient!
- refer to Chapter 5 in *Native Warm-Season Grasses: Identification, Establishment, and Management for Wildlife and Forage Production in the Mid-South*, PB 1752, for additional information on establishing native grasses and forbs

Plant firebreaks and other disked strips not left for natural vegetation

- iron-clay cowpeas, soybeans, grain sorghum, Egyptian wheat, and various millets provide forage and seed for a variety of wildlife species
- refer to *A Guide to Successful Wildlife Food Plots: Blending Science with Common Sense*, PB 1769, for seeding rates and additional information

Plant warm-season food plots

- refer to *A Guide to Successful Wildlife Food Plots: Blending Science with Common Sense*, PB 1769, for planting recommendations

Burn unharvested wheat fields that have been left standing for doves in late June/early July

Plant Japanese millet around beaver sloughs and other areas that will be flooded in fall for ducks

Mow and spray perennial forage food plots for weed control if necessary

- refer to *A Guide to Successful Wildlife Food Plots: Blending Science with Common Sense*, PB 1769, for specific herbicide and management recommendations

Collect soil samples for testing from plots to be planted this fall and lime now as needed

Establish salt/mineral licks for white-tailed deer

- realize mineral licks have not been found to increase antler size, body weights, or reproduction
- trace mineral salt licks may increase visitation to sites that will be used later for infrared-triggered camera surveys

Construct/repair dikes and water-control structures for flooding fields/woodlands for waterfowl this fall/winter

Wildlife Damage/Population Management

Leave young wildlife alone

- let nature takes its course; you'll do more harm than good by trying to save "orphans"

Do not allow pet cats outside; report all feral cats to the animal shelter for immediate removal

- putting a bell around a cat's neck does not keep it from killing birds and young rabbits and squirrels
- house cats are not natural predators as they are not native to North America

Put up chicken-wire fence at least 6 inches belowground and 2 feet aboveground around vegetable gardens to repel rabbits

Put up a 2- or 3-strand electric fence (one strand 6 inches above ground and the other 6 inches higher) to keep groundhogs and raccoons out of vegetable gardens

To repel deer from vegetable gardens, erect a single-strand electric fence (2 ½ feet above ground) with aluminum tabs attached every 3 – 5 feet. Smear peanut butter on the aluminum tabs. Deer are attracted to the peanut butter; however, when they touch the aluminum tabs with their mouths, they learn to stay away.

Plant “alternative” forages (such as iron-clay cowpeas, buckwheat, and clovers) for wildlife on the outside of fencing around a garden to satiate the appetite of deer, groundhogs, and rabbits, further helping to keep them out of the garden.

“Repel” snakes by cleaning up around the house – mow more often, remove piles of wood, brush, and trash – to repel rodents that attract snakes. There is no reliable “repellent” for snakes; only “snake oil.”

The best way to get rid of moles is by trapping, but you have to set the traps **correctly!**

Keep crawl spaces and other entrances to houses and buildings closed to prevent young skunks from entering

Refer to *Managing Nuisance Animals and Associated Damage Around the Home*, PB 1624, for additional information on wildlife damage management

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