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Department of Forestry, Wildlife and Fisheries

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Please join us in welcoming new faculty members!

Brian Alford has accepted the Assistant Professor of Fisheries position, with a start date of October 14, 2013.

Chris Graves has accepted the WFS lecturer position, with a start date of August 1, 2013.
Wood Protection Options for Beekeepers

Adam Taylor, Associate Professor, Forest Products

Bee hives are traditionally made from wood; and wood remains an excellent choice for this application. Strong, insulating, affordable, and a safe material for bees and the food they produce. The hive bodies are a significant investment for the beekeeper and they take a beating during use, so prolonging the useful life span of a wooden beehive is an important consideration.

There are two complementary approaches to enhancing the durability of a wooden beehive:

- **Keep beehives dry.** Wood rot is caused by fungi that require liquid water (even so-called ‘dry rot’). Because hives are kept outside, they get rained on but this doesn’t necessarily mean that the wood has to get or stay wet enough to support wood rot fungi. Keeping good covers on the hives to shed the rain will help a lot, as will providing foundations to keep the hives off the wet ground. Wood in continuous ground contact will become consistently wet enough to support fungal growth in most areas. However, even above-ground water can get trapped where two pieces of wood meet. Maintaining an intact paint film over exposed wood surfaces can help shed the liquid water before it has a chance to be absorbed by the wood. This is especially important at joints in the construction. Placing the hives in the open will also help the wood to dry rapidly after wetting.

- **Use rot-resistant wood.** Some wood is naturally rot-resistant because it contains naturally occurring protective chemicals. Some species with naturally rot resistant wood include the cedars, cypress, redwood and white oak. White pine, a common choice for bee hives, is moderately rot resistant. It is important to note that it is only the heartwood portion (inner, dead core of a living tree) that may be rot resistant. The sapwood of any species is highly susceptible to rot and mold. In white pine, the sapwood is wide so it can be difficult to obtain lumber that is only heartwood.

  Chemicals can be added to susceptible woods to make them rot-resistant. This ‘treated’ wood is commonly used for utility poles, railway ties and decking lumber. Different chemical mixtures are used for different applications and, until recently, one called copper naphthenate was used for beehives. Copper naphthenate is a non-restricted-use pesticide that is widely used for DIY and industrial applications however the label instructions for its use in beehives was recently removed, at the request of the EPA. The basis for this request is unclear, as the limited data available suggests its use in beehives was acceptable. Treated wood is still acceptable for foundations and other components that are not inhabited by the bees.

  The use of paint to help shed liquid water was mentioned above. However, paint is not a substitute for using rot-resistant wood. Painted wood that is continuously exposed to liquid water will get wet enough to support fungi.

Wood rot, even in its initial stages, makes wood much weaker. Thus, taking steps to protect beehives against rot is an investment that can pay off in terms of hive bodies surviving for many more years than they would otherwise. In summary, use durable wood when possible, especially for the supports that touch the ground, and keep your hives ‘high and dry’ for long-lasting wooden beehives.
Chinese Privet: Problematic to Forests

David Mercker, Extension Specialist

When a plant species is found beyond its natural range, it is termed exotic. When exotic plants become problematic and displace native vegetation, they are termed exotic invasive. Invasive species can threaten forest stability and biodiversity. Invasives can be either native or nonnative. Chinese privet (Ligustrum sinense), also called “common privet,” is an exotic invasive plant. It was introduced from China in 1852 and has gradually spread throughout much of the southeastern United States. It has been successful at displacing some native trees and plants, and has brought difficulty in regenerating forests.

Chinese privet is a semi-evergreen shrub (retaining most of its leaves in the dormant season) reaching 30 feet tall. The growth habitat produces multiple basal stems that arch in all directions, forming dense thickets, particularly in bottomland forests and along fencerows. When mature, the dark purple fruits are consumed – then spread – by birds. Privet is tolerant to shade, existing quite well under the forest canopy. It also sprouts prolifically.

Chinese privet, in contrast to two other common privets (glossy privet and Japanese privet), has small leaves that average 1.0 inches long. The leaf is arranged oppositely, is elliptical in shape, is lustrous green above with a hairy midvein below, and is entire (without lobes along edges). Because privet retains most of its foliage during the dormant season, it is capable of producing and storing sugars from photosynthesis even in the winter months when most other plants have become inactive. This gives privet a competitive advantage against other native vegetation.

Privet is controllable by either mechanical or chemical measures, depending on the level of infestation and a landowner’s time and resources. Forms of treatment can include: prescribed burning, tractors with rootrakes and shredder-mulcher heads, pulling and digging, and herbicides. Herbicides are effective in one-of-four ways: cut-stump treatment, tree injection via hack-and-squirt, basal stem spraying, and foliar spraying. A number of herbicides are registered as safe by the US Environmental Protection Agency for treatment of privet. Be sure to follow the label recommendations when using herbicides.

Cost-share assistance is sometimes available to address invasive species control, such as privet. Contact your local Natural Resource Conservation Service or TDA Division of Forestry for more information. Finally, privet control is never complete. Be sure to continually treat new, unwanted arrivals.

Reference:

Managing Native Grasses: Going Broke Slowly – or – Why Summer Forage Matters

Patrick Keyser, Professor and Director, Center for Native Grasslands Management

In every business enterprise, including livestock, we hear about the “bottom line.” But an important part of figuring the bottom line is the “top line.” In other words, how much did it cost me to produce a $1 of beef? If the answer is at or near $1, you have either a failing business or a very expensive hobby. Neither is a good idea. To avoid going broke slowly in raising cattle, the cost of gain should always be considered.

The steep increase in fertilizer prices since 2006 has impacted production costs of many traditional types of forage. A recent analysis conducted at the University of Tennessee using January 2011 input costs reinforced this point. The cost of hay production for a summer annual (sorghum-sudangrass hybrid), bermudagrass, and a native warm-season grass (big bluestem-indiangrass blend) was strongly influenced by fertilizer costs. The high yielding, low-input natives could be produced at $53/ton versus $75/ton for the high yielding, high input bermudagrass and $83/ton for the annual. Using the same input costs, the lower yielding cool-season forage, tall fescue, cost $123/ton to produce.

For grazing, the results were similar. Natives produced gain more cheaply ($0.31/lb) than either bermudagrass ($0.54) or summer annuals ($0.75). All of these figures are being driven by two main factors, yield per acre and fertilizer costs. Indeed, at nitrogen prices of $400/ton, the rate of return on both summer annuals and bermudagrass were negative. Natives maintained positive returns with nitrogen prices up to $800/ton. Remember, producers cannot influence market prices, just their costs of production.

This analysis did not take into account the cost of not having good summer pasture. However, another evaluation conducted at Texas A&M sheds light on this question. Their analysis of 15 years of data collected under the National Cattlemen’s Association’s Standard Performance Analysis program indicated that the top performing cattle enterprises (+6.6% return) were distinguished from those that performed the most poorly (-7.4%) by the cost of purchased feed. Those at the bottom were not well prepared for drought cycles and, as a result, purchased 44% more feed than those in the top group.

It is likely that the costs of not being able to cope with droughts like those much of the Southeast experienced during 2007, 2008, and again in 2012, impact cattle enterprises in many ways beyond purchased feed costs. Pasture reestablishment, selling cattle into weak markets, and repurchasing cattle in high markets following the drought all will have lasting effects on the bottom line.

Native perennial forages provide a cost-effective, reliable way to produce cheap feed, bridge the summer forage gap, and minimize the impact of severe droughts. To learn more, see UTIA publication, Economic Implications of Growing Native Warm-Season Grasses for Forage in the Mid-South (SP731-E) available online https://utextension.tennessee.edu/publications/Documents/SP731-E.pdf or visit https://nativeforages.utk.edu for an economic decision support tool that will allow you to evaluate summer forage options.
Loblolly Pine: Is it Native in Tennessee?
Wayne Clatterbuck, Professor, Silviculture and Forest Management

We have received several inquiries asking whether loblolly pine is native to Tennessee. Most of these inquiries are from those who are interested in using native plants or are attempting to meet guidelines of forest certification programs that specify use of native vegetation. The 1950 range map for loblolly pine (last time most range maps were formulated and have not been updated since) has this species in the southern tier of Tennessee counties that border Georgia, Alabama, and Mississippi. The range maps were hand-drawn based on oral information from people who worked or lived in the area. Spatial analysis technologies that we use today were not in existence in 1950. The USDA silviculture manual states that the native range is the southern extremities of the Cumberland Plateau, the Highland Rim, and the Valley and Ridge provinces of the Appalachian Highlands that includes Tennessee. The range map gives an assessment in 1950 of the distribution of loblolly pine based on knowledge at that time, but the lines drawn were estimations not based on actual spatial data.

Loblolly pine was planted north of its native range by forest industry beginning in the late 1950’s ranging into counties near the Kentucky border in Henry County in west Tennessee and in Fentress, Morgan, and Scott Counties on the Cumberland Plateau. Loblolly pine was also planted by the Tennessee Valley Authority (TVA) during dam and reservoir construction as well as other federal government agencies (such as the Works Progress Administration - WPA) for erosion control. Loblolly pine was favored for planting because of its ease of establishment, fast growth, fallen pine needles are slow to decay providing a ground cover for erosion control, and loblolly pine is less vulnerable to diseases that impact pine species, particularly fusiform rust. The susceptibility of loblolly pine to ice storms (breakage of limbs) limits its northern range, even though the tree recovers from limb damage if at least 50 percent of the crown remains.

Even if loblolly pine had not been planted north of its range, forests do not remain static and species migrate over time into favorable environments. Plant hardiness zones have shifted to the north, another indication of warmer temperatures. These zones were redrawn on 1990 and 2012 and shifted northward with increases in the average annual minimum temperatures as well as the longer growing season. In the 60 years since the range map was created, loblolly pine would have migrated northward to at least I-40, especially if you are an advocate of climate change and warmer temperatures. The distance between the edge of the loblolly pine range map in 1950 and I-40 averages about 60 miles.

Differentiating the native range of loblolly pine in Tennessee may be moot now because loblolly pine is naturalized in most of Tennessee. Loblolly pine is a prolific seeder; seed is distributed by wind, water, and animals; and the species regenerates easily. USDA county soil surveys in Tennessee use loblolly pine as an indicator of forest site productivity through site index even though many of those counties are not within the 1950 loblolly pine range map.

In summary, the native range of loblolly pine in Tennessee has expanded since 1950, by planting and naturally through species migration. Using the 1950 range map as an indication of native range of loblolly pine does not reflect present favorable environmental conditions and areas where loblolly pine is present, regenerating, stable and thus self-sufficient today.
Managing Forests for Resiliency
Wayne Clatterbuck, Professor, Silviculture and Forest Management

Forest resiliency is an indicator of healthy forests. A resilient forest has the ability to eventually return to its original state after a disturbance causes a short-term change. The tenets of forest resiliency are very similar to practicing good management and silviculture. A few of the characteristics that typify forest resiliency, health and management goals include:

1. **Diversity of species.** The mesic climate in Tennessee provides for a wide range of species. Managing for a diverse range of species helps prevent pest and disease spread. Most forests pests and diseases are species specific. The risk of damage from pests and disease decreases with a wider variety of species and makes forests more resilient to disturbances. Large areas of the same type of tree are more vulnerable to insects, disease and losses from disturbances. Thus the risk of loss is much greater.

2. **Maintain vigorous trees.** Trees that are growing well are less susceptible to disturbances. As stands grow and develop and once all growing space is utilized, overstocking occurs, growth slows, stagnation begins and trees become increasingly stressed. Overstocking and stress lead to trees not being able to recover from disturbances and insect/disease impacts. Thinnings should be conducted to allow more growing space and resources (moisture, nutrients, light) for the remaining trees to continue growing and remain healthy. Thinnings can also remove inferior, poorly-formed, or unhealthy trees while adjusting species composition of the stand.

3. **Avoid too many mature to overmature trees.** Older trees are more susceptible to disturbances, insects and disease. Older trees are generally less vigorous than younger trees and have less chance of overcoming the damage from a disturbance. Mature stands should be harvested and regenerated before these older ages to maintain health and vigor of trees. Often older trees succumb before regeneration plans are in place such that the regeneration that does occur is not preferred.

Active management of forests/stands, even young stands, is necessary to ensure forest resiliency and health. Maintaining vigorous trees through thinning, ensuring species diversity, avoiding too many mature and older trees, and controlling density at the proper time to alleviate overcrowding are all productive measures and practices that contribute to forest resiliency and the forest’s ability to recover from a disturbance. These practices will not guarantee that a forest will not be harmed from a disturbance event. However, these practices will decrease the risk that the disturbance will have a catastrophic impact on the resilience of the forest.
Tree Planting? . . . Lots to Think About

Larry Tankersley, Extension Specialist, Forestry


Reading through the “bullets” from this table of contents, you may realize why sometimes it is hard to decide what tree to plant and where to plant it. Some things to think about……

Matching the Plant to the Planting Site
Evaluate the site,
Soil properties,
  Topsoil/subsoil
  Texture and structure
  Drainage (perc. test)
Soils and plant growth
  Temperature
  Water
  Aeration
  Nutrients
  Soil pH
Available Root Space
Above ground site limits
Select the appropriate Species
  Ecological attributes
  Appearance
  Transplantability
  Plant Size
  Expected maintenance
  Market Considerations

Preparing to Plant
Planting Site Design and Preparation
  Unrestricted landscape sites
  Planting pits and planters
When to Plant
  Factors that can influence planting time
  Nature of the Species
  Growth Stage of the Plant
  Environmental conditions
  Type of stock and planting methods
Obtaining Quality Plants
  Origin of the plant material
  Bare root production
  Field-grown with a soil ball
  Container production
  Plant quality
The Planting Process

Digging, Handling, and Storing Plants
- Tying branches
- Bare root plants
- Plants with a Soil Ball
- Mechanical tree spades
- Palms
- Large trees
- Container plants

Planting
- Preparing to Plant
- Backfilling
- Pruning at planting
- Support systems
- Trunk wraps
- Mulching
- Fertilizers and root stimulants
- Antitranspirants
- Tree shelters
- Final inspection

Establishment

Root Development After Planting
- Root distribution
- Root loss
- New Root growth
- Environmental factors influencing root growth
- Redevelopment of root structure
- Increasing root growth after planting

Establishment in the Landscape
- Defining post-planting stress
- Duration of post-planting stress

Care after Planting

Care after Planting
- Regular inspections
- Watering
- Fertilization
- Mulching
- Trunk Protection
- Pruning
- Pest Control

It doesn’t have to be real complicated; How much room do you have for a new tree? Buy a quality plant(s), Plant them with care and expect to maintain your tree until it can care for itself. It doesn’t have to be complicated, but, ...?? If you still have Questions? ?? Let me know.

The more we know about plants the more we love ‘em!!
Endangered and Threatened Fish Return to Home Waters in Tennessee

Stephanie Chance, Fish & Wildlife Biologist, US Fish and Wildlife Service

Five federally endangered and threatened fish species – smoky madtom, yellowfin madtom, duskytail darter, spotfin chub, and boulder darter – have been reintroduced to streams in central Tennessee where they were once found to help speed their recovery. Efforts to establish non-essential experimental populations in these waters will improve the status of these species to the point where Endangered Species Act (ESA) protection is no longer necessary for their survival.

Reintroducing species into areas where they formerly occurred is often done for species whose populations have been fragmented because their habitats have been altered.

Streams where threats are minor and manageable are ideal for such reintroduction efforts, as are streams with are managed as national forests or parks. However, the presence of endangered species on federal lands may result in time delays for consultation on federal projects or routine activities. Fortunately, the establishment of non-essential experimental populations allows for the re-establishment of an endangered species without adding a regulatory burden to federal agencies or to members of the public—a win-win for people and wildlife.

There are a number of partners contributing to these efforts to restore these fishes in Tennessee, including the Service, Tennessee Wildlife Resources Agency, Cherokee National Forest, North Carolina Wildlife Resources Commission, National Park Service, Tennessee Valley Authority, and the Tennessee Aquarium.

Biologists have released smoky madtom (*Noturus baileyi*), yellowfin madtom (*Noturus flavipinnis*), duskytail darter (*Etheostoma percnurum*), and spotfin chub (*Erimonax monachus*) into the Tellico River in Monroe County. In 2002, Conservation Fisheries, Inc., a non-profit organization based in Knoxville, Tennessee, began captive propagation efforts for smoky madtom, yellowfin madtom, and duskytail darter to support these reintroduction efforts. Eggs collected from nests in nearby Citico Creek have been used to reproduce young for these reintroduction efforts.
Biologists have also released boulder darter (*Etheostoma wapiti*) and spotfin chub propagated by Conservation Fisheries, Inc. into Shoal Creek in Lawrence and Wayne counties. The boulder darter and spotfin chub were last collected from Shoal Creek in the 1880s, and since then both were believed to have been eliminated from this reach after the impoundment of the lower creek by Wilson Reservoir, siltation from agricultural erosion, and pollution from an industrial facility upstream. In 2005, following improvements to water quality, a free-flowing portion of Shoal Creek in Lawrence County was designated as a non-essential experimental population. This population will re-establish the boulder darter into a portion of its historical range.

Establishing populations of the different fish species in different locations, so no one event could likely cause their extinction, is an essential element of the strategy to recover them so that they no longer need the protections of the ESA. Biologists have confirmed that these fishes are naturally reproducing within their respective non-essential experimental population areas. As these re-established populations continue to expand on their own, the future for these species will grow brighter as they move one step closer to potential downlisting and recovery.

*Stephanie Chance can be reached at the Tennessee Ecological Services Field Office  931-528-6481, ext. 211 or stephanie_chance@fws.gov*

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**Successes of Protecting Bird Habitation on Private Lands**

*Reprint from the USDA Department of Agriculture*

Agriculture Secretary Tom Vilsack and Interior Secretary Sally Jewell released the *State of the Birds 2013 Report on Private Lands* on July 2 of this year. A collaborative effort as part of the U.S. North American Bird Conservation Initiative, involving federal and state wildlife agencies and scientific and conservation organizations, the report shows how private land conservation incentives positively impact bird habitat.

"Sixty percent of U.S. land is in private hands, making the efforts of farmers, ranchers and landowners critical when it comes to creating, restoring and protecting bird habitat," Secretary Vilsack said. "Today's report highlights the positive impact of voluntary conservation measures for birds, including those made possible by Farm Bill programs. The need for a long-term commitment to conservation is just one more good reason why we need Congressional passage of a multi-year Food, Farm and Jobs Bill as soon as possible."

Individuals, families, organizations and corporations, including two million ranchers and farmers and about 10 million woodland owners, own and manage 1.43 billion acres, roughly 60 percent of the land area of the United States. Private lands are used by virtually all of the terrestrial and coastal birds of the United States, 251 of which are federally threatened, endangered or of conservation concern. Many privately owned working lands that produce a bounty of food, timber, and other resources for society also provide valuable habitat for birds.

"Our nation's most effective conservation efforts are partnerships in which federal, state and local governments work hand-in-hand with private landowners and other stakeholders," said Secretary Jewell. "The programs highlighted in this report help build these voluntary partnerships to conserve the vital habitat of our many bird species. In addition, many of these partnerships provide direct benefits to people such as improving water quality and supporting jobs and economic growth."

The *State of the Birds 2013 Report on Private Lands* shows that private lands have critical conservation value, and that landowners and managers can measure their yield not only in bushels and head and cords, but also in bluebirds, hawks and canvasbacks.

The success stories highlighted in this report demonstrate that these voluntary efforts on private lands are resulting in meaningful bird conservation results:

- **Conservation Reserve Program (CRP):** Henslow's Sparrow populations, which have declined more than 95 percent since the mid-1960s, have rebounded in areas through CRP. In Illinois, regional Henslow's Sparrow spring bird counts are now about 25 times greater than 30 years ago, prior to CRP. The Illinois counties with the highest percentage of CRP acreage also have the highest Henslow's Sparrow
population gains. A recent study in the Dakotas suggested that if CRP acres were put back into annual crop production, populations of several species of grassland birds (including Sedge Wren, Grasshopper Sparrow, Bobolink and Western Meadowlark) would experience significant population declines, ranging up to 56 percent.
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/technical/nra/ceap/?cid=stelprdb1041269

- **Wetlands Reserve Program (WRP):** The Wetland Reserve Program has restored 2.6 million acres of private wetlands across the nation. WRP-conserved wetlands provide essential breeding habitat for waterbirds such as Wood Duck and Hooded Merganser, wintering habitat for 3.5 to 4.5 million waterfowl every winter; and migratory stopover habitat for shorebirds such as Black-necked Stilt and Greater Yellowlegs.

- **Natural Resources Conservation Service Landscape Conservation Initiatives:** The Sage Grouse Initiative has targeted Farm Bill conservation funding to enroll more than 700 ranchers and implement sustainable grazing systems that improve habitat on more than 2 million acres in 11 western states. The Migratory Bird Habitat Initiative, delivered through various Farm Bill conservation programs, is providing inland habitats for migratory waterbirds on more than 470,000 acres of private lands in eight states from Florida and Georgia to Texas and Missouri.

- **Chippewa Flowage Forest Conservation Easement:** This Forest Legacy project—a partnership of the Forest Legacy Program, Wisconsin Bureau of Forest Management and Trust for Public Land—created an 18,000 acre conservation easement of forest, wetlands, and exceptional wildlife habitat especially important for forest birds like Wood Thrush, Rose-breasted Grosbeak, and Black-throated Green warbler, and water birds like the Bald Eagle, Osprey and Common Loon.

- **Machias River Project:** This project in Maine is a good example of conservation easements protecting the futures of both birds and working forests. This Forest Legacy project—a partnership of the Forest Legacy Program, Maine Bureau of Parks and Lands, The Nature Conservancy Maine Chapter, and others—protected 60,000 acres through fee purchase and easements. These acres connect to over 340,000 acres of other protected lands, creating a mega block of contiguous habitat for 28 bird species of conservation concern.
http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/maine/placesweprotect/machias-river.xml

- **Foresters for the Birds: Helping Landowners Integrate Timber and Forest Bird Habitat Management—** This project, with financial support from the USDA Forest Service, is a partnership between the Vermont Department of Forests, Parks and Recreation and Audubon Vermont. Audubon biologists and over 100 foresters in Vermont and the surrounding region have begun working together to help landowners integrate timber and songbird habitat management.
http://vt.audubon.org/foresters-birds

WILDLIFE MANAGEMENT CALENDAR FOR AUGUST

Craig Harper, Professor, Wildlife Management

Wildlife Notes
Bluebirds are hatching their third nests
Shorebird migration at its peak
Songbirds begin migrating
Young bats learn to fly
Bats begin migrating
Chipmunks are bearing their second litter
The bobwhite population is probably at its annual peak in August
Bullfrogs, green frogs, cricket frogs, and gray and green treefrogs are calling throughout TN
In west TN, you might also hear bird-voiced treefrogs, and barking treefrogs

Habitat Management
Spray undesirable woody plants in early successional areas
- multiflora rose, privets, sericea lespedeza, sweetgum, green ash, and Ailanthus are examples of undesirable woody plants in early successional areas
- Roundup, Garlon 3-A, Arsenal, Cimarron, and PastureGard should be considered
- refer to Chapter 6 and Appendix 4 in Native Warm-Season Grasses: Identification, Establishment, and Management for Wildlife and Forage Production in the Mid-South, PB 1752, for additional information

Instead of mowing early successional areas, spot-spray instead
- Roundup and other glyphosate products work well
- Garlon 3-A and Cimarron work well for many undesirable broadleaf plants
- 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

Burn old-fields to stimulate forbs and reduce grass dominance (late August)
- Smokey Bear is 69 years old this month (1944). Let’s pray he will retire soon!

Plant firebreaks (late August) and other disked strips not left for natural vegetation
- annual cool-season grains (such as wheat and oats) along with annual legumes (crimson and arrowleaf clover) are excellent choices

Prepare new cool-season plots for planting in September
- spray existing sod with glyphosate herbicide (such as Roundup—2 quarts per acre)
- amend soil according to soil test recommendations
- incorporate (disk) lime and fertilizer into root zone of plot
- refer to A Guide to Successful Wildlife Food Plots: Blending Science with Common Sense, PB 1769, for additional information on seeding rates and management recommendations
- if you cannot get seed locally, order it now so you’ll have it when it is time to plant

Spray and/or mow perennial forage food plots for weed control if necessary
- refer to Appendix 2 in A Guide to Successful Wildlife Food Plots: Blending Science with Common Sense, PB 1769, for herbicide recommendations
Begin silage chopping or strip-mowing dove fields as they mature

Top-sow winter wheat in late August to attract doves and provide forage for white-tailed deer, wild turkeys, and other wildlife through fall and winter

Don’t cut native grass hayfields past mid-August
- winter cover provided by native grasses is the primary usefulness of native grass hayfields for wildlife
- if you hay past mid-August, there will not be enough regrowth to provide sufficient winter cover
- refer to Chapter 3 in Native Warm-Season Grasses: Identification, Establishment, and Management for Wildlife and Forage Production in the Mid-South, PB 1752, for additional information on using native warm-season grasses as forage for livestock

Grazing native grass pastures should be ceased by late August to allow sufficient regrowth for plant vigor and winter cover for wildlife

Order tree seedlings if you plan to plant trees this fall/winter

Begin flooding fields for migrating blue-winged teal and local wood ducks

Finish planting wild millet and buckwheat around beaver sloughs and other areas that will be flooded in November for ducks

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

To provide high-quality habitat for many amphibians, maintain flooded areas throughout the summer and restrict cattle access.

Maintain cattails and other emergent vegetation around ponds if amphibians are a focus and fish are present (fish are significant predators of amphibian eggs and tadpoles)
- if the pond is managed for fish, pond edges should be deepened to approximately 18 inches and emergent vegetation should be removed

**Wildlife Damage/Population Management**

If bats are in your attic, don’t close them up now
- young are still present, but will be flying soon
- if you close them up, they will die and produce a terrible odor
- maternal colonies will be leaving for hibernation before too long
- close all outside openings to attics as soon as the bats leave

Blackbirds begin flocking later in August
- don’t allow them to roost in the trees in your yard; if they start, they’ll form a habit
- repel them with noise makers consistently until they stop returning in the evening (shotguns, firecrackers, banging metal pans together)
- be persistent

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

Conduct survey for white-tailed deer using infrared-triggered cameras
- one camera per 50 – 100 acres, spaced systematically throughout property
- trace mineral salt may be placed at site in spring to get deer accustomed to coming to site
- bait camera sites with shelled corn and take pictures for 2 weeks
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