



# FORESTRY, WILDLIFE & FISHERIES UPDATE NEWSLETTER

MAY 2011

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## DISASTER RECOVERY RESOURCES

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Tennessee is once again experiencing losses due to disasters, including the storms in late April, and the flooding that is occurring at this time. Educational resources are available to cope with disaster recovery (especially related to water and flood damage)

A web-based resource page has been created with links to key documents and resources that can be used in helping communities cope with storm and flood damage. The URL for this page is

<https://utextension.tennessee.edu/Pages/FloodRecovery.aspx> .

## TREE PLANTING GUIDANCE ON SITES WITH FLOODING LIMITATIONS

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*Wayne K. Clatterbuck, Professor, Forest Management & Silviculture*

With the flooding associated with the Mississippi River this year, we should review plans and procedures associated with tree planting in flood plains. Most tree planting failures are associated with sites below the 7 and 15-day duration flood elevation and are attributed to improper species adaptation to flooded conditions. However, inadequate site preparation and poor planting methods and timing also contribute to poor survival. Although predicting flood occurrence is improbable, planting success is usually dependent on the absence of inundation during the growing season for a long enough period of time for tree establishment.

Understanding the site location in flood plains and obtaining accurate flooding data and soils information is critical for planning tree plantings. Flooding information and 7 and 15 day flooding elevation profiles usually can be obtained from the Natural Resources Conservation Service (NRCS) or the U.S. Geological Survey (USGS). These profiles depict a 7- and 15-day flood event that has a 50 percent chance of occurrence in any year during the growing season as defined by the 1987 Corp of Engineers Wetlands Delineation Manual. NRCS soil survey map unit descriptions sometimes express flooding parameters to determine flood frequency and duration. Prolonged floods create anaerobic soil conditions (lack of soil oxygen) that are necessary for tree roots to survive. Flooding frequency and duration are major factors in planning the probability of planting success on flood-prone sites.

Choose tree species that are more adapted to flooded areas and the associated soil conditions. Sycamore, baldcypress, black willow, silver maple, overcup oak, pecan, and sweetgum are considered more tolerant of flooding, while cottonwood, red maple, persimmon, river birch, shellbark hickory, blackgum, and pin, water, willow, and swamp white oaks are classified as somewhat tolerant. These somewhat tolerant species should be planted in areas that do flood, but are not as flood-prone.

To insure successful establishment of trees, have a weed free planting site. Site preparation is recommended to control weeds using tillage, herbicides, and/or cover crops. Research has shown that at least 3 years or growing seasons of weed control is necessary to establish tree seedlings. For best results, plant trees in fields that have been previously row cropped. The herbicides used to control weeds in previous agricultural crops usually permit tree planting in crop stubble without established competing weeds. Otherwise, weed control should be conducted each year to alleviate annual weed pressure on planted seedlings. Consult with a professional forester or county Extension specialist for specific herbicide and weed control recommendations. Use of cover crops such as rye can be seeded to help supplant weed seed introduction on the site.

Timing of tree plantings is difficult because flooding can prevent access to sites for normal spring planting. This delays planting until the summer months after the flood water recedes. Tree seedlings should be planted in the spring as early as local weather and soil conditions allow. If the site is inundated often, then consideration should be given to fall planting. Seedling planting after June 1 should only be considered if the soil at the site contains adequate moisture and the seedlings have been properly stored in a refrigerated cooler since lifting from the nursery. Dormant seedlings can be planted in the fall (usually after November 1). If fall planting is planned, then special arrangements with the tree nursery are required to ensure seedling availability.

Common recommendations with tree planting in flood plains are planting a portion of the site in successive years to reduce the risk of seedling mortality from flooding. For example, a 150-acre site could be planted over a 3-year period planting 50 acres per year. With historic information on flooding, plant trees on higher locations of the site and utilize natural regeneration on lower elevations where seedling success is less likely. On planted sites, three years of weed control using herbicides is required to control competition to tree seedlings.

## TEN TIPS FOR TREE FARMERS

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Wayne K. Clatterbuck, *Professor of Silviculture and Forest Management*

1. Hire an experienced and compassionate consulting forester.
2. Constantly educate yourself on forest management.
3. Develop a long-term management plan for your property
4. Invite other forest landowners to visit your forest. Listen to their advice.
5. Get involved in your local forestry association.
6. Diversify the composition of your wood while taking advantage of markets and great wildlife diversity.
7. Always use written contracts for off-farm labor and logging contractors.
8. Don't delay removing invasive species. Fight them early before they spread.
9. Consider cost-share programs to reduce up-front costs and increase long-term revenue.
10. Be patient, knowing that at least some of your compensation will come from the love of the land.

**Adapted** from survey of several family forest owners affiliated with *Tree Farm*. **Source:** *Tree Farmer Magazine* March/April 2011

## SELECTING YELLOW-POPLAR CROP TREES WITH THE BEST FINANCIAL POTENTIAL

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Wayne K. Clatterbuck, *Professor, Forest Management & Silviculture*

To produce a good rate-of-return and income, a tree must have a healthy crown that is not only wide, but deep as well. In many unmanaged stands, the most vigorous dominant and codominant trees have live crown ratios (ratio of crown depth and total tree height) of about 20 percent. To achieve good growth rates, live crown ratios of 40 to 50 percent are desirable. This higher ratio is easier to develop in young stands that have not yet achieved a significant percentage of their full height growth. In middle-aged yellow-poplar stands (50 or so years), opportunities for increasing crown size still exist, but are limited by the slower height growth. In young stands that are between 25- to 60-feet tall, precommercial operations are usually necessary. However, trees in these stands have the potential to develop deep crowns needed to sustain excellent growth rates throughout their lifespan, depending on site potential.

In research conducted at West Virginia University in the early 1950's, Torkel Holsoe recommended releasing individual trees to maintain live-crown ratios close to 50 percent. He diagrammed crowns and boles of trees to show how much clear wood is produced when crowns are released and deep crowns are maintained. The released trees have rapid growth rates that result in larger boles with more clear wood on the lower two logs than can be obtained from smaller diameter trees with lower live-crown ratios. With release at younger ages, yellow-poplar can grow at a rate of 3 to 5 inches in diameter per decade on productive sites. With those growth rates, sawtimber trees of 20+ inches can be harvested in 50 to 60 years.

If a crown-touching release to the most desirable timber crop trees is applied at a relatively young age, good naturally regenerated stands may have 35 crop trees per acre that can be retained to a mature diameter (dbh) of about 20 to 22 inches. The butt logs of these trees will contain about 200 board feet, with an additional 100 board feet in the second log giving about 7,000 board feet per acre of high-value product and 3,500 board feet per acre of a lower grade product. A rotation length of 50 to 60 years would be competitive with other wood-producing areas in the United States.

In the past, widespread investments have not been made in yellow-poplar stands. Considering the growth rate of yellow-poplar on good sites and the ease of naturally regenerating yellow-poplar, more investment opportunities (financial and human resources) should be directed to the development and growth of yellow-poplar.

**Adapted from:** Arlyn Perkey, *Forest Management Update, Issue 17, USDA Forest Service, Northeastern Area State and Private Forestry.*

## MEASURING SCENIC QUALITY AFTER A TIMBER HARVEST

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David Mercker, Extension Specialist

Typically foresters measure a number of attributes following a timber harvest. These can include: residual trees per acre, stocking, best management practices (BMPs), etc. More recently, changes in scenic quality have gained in importance too. But how is scenic quality quantified? A logging job that appears attractive to foresters and logging operators – one that is well implemented, with few damaged trees and where water and soil have been protected – can be viewed with disdain by others.

In 1990, Oregon State University set out to study this issue. Researchers sought to create a “scenic acceptability rating” for six silvicultural treatments. Comparisons were made for old-growth (the control), traditional treatments (clearcutting and thinning) and nontraditional treatments (patch cutting, snag retention, and two-story). The survey audience consisted of junior-level wildland recreation class members. Their job was to assess the scenic quality of each of the six sites. The scientists evaluated how the student evaluations changed through the first 11 years of the study.

For the purpose of the study, old growth was defined as 250-300 year old Douglas fir with a diverse maple, grand fir, and Pacific yew understory. At the other extreme, clearcuts (where all trees were removed) measured 45 acres in size.

The findings indicate that, as expected, initially old growth received the highest acceptable scenic rating. Regarding the other five methods, patch cuts received the highest rating while clearcutting received the lowest. However, by the end of the study, “acceptability rating” of the five harvest treatments had virtually equalized with an average of about 76 percent. Even the clearcut site had improved from 21 percent to 68 percent acceptability. The control was favorable throughout the study, surpassing all five treatments both at the onset and conclusion.

The most interesting finding is that the acceptability rating of the five treatments converged. There were notable differences at the onset (immediately following the harvesting), but these differences narrowed in time. This substantiates something that professional foresters have long understood, “Time heals.”

To view the findings of this work, see:

Shelby, B. et al. 2003. “Changes in Scenic Quality after Harvest: A Decade of Rating For Six Silvicultural Treatments.”, *Journal of Forestry*. Vol. 101, No. 2. March 2003, pp. 30-35(6).

## WHY DOES A LOGGER LEAVE “TRASH” IN THE WOODS

*Adam Taylor, Associate Professor, Forest Products*

Loggers are often asked why they leave behind limbs and short chunks cut from the trees they harvest. The short answer is because sawmills don't want that wood.

Tennessee's forests produce a variety of wood products – eg. veneer, railroad ties, mulch, pulpwood and barrel staves – but the single most important item is 'saw logs'. Saw logs are those that will be sawn into hardwood lumber. Because of the central importance hardwood lumber, the quality ('grade') characteristics of hardwood lumber are key features for the sale of saw logs. Saw log quantity is also measured ('scaled') by estimating the amount (the number of 'board feet') of hardwood lumber they will yield.

In general, good quality hardwood lumber is long, wide and free of defects. Similarly, good quality hardwood saw logs usually are long, large in diameter and free of visible defects such as knots, rot or splits. Because of the large premium paid for better quality lumber of preferred species, the quality (and species) of hardwood logs is of primary importance in determining their value. For this reason, a good logger will sometimes cut defective chunks of wood off the end, or from the middle, of a tree they are cutting into saw logs. As the example below shows, improving log quality (grade) by removing a defect is almost always beneficial, even if the total amount of wood (scale) is reduced.

### Optimal Solution Returns \$267.70

12' Prime 1	12' Prime 1	12' #1 Sawlog
20" sed	19" sed	18" sed
1" sweep	1" sweep	2" sweep
0% S 0% C	0% S 0% C	0% S 1% C
192.00 bf	169.00 bf	146.00 bf
\$115.20	\$101.40	\$51.10

### Optimal Solution Returns \$188.30

16' #1 Sawlog	12' #1 Sawlog	10' #1 Sawlog
20" sed	19" sed	18" sed
1" sweep	2" sweep	2" sweep
0% S 1% C	0% S 0% C	6% S 7% C
254.00 bf	169.00 bf	115.00 bf
\$88.90	\$59.15	\$40.25

The above charts compare two ways of cutting the same tree and the total amount of money paid by the sawmill to the logger. The ‘bucker solution’ (bottom) provides more wood to the sawmill (538 board feet versus 507) but the ‘optimum’ cutting scenario (top) yields more money. This tree had some rot in the big end (left) that would reduce the quality (from Prime to #1 Sawlog). By cutting off that defective wood, the log is increased in value. Similarly, by cutting out a knotty section (purple dot in the picture) the logger can again improve the quality and value of the log. This is not a trick played by the logger to detriment of the sawmill; the sawmill would prefer that the logger provides the best quality logs the woods can provide – and will pay accordingly. This example is based on a real tree and real prices from a mill in central Tennessee. The comparison was calculated using HW Buck software.

The charts also illustrate why a good logger might want to leave chunks of defective wood in the forest. For a similar reason, they might leave behind small diameter logs or limbs: i.e because there is no market for these items. Sawmills will not accept logs below a minimum (8-12” depending on the location) scaling diameter (small end, inside the bark). In some areas, local sawmills or chipmills may buy small or low quality logs but in some regions there is no market for that wood.

In a contract, a landowner may of course require a logger to adhere to certain standards. However, they should understand that sawmillers also have standards for the wood that they buy from the logger.

## WHAT IS EARLY SUCCESSION?

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*Craig A. Harper, Professor, Wildlife Management*

Early succession is a term used more and more, especially among people interested in wildlife that use early successional areas, such as bobwhites, cottontails, indigo buntings, field sparrows, and grasshopper sparrows. However, the term is often used incorrectly. Why is this important? There are many people interested in wildlife associated with early succession. Habitat restoration efforts are underway to restore populations of wildlife species dependent upon early succession. There are several government programs available that provide cost-share assistance with these efforts. Using the correct terminology is important to ensure land management activities are planned and implemented correctly for a particular wildlife species. Although the terminology can be confusing, it is important to understand these ecological concepts and the systems we are working with to reach our land management goals. For those interested in early successional wildlife and especially those interested in managing habitat for those species, I hope this discussion is helpful.

“Succession” describes *the orderly progression of changes in vegetation community composition*. There are 3 key words or phrases in this definition. It is important to understand each.

The first important phrase in the definition is “orderly progression.” When an area is disturbed, there are certain plants we can expect to pioneer into the area and grow. For example, when a field is disked and nothing planted and no herbicides used, various plants soon will appear (most people call these weeds, but that is incorrect if those plants are desirable for an intended objective, such as wildlife habitat). Imagine if you till your garden, but don’t get around to planting anything and you don’t till it again. Annual grasses and forbs, such as ragweed, pokeweed, horseweed, and crabgrass, often germinate from the seedbank (seed occurring naturally in the soil) and establish on the site. If the site is left alone, perennial grasses, forbs, and brambles soon appear. Broomsedge, goldenrods, and blackberry are common on most sites in the South. Along the way, woody species, such as winged elm, eastern redcedar, shortleaf pine, and sweetgum, begin to appear. These woody plants may germinate from the seedbank, or they may pioneer into the site via wind-disseminated seed or by animals (usually birds). Regardless, the point is if you disk a field in the eastern United States (where we get 35+ inches of rain annually) and leave it alone, it will be a patch of woods in 25 years. That describes succession.

The second key phrase in the definition is “vegetation community.” A vegetation community includes all the species (different kinds of plants) occurring in a given area. One or two species does not constitute a community (unless they are the only species present). Throughout the successional process, one vegetation community gradually gives way to another vegetation community. That is, there is considerable overlap in vegetation species as one community gives way to another. This change in vegetation communities describes the successional process. These vegetation communities are also called successional stages, or seral stages.

The last key word in the definition is “composition.” This refers to the different species present. It is important to realize successional stages are defined by a general change in species present; they are **not** defined by structure (height/density of vegetation). Structure influences the successional process as competition and shading modifies the sites and helps lead to another vegetation community. Nonetheless, structure is an artifact of the different kinds of plants present. Early succession certainly may contain shrubs and trees pioneering into the site. However, once the site begins to be dominated by woody species, the site enters a mid-successional stage.

The term “early succession” is most often misused when referring to a young forest. By definition, a forest is a later successional stage. Before a forest can establish, various annual and perennial herbaceous communities have already passed. Commonly, people refer to a young forest that has been recently clearcut as early succession. This is technically incorrect. Yes, there are usually grasses, forbs, and brambles growing in a recently clearcut forest. However, clearcutting, like other silvicultural methods, are techniques to *regenerate* an existing forest. **The objective of any silvicultural method is to regenerate the forest stand, not create an early successional opening.** When hardwood stands are regenerated, a new stand establishes naturally the following year. Succession is thus set back on the site and the structure of the stand is very different from the preceding stand. However, many trees in a regenerated hardwood forest are sprouts that are supported on root systems of the trees recently cut. Thus, in some stands, there can be relatively little change in community composition and the successional trajectory is much faster than that occurring on a site dominated by annual and perennial herbaceous plants. But regardless of species composition, a regenerated hardwood forest is always dominated by tree species the year following harvest; the site does not undergo a transition from an herbaceous-dominated community to a tree-dominated community.

This does not mean there is no such thing as an early successional forest. When an old-field undergoes succession and a forest begins to develop from species that have pioneered onto the site, an early successional forest is established and the site enters a mid-successional stage.

Succession is set back by disturbance. We commonly set back disturbance with prescribed fire, herbicides, mowing, disking, bulldozers, and grazing. Flooding is also sometimes used to set back succession. We advance succession by planting. In forested areas, this is most often done by planting pines, especially loblolly pine, which is seldom regenerated naturally in the Mid-South. A recently planted pine stand usually resembles the perfect example of early succession, with the exception that it contains planted pines. Thus, the successional trajectory is much faster than if the pines had not been planted. When the planted trees begin to influence coverage of herbaceous plants and brambles, for example, the site begins to enter a mid-successional stage.

Finally, concerning wildlife, it is most important to realize different wildlife species are attracted to and use different successional stages. As mentioned, there are many species that use and require early succession. Some, such as eastern meadowlark and grasshopper sparrow, require grassy areas. Others, such as indigo bunting and dickcissel, use early successional areas that contain scattered small trees and shrubs.

Still others, such as brown thrasher and eastern towhee, use more mid-successional stages with considerable brush and dense small tree cover. Chestnut-sided warblers and white-eyed vireos use dense young forest stands, whereas ruffed grouse are primarily found in forests 6 – 20 years old. Understanding the vegetation composition and structure presented by different successional stages is obviously critical when managing land for wildlife.

## WILDLIFE MANAGEMENT CALENDAR FOR JUNE

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*Craig A. Harper, Professor, Wildlife Management*

### **Wildlife Notes**

Wild plums ripen through June.

Peak hatch for wild turkey nests occurs in early June. DO NOT MOW old-fields.

Initial nests of most songbirds have hatched and nestlings are fledging.

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

Bullfrog breeding peaks in June and July.

Box turtle eggs hatch in June.

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

### **Habitat Management**

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 be killed before planting
- use 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

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!**
- 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

Collect soil test samples 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

Spray woody competitors in early successional areas

- multiflora rose, privet, sericea lespedeza, sweetgum, elms, etc.
- Roundup<sup>®</sup>, Garlon<sup>®</sup>, Arsenal<sup>®</sup>, Cimarron<sup>®</sup>, and PastureGard<sup>®</sup> are good herbicide options

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 aboveground 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 aboveground) 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. 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

## BIRDS IN TORNADO DAMAGED AREAS

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*Craig A. Harper, Professor, Wildlife Management*

### *Question:*

I live off Alcoa highway, at the county line, near the river. We had much storm damage in our neighborhood. Normally we have many birds at our feeders! Not so many since the storm. Found one male cardinal hanging upside down in a shrub, and a blue bird in the tree debris on the ground, the next day. This morning a female cardinal came to the feeder with messed up feathers and a broken, misshapen leg. She was still able to get sunflower seeds, but it took lots of effort, and she is not trying very hard, just sitting on a limb looking around. I will keep an eye out for her, but she probably will not survive. One of our trees with chickadees nesting in a house was uprooted. The box was empty when we removed it from the tree. Were our birds destroyed? Anyone looking into the bird populations? I know this is so minor compared to people's lives lost and homes destroyed, but we love our birds too.

### *Answer:*

Undoubtedly, there were many birds killed in the storms that have raged across TN and other states in the last few weeks. I'm not aware of anyone measuring the impact of those storms on bird populations. Although the storms were bad (worse than what we normally see), on a broad scale, many birds are lost each year to such events. I do not expect there will be any population decline of any species as a result of the storms, even though many individuals were killed. Since you didn't find the chickadees in the house, I expect they lived. If you replace the house on another tree nearby, they may start another nest. Thanks for your concern and interest. Hope this helps-- Craig

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