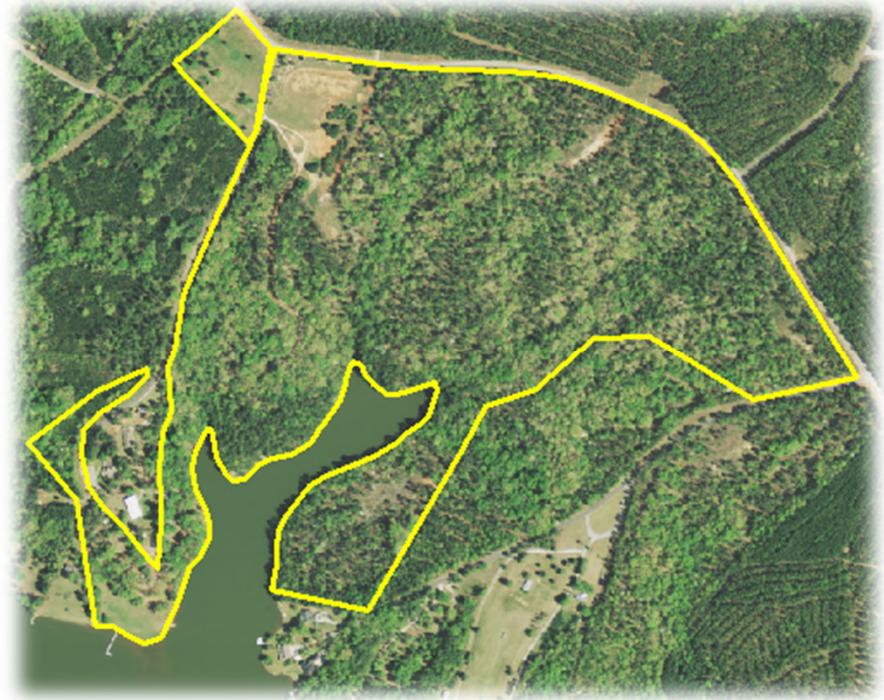




fellowship
CAMP & CONFERENCE CENTER

Forest Management Plan



November 19, 2014



HISTORICAL, CULTURAL, & ARCHAEOLOGICAL SITES

None of these sites were found. Significant historical or cultural sites add a tremendous aesthetic value to the property and should be protected against development and during silvicultural operations. Further information on old gravesites and their preservation can be obtained from your local library or the SC State Historic Preservation Office at 8301 Parklane Rd, Columbia, SC 29223 (803-896-6175).

THREATENED & ENDANGERED SPECIES

No threatened or endangered species were noticed on the property. T&E species should be considered a unique aspect of your property and protected for future generations to enjoy. T&E species may occur in your county. Refer to Endangered Species Table. For additional information on T&E species management, please contact:

US Fish and Wildlife Service

Ecological Services
176 Croghan Spur Road

Suite 200
Charleston, SC 29407

843-727-4707

SC Department of Natural Resources

1000 Assembly Street
Columbia, SC 29202

803-734-3886

Rare, Threatened, and Endangered Species and Communities Known to Occur in Laurens County, South Carolina
March 13, 2012

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
<u>Vertebrate Animals</u>					
<i>Microtus pennsylvanicus</i>	Meadow Vole			G5	SNR
<i>Picoides borealis</i>	Red-cockaded Woodpecker	LE: Endangered	SE: Endangered	G3	S2
<i>Tyto alba</i>	Barn-owl			G5	S4
<u>Invertebrate Animals</u>					
<i>Elliottia lanceolata</i>	Yellow Lance			G2G3	SNR
<u>Animal Assemblage</u>					
Waterbird Colony				GNR	SNR
<u>Vascular Plants</u>					
<i>Cypripedium pubescens</i>	Large Yellow Lady's-slipper			G5	S3
<i>Dirca palustris</i>	Eastern Leatherwood			G4	S2
<i>Frasera caroliniensis</i>	Columbo			G5	S2
<i>Heteranthera reniformis</i>	Kidneyleaf Mud-plantain			G5	S1
<i>Lonicera flava</i>	Yellow Honeysuckle			G5?	S2
<i>Minuartia uniflora</i>	One-flower Stitchwort			G4	S3
<i>Orobanchae uniflora</i>	One-flowered Broomrape			G5	S2
<i>Panax quinquefolius</i>	American Ginseng			G3G4	S4
<i>Rhododendron eastmanii</i>	May White			G2	S2
<i>Symphotrichum georgianum</i>	Georgia Aster	C: Candidate		G2G3	SNR
<i>Trillium rugelii</i>	Southern Nodding Trillium			G3	S2
<i>Viola tripartita</i> var. <i>tripartita</i>	Three-parted Violet			G5T3	S3
<u>Communities</u>					
Oak - hickory forest				G5	S5
Pine - oak heath				G5	S3

Camp Fellowship

Fellowship Camp and Conference Center nourishes and sustains faith in God by building community, fostering relationships and exploring our connection with creation.

We live out our mission by:

1. Implementing year-round and summer programs for all ages.
2. Reaching out to the church and the wider community.
3. Modeling and teaching stewardship of God's creation.

Forest Management Objectives (Proposed)

1. Maintain aesthetic appeal around all camp structures and meeting areas
2. Develop diverse wildlife habitat
3. Produce timber as stewards of the land

Acreage

Stand	Type	Acres
1	Loblolly 1960	71
2	Hardwood	38
3	Loblolly 1995	1
CAMP P	CAMP FELLOWSHIP	16
O	Open	9
	Total	135

Point of Contact

Kevin Cartee and Emily Keinker

457 Camp Fellowship Road
Waterloo, SC 29384

Kevin@campfellowship.org

emily@campfellowship.org

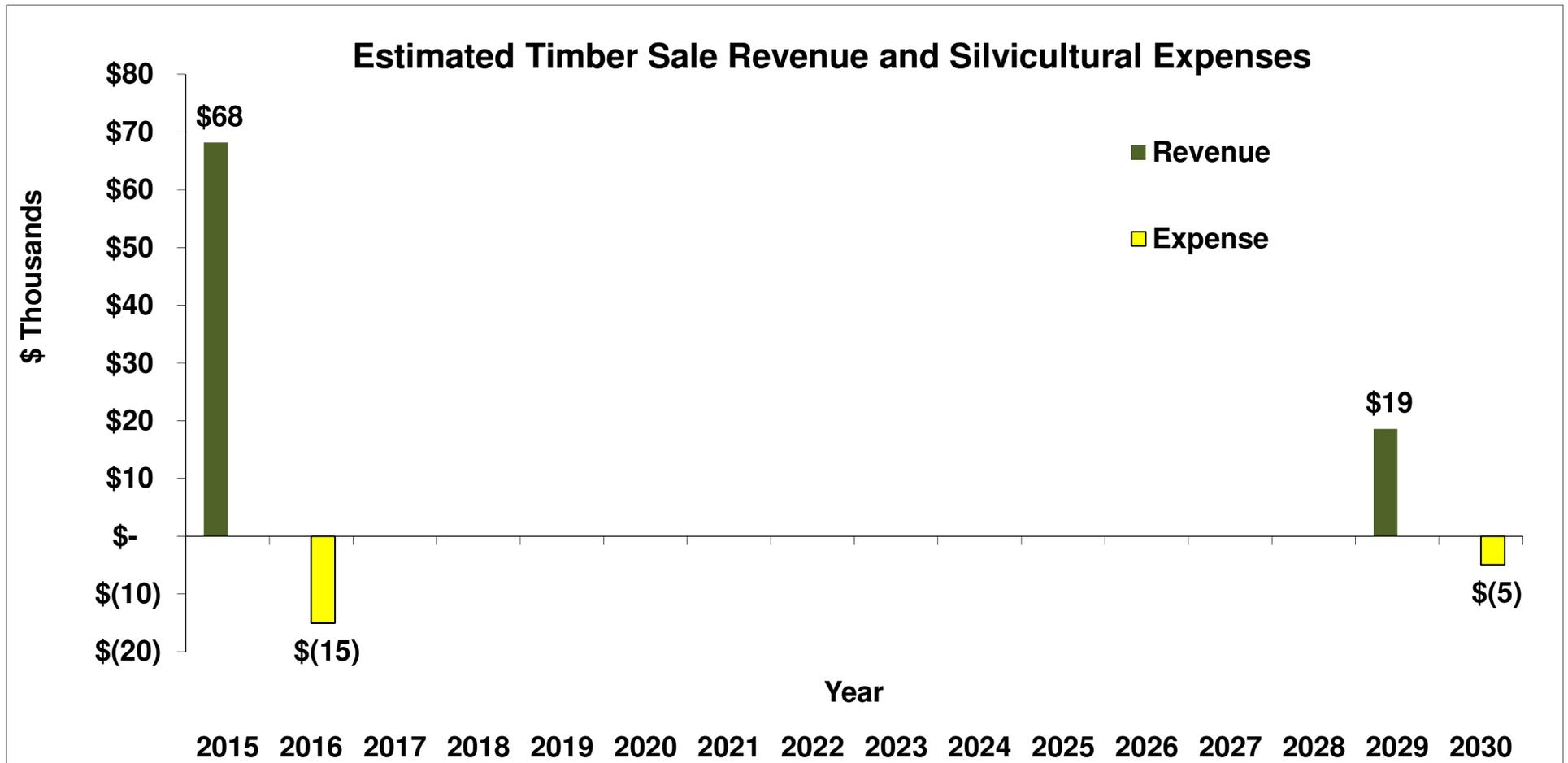
<http://www.campfellowship.org/contact-us/>

864.998.3400

Does not include all rights of way

Consolidated Estimated Revenues and Expenses

Below is a summary of estimated cash flows, using our silvicultural recommendations for the tracts covered in this estimate. These estimates are based on current prices; however, no guarantee is made of future revenues or expenses.



15 Year Summary of Forest Management Recommendations

<u>Year</u>	<u>Stand</u>	<u>Type</u>	<u>Acres</u>	<u>Activity</u>	<u>Revenue (Expense)</u>
2015	1	Loblolly 1960	62	Final Harvest	\$68,200
2016	1	Loblolly 1960	62	Site Prep and Plant with CP Loblolly	(\$13,640)
2016	Open	Open	9	Plant CP Loblolly	(\$1,440)
2029	1	Loblolly 2016	62	First Thin	\$18,600
2030	1	Loblolly 2016	62	Pine Release-Backpack	(\$4,960)
**Boundary lines should be painted with boundary paint every 10 years to mitigate surveyor costs					

Cost share assistance typically available for reforestation and some non-native control

Silvicultural Recommendations by Timber Stand Type

STAND: 1	ACRES: 71	AGE (Years): 50+	TIMBER TYPE: Loblolly 1960
SITE INDEX: 50-60(Unmanaged Loblolly pine 25 years)		SIZE RANGE: Sawtimber Avg DBH = 14"	BA: 90 ft ² /ac
UNDERSTORY VEGETATION: Numerous hardwood species, primarily sweetgum, oak, cedar and elm,			
PRESENT CONDITIONS: This stand is well past financial maturity. Mortality is high, as expected. The understory is pulpwood-sized in some locations.			
DESIRED FUTURE CONDITION: Produce timber as stewards of the land			
<p>RECOMMENDATIONS: Clearcut +/- 62 acres of stand in 2015 and replant with high quality loblolly pine. Prior to the sale, mark sale boundaries with paint and GPS. Maintain 100' buffer along lake front and from meeting areas—such as the fire pit. Maintain a 60' buffer along the main entrance. Consider harvesting some large pines along the lake front to capture value before mortality. These trees should be marked prior to harvest.</p> <p>Prepare the site using herbicide to control competition before planting pines. Best Management Practices will ensure that water quality is protected and erosion minimized.</p> <p>Portions of this stand around the bunk-houses pose a severe danger to people and structures. This plan does not make recommendations on this area due to lack of expertise and complexity of the problem. A licensed arborist and/or landscaper should be consulted.</p> <p>The pines are heavily stocked and have a severe risk of mortality. The size and disposition of the trees will require a highly-skilled and well-equipped logging contractor to prevent damage to structures while logging. Our firm can market these trees once a long term landscape plan is available; however, the character of this forest will be altered dramatically by logging. It would seem that selling the timber would be more cost effective than removing dead trees one by one. While options are limited with the age of these trees, this area will require very detailed planning and communications by Camp Fellowship.</p>			

Silvicultural Recommendations by Timber Stand Type

STAND: 2	ACRES: 38	AGE (Years): 50+	TIMBER TYPE: Hardwood	
SITE INDEX: 50-60 (Unmanaged Loblolly pine 25 years)		SIZE RANGE: Sawtimber Avg DBH=15"		BASAL AREA: 110 ft ² /ac
UNDERSTORY VEGETATION: Understory is mostly minimal due to shading. Where pines were removed, hardwood saplings of all upland species are present				
PRESENT CONDITIONS: The stand provides climax habitat and hard mast for wildlife. The stand offers an alternative to early successional habitat from pine. It also protects steepest slopes and water courses leading to the lake.				
DESIRED FUTURE CONDITION: Develop diverse wildlife habitat; Maintain aesthetic appeal around all camp structures				
RECOMMENDATIONS: Minimize any logging activity in this stand. Consider using an arborist to prescribe actions for mitigating the risk of danger trees around buildings.				

STAND: 3	ACRES: 1	AGE (Years): 20	TIMBER TYPE: Loblolly 1995	
SITE INDEX: 55-60 (Unmanaged Loblolly pine 25 years)		SIZE RANGE: Pulpwood Avg DBH=6"		BASAL AREA: 110 ft ² /ac
UNDERSTORY VEGETATION: Very limited due to shading. Blackberry along edges				
PRESENT CONDITIONS: The stand generated naturally along the edge of the field. There is some construction debris scattered throughout.				
DESIRED FUTURE CONDITION: Maintain aesthetic appeal around all camp structures				
RECOMMENDATIONS: Minimize any logging activity in this stand. Allow the stand to serve as a visual screen to the Stand 1 clearcut				

Silvicultural Recommendations by Timber Stand Type

STAND: Open	ACRES: 9	AGE (Years): NA	TIMBER TYPE: Open	
SITE INDEX: 55-60 (Unmanaged Loblolly pine 25 years)		SIZE RANGE: NA		BASAL AREA: NA
UNDERSTORY VEGETATION: NA				
PRESENT CONDITIONS: Grasses in an uncultivated field				
DESIRED FUTURE CONDITION: Produce timber as stewards of the land				
RECOMMENDATIONS: These fields can be planted with high quality loblolly pine by rubber-tired tractor during the winter months.				

Invasive Species Recommendations

No substantial infestations of invasive species were noticed. However, wisteria is hard to identify in the fall, when the inspection took place. If invasives are found, below are some recommendations.

Invasive Plant	Recommendations	Season
Bamboo	Apply imazapyr (i.e. Arsenal) over the top of the stand during the summer months. A low rate of herbicide will not damage the pines. Pair this treatment with other treatments nearby to lower the cost. Ground treatment may be necessary for shoots shaded from herbicide by the overstory.	Summer
Kudzu and Wisteria	<p>Use aminopyralid (i.e. Milestone) on foliage during the summer months. This chemical is not soil-active, thereby protecting canopy species and aesthetics.</p> <p>Repeated treatments will be necessary for 3-5 years. Each treatment will be less intensive as we achieve more control. Wisteria will be most difficult to control.</p> <p>To treat vertical vines, apply mineral oil and Garlon mix around entire vine. Some repeat treatments will be necessary, but will be very limited.</p>	<p>Summer</p> <p>Winter</p>
Privet	Depending on landowner objectives, use appropriate herbicides. Treatment can be done in summer or winter depending on objectives, the forest structure, and Best Management Practices.	Summer or Winter

Timber Sale Terminology

Term	Description	Pros	Cons
Basal Area	Measurement of tree density in square feet per acre, as determined by the cross sectional area 4.5 ft above the ground of each stem. Typically, thin pine down to 70 ft ² /acre. Minimum basal area in a streamside management zone is 50 ft ² /acre.	N/A	N/A
5th Row, Operator Select	Most common method for “first” operator select thinnings. Corridors are removed in every 5 th row or every 50 ft. Then middle 4 rows are thinned, with worst trees removed until meeting the target basal area.	Well understood throughout the industry	Feller-buncher operator has most control of which trees are cut
Operator Select	Feller-buncher operator removes least-productive trees	See above	See above
Marked	Trees are either marked with paint or flagging tape as “cut” or “leave” trees	Control of tree selection is not in the hands of feller-buncher operator; selection MAY be better	Additional cost to the landowner must be recovered
Selective Cut	Trees are harvested based on specific criteria relating to species, DBH, or other factors	Works well in streamside buffers and un-even aged hardwood	May be costly if trees are to be marked; may be too rigid or complicated
Pole Thin	Poles are sold as part of a operator select thinning.	Prevents loss of premium timber to mortality.	Prevents additional volume growth of the poles.
Lump Sum	Timber is sold for one total value at closing.	Minimizes merchandising, time and volume risk to the landowner	Sales with lots of variation are difficult to value. Requires professional, unbiased assistance.
Unit Sale	Timber is sold according to specifications and prices listed in a contract.	Best for operator select thinnings and clearcuts where estimation of value is difficult.	Merchandising risk is elevated and time of payment is uncertain

General Recommendations

- For managing pine, we recommend chemical site preparation, artificial regeneration, followed by a two-thin regime, with mid rotation pine release, and a rotation age of 30 +/- 2 years.
- When selling timber, always use a written contract developed by an independent third party and hold a performance bond to ensure compliance. Use of South Carolina BMPs should be stipulated in the contract.
- For all timber sales, review Best Management Practices at <http://www.state.sc.us/forest/refbmp.htm> to ensure protection of soil and water resources.
- Regeneration is best done artificially for pine. Financial returns for naturally regenerated pine are extremely difficult to determine. Many hardwood species regenerate reliably, although species composition, wood quality, and cash flow are extremely difficult to determine.
- Boundary line maintenance is an easy way for landowners to gain sweat equity and prevent timber trespass and/or the cost of a boundary line survey.
- Non-native invasive species diminish wildlife habitat and forest health. Invasive species such as privet and tree of heaven can be treated with glyphosate during the growing season, or privet can be treated in the winter. Wisteria is much more difficult to control and treatment decisions require a detailed discussion as some herbicides are selective while others are unselective.

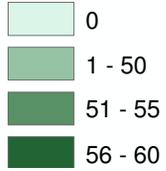
Appendix

Soil Site Index Map

Legend

Soil_clip2

SI_25



	Woodland Suitability Group	
CdB2	Cataula sandy loam, 2 to 6 percent slopes, eroded	3o
CdC2	Cataula sandy loam, 6 to 10 percent slopes, eroded	5c
CeB2	Cataula sandy clay loam, 2 to 6 percent slopes, eroded	5c
CeC2	Cataula sandy clay loam, 6 to 10 percent slopes, eroded	5c
MhF	Madison and Pacolet soils, 15 to 40 percent slopes	5c
WkD	Wilkes sandy loam, 6 to 15 percent slopes	5c
WIF	Wilkes soils, 15 to 40 percent slopes	5c

Woodland Suitability Group Reference

3o Soils of the Piedmont and mountain areas with no serious management problems. Suited for hardwoods and pines. Mechanical reforestation and harvesting operations are not restricted except during wet periods. When slopes exceed 15 percent logging roads should be on contour and incorporate water diversions to prevent erosion. Suited for pine and hardwood natural regeneration.

5c Soil in the Piedmont area. Suited for hardwoods and pines. This soil has a clay surface texture and will require special management to control erosion. When slopes exceed 15 percent logging roads should be on contour and incorporate water diversions. Mechanical site preparation should not disturb the mineral soil. Mechanical site preparation and harvesting operations should be scheduled when soils are dry. Machine planting should be avoided when wet. Suited to pine and hardwood natural regeneration.

Cost Share Programs

A few cost share incentive programs exist for private landowners specifically designed to offset the costs of reforestation and wildlife habitat improvement.

The following is an overview of cost-share programs administered by the USDA Natural Resources Conservation (NRCS), Farm Service Agency (FSA), and the South Carolina Forestry Commission (SCFC).

Conservation Stewardship Program (CSP)

The program provides many conservation benefits including improvement of water and soil quality, wildlife habitat enhancement and adoption of conservation activities that address the effects of climate change.

All producers are encouraged to apply for CSP. The program, authorized in the 2008 Farm Bill, offers payments to producers who maintain a high level of conservation on their land and who agree to adopt higher levels of stewardship. Eligible lands include cropland, pastureland, rangeland and nonindustrial forestland.

Wildlife Habitat Incentives Program (WHIP)

The **WHIP** program, Wildlife Habitat Incentives Program, is administered through the Natural Resources Conservation Service (NRCS) and provides 50-75% cost shares for specific habitat improvement practices. This can include mowing, pre-commercial thinning, disking, longleaf pine reforestation, planting of native tree/shrub species, & prescribed burning. Contact your local **NRCS District Conservationist** for further details and what in your area may be eligible for cost-sharing.

Environmental Quality Incentives Program (EQIP)

Also administered through NRCS is **EQIP** (Environmental Quality Incentives Program). EQIP targets agricultural production. Conservation practices, available for cost-share include: no-till or strip till, erosion control structures, grazing land management (fencing, stockwater tanks, etc.), pasture and hayland planting, prescribed burning, exotic plant removal, and animal waste facilities. Contact your local **NRCS District Conservationist** for further details and what in your area may be eligible for cost-sharing.

Wetlands Reserve Program (WRP)

WRP was designed to assist landowners in restoring wetlands that have been altered and/or drained. Landowners can establish conservation easements through WRP, either permanent or 30-year, or they may choose not to establish an easements but still receive cost-share payments for restoration. Applications for WRP on accepted on a continuous sign-up basis. Contact your local **NRCS District Conservationist** for further details and what in your area may be eligible for cost-sharing.

Conservation Reserve Program (CRP)

The Conservation Reserve Program (**CRP**) encourages landowners to covert highly erodible cropland or other sensitive acreage to vegetative covers such as trees, filter strips, wildlife plantings, or buffers. Landowners enrolled in CRP receive annual rental payments as indicated in 10 or 15 year contracts, as well as cost-share monies to establish the practice. Contact your local **Farm Service Agency** office for further details and what in your area may be eligible for cost-sharing.

Forest Renewal Program (FRP)

The SC Forestry Commission also has an assistance program for site preparation, tree planting, natural regeneration and timber stand improvement, **FRP** (Forest Renewal Program). Please contact your local SCFC forester for more details and application procedures.

General recommendations to be performed over the entire tract

Recreation

Recreational activities are abundant on the property including, wildlife watching & hunting, and as the landowner, you have a wonderful opportunity to do so on this tract. Other potential activities include walking the property, observing seasonal changes in vegetation, wildlife photography, and working the property for personal gratification. All of these activities will only be enhanced through the management schemes outlined in the plan.

Aesthetics

The aesthetic value of a property is important, especially if a tract is located along a major road or contains a permanent residence. Different habitat types can provide diversity while improving aesthetics and wildlife habitat. As management objectives are obtained & activities such as fruit tree planting are implemented, visual qualities will improve.

Property Lines

Property lines should be clearly marked and maintained to minimize trespass occurrence and liability. Designated trees at or near the property boundaries should be scraped at eye level (provide a smooth surface) and painted with a contrasting, permanent paint. Note that the scraping should be contained in the bark layer and not intrude into the live wood. Consider placing "POSTED" or "NO TRESPASSING" signs at 25-yard intervals along the boundary. Signs should be at least 8 feet high to discourage removal. Be prepared to prosecute offenders. Landowners are required to sign warrants for arrest in trespassing cases. If you want to decrease the incidence of poaching or trespass, nothing works better than letting the public know that you are serious and will not tolerate any infractions. If you suspect that poaching is occurring on your property, please call OPERATION GAME THIEF at 1-800-922-5431.

The SC Department of Natural Resources (SCDNR) offers the Property Watch Program. This program involves registering your property with the SCDNR and providing maps, access keys if necessary, etc. You place signs along your property boundaries designating your property as being under the jurisdiction of SCDNR law enforcement. If you or someone else notices something odd (fire, poaching, etc.) on your land, they can report the incident by calling the number on the sign. A dispatcher will then call an officer to investigate. The officer will be familiar with your property and may be able to apprehend the suspect(s). You must be willing to prosecute in order for the program to be effective.

Soft Edges vs Hard Edges

Consider 'feathering' or softening the edges of your fields or planted pines by allowing a strip of native vegetation to remain fallow (20'-30' wide at least), creating a soft edge or a transition zone between this stand and adjacent habitat. When you have an abrupt stop in a habitat type and change directly into another, this is referred to as a 'hard' edge. Soft edges are beneficial to wildlife because they can contain a mix of species from the two adjacent habitat types, provide additional 'green' forage, and serve as cover and nesting sites. Be sure to disturb your soft edges once every 2-3 years by mowing, disking or burning, depending upon your site conditions to keep hardwood sprouts controlled. Consider getting your edges on a 2-3 year disturbance rotation by only manipulating 1/2 - 1/3 of the edge annually; do not mow, disk, or burn the entire edge in one year. This will leave cover and forage available for wildlife species use.

Firebreaks

One major management tool important to all properties is the creation and/or maintenance of firebreaks around the perimeter of the tract and also within the vicinity of any buildings to provide protection from wildfire. Firebreak creation and maintenance should be a top priority. Currently, the SC Forestry Commission can provide assistance in firebreak creation. After the firebreaks are plowed, use a disc to "smooth" the areas for better access lanes and to help facilitate growth of herbaceous vegetation.

Firebreaks can serve many purposes if properly maintained. They will 1) provide access to the property from the perimeter, 2) will help control prescribed burnings, and 3) will also provide transitional zones that are very important to wildlife species. The edges of firebreaks can provide excellent nesting and foraging habitat and will also provide travel corridors for wildlife. Fire lines should be at least 15 to 20 feet wide and follow the natural contour of the land to the fullest extent possible.

General recommendations to be performed over the entire tract

Streamside Management Zones (SMZ'S)

Streamside management zones (SMZ's) are areas adjacent to streams, ponds, or lakes where extra precaution is necessary to protect water quality from soil erosion or other sources of pollution. These streamside corridors of vegetation need to be preserved to prevent streambank erosion and to filter runoff from upland areas. SMZ's are also excellent sites for creating wildlife habitat diversity, food sources, nesting and escape cover. The minimum width of SMZ's is 40' to 80' (depending on slope) wide area of vegetation along each side of the stream bed. Wider (200+/- feet) SMZ's provide a more effective wildlife habitat.

Artificial Nesting/Roosting Structures

Consider installing artificial songbird nesting structures and bat/owl roosting boxes around the openings, pond, and wooded areas. Songbird nesting structures preferably should be placed on metal poles with a predator guard underneath to deter climbing predators such as raccoons and gray rat snakes.

Nesting box tip: Place no more than 4 small nesting structures (such as bluebird or wren box) per targeted bird species for the property or no more than one larger nesting/roosting (bat/owl box) per acre. Entrance holes should be faced east when possible to keep from overheating the box in summer. Boxes should be cleaned annually during the winter months and nesting material replaced (usually saw dust or chips).

Brush Piles

A simple habitat improvement for wildlife is the creation of brush piles. Brush piles can have a multitude of functions including shelter from the weather, hiding places from predators, and provide food sources from insects found within the structure. Man-made brush piles can be placed throughout your property, adjacent to permanent openings, food plots, and field edges where natural cover is lacking but a food source is readily available. Wildlife species such as bobwhite quail, rabbits, songbirds, reptiles and amphibians will use brush piles. Building a brush pile is not complex. Materials needed for the piles can come from your yard trash or tree trimming activities.

The most common materials are logs (usually 6 – 10" in diameter), small limbs, rocks, and man-made materials such as PVC pipes. Dimensions of your brush piles can vary. Recommended height is between 6 - 10' and 6 – 12' in diameter. Start by placing 4 –5 logs on the ground, parallel and approximately 6" apart. By allowing room between each log, you are providing tunnels and air spaces for wildlife. Place another layer of logs perpendicular to the 1st layer. Then place smaller branches onto your base, criss-crossing some to provide stability. Your brush pile should take on an igloo or tepee shape when finished. Rocks and/or PVC pipes can be substituted for the base logs.

Depending on the size of the piles and the lack of natural cover available, 2 – 8 piles per acre should be sufficient. Keep brush piles away from residences or barns to avoid attracting unwanted wildlife species to yards and gardens. Brush piles are an easy way to improve your existing cover component on your land while keeping limbs/tree trimming debris out of landfills, allowing natural materials to decay back into the ground and provide a home/shelter for many wildlife species.

Snags

Whenever possible, snags (standing dead trees) should be left standing on the property. Snags are used by cavity nesting and roosting wildlife species, which includes woodpeckers, chickadees, bats, flycatchers, and owls. Snags should be removed if they have decayed to the point of posing a hazard to structures or falling across fire lines

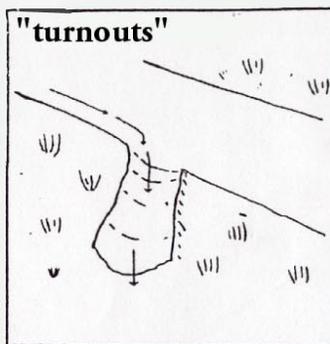
Boundary Lines

Lines should be PROPERLY IDENTIFIED and then marked by scraping tree bark and applying high visibility, durable paint every 7-10 years.

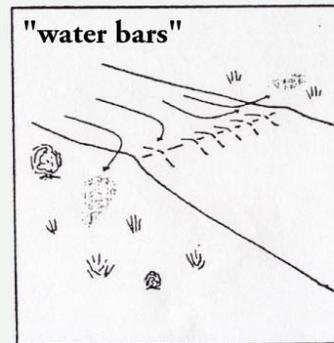
Access Roads

Access roads should be kept on the contour as much as possible, and crowned, with water dispersion as a top priority. Because slope is an issue within this tract, road conditions and erosion control should be a priority. Erosion control on roads can be solved by measures such as grading and shaping, and installing waterbars, broad-based dips or diversions and/or seeding (see below). The Natural Resources Conservation Service (NRCS) can assist with the layout and design of erosion control structures.

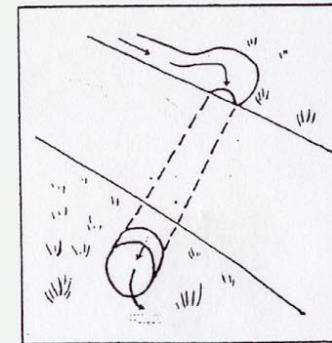
For a fee the S.C. Forestry Commission can install these structures for you or there are private contractors who do this work also. Call (864) 459-2337 for fee rates and to obtain an application to have this work done or for a listing of private contractors.



A. DITCH OUTLETS are just that, new outlets in existing ditches to disperse runoff more frequently. This reduces the runoff volume at any one outlet and makes it easier to infiltrate the runoff in a smaller area, like between the road and the adjacent stream.



B. HUMPS are built up sections of road surface that create short lengths of reverse grade. This forces runoff that is flowing down the road off to the side.



C. RELIEF CULVERTS are new pipes installed to pass ditch water from one side of the road to the other at places where the ditch water can be infiltrated or its sediment trapped.

Wildlife Habitat Recommendations (1 of 6)

Planted loblolly pine

Two management techniques, operator select thinning and prescribed burning, are very important if you are trying to integrate wildlife and timber production.

Prescribed burning is one of the best and most economical management tools that you can employ on your land. Burning will improve wildlife habitat by recycling nutrients and promoting new vegetation growth at ground level, which is then utilized by many animals including deer, turkey, rabbit, and small mammals. Many seed-eating songbird species and especially quail will benefit from the seeds produced by the native plants. Also, after a fire, there is an increase in insect production which provides forage for insectivorous songbirds such as the eastern bluebird, flycatchers and woodpeckers.

One of the keys to providing the best possible habitat for a variety of wildlife species is diversification of the ground cover.

Control Burning

Your first burn should take place during the dormant season (winter months), usually falling between November & late February. Winds tend to be more predictable and stable during this time and the relatively low ambient temperatures will reduce the heat hazard within the stand. Burn on a 2-3 year rotation, preferably utilizing compartments (see below).

To maximize the burning effects for wildlife, if possible, break the stand into 2 or 3 burning compartments, with only one compartment burned each year. This will allow adjacent areas to be left in cover and provide a more manageable burn regime (smaller areas to burn each year) to be completed. Utilize interior road systems or construct fire lines through the stand (possibly in conjunction with a operator select thinning operation).

After a few winter burns, consider a growing season burn. Burns conducted during the active growing season will help control nuisance hardwood species and give a different response in ground cover vegetation (i.e., more native grasses). Yes, you may destroy bird nests. BUT, the overall benefit of burning during this time far out weighs the loss of a few nests AND most birds will re-nest in a season. Follow the advice for burning compartments so that your entire property is not burned during one growing season.

Maintain firebreaks annually as described in the **Tract Recommendations** section. Because the tract is adjacent to paved roads and other residences are nearby, careful planning needs to be undertaken before initiating any prescribed burns. Major concerns will be containment of the fire and smoke sensitive areas. It is recommended that a prescribed burn plan be prepared, by a certified prescribed burner, before any burns are performed. This will help reduce liability and insure that there are no negative impacts from the prescribed burns to road systems or adjacent landowners.

operator select thinning will open the pine stands for pine growth, by removing suppressed and diseased trees, and allow more sunlight to reach the ground, stimulating beneficial wildlife plants. As basal area reaches 120 ft² per acre, the crowns of the trees are reduced, diameter growth decreases, and wildlife habitat is greatly decreased. Chances of infestation by Southern pine beetle (SPB) also becomes more likely as density increases. Regularly inspect for infestation by Southern pine beetle (SPB) and if noted contact a forester.

“Daylighting” or widening the roads to approximately twice their existing width during the operator select thinning operation would also help increase the diversity of the property and promote travel corridors within the stand. Just as operator select thinning will do within the pines, daylighting will allow more sunlight in, stimulating vegetation growth beneficial to many wildlife species. Edges of roads can be left in native vegetation and either mowed or disked annually or can be supplementally planted in food crops to facilitate hunting or viewing opportunities.

operator select thinning is also a good time to enlarge permanent openings or food plots for wildlife viewing / hunting. Openings should be at least 1 acre in size to discourage over-grazing. See **Permanent Openings / Food Plots** in the **Tract Recommendations Section** for specific guidelines.

Wildlife Habitat Recommendations (2 of 6)

FIELD BORDERS

Field borders could be placed around the edges of the fields. These should be at least 25 feet wide, but 50 feet + is better. These borders will insure sunlight reaches the ground. Half of the strips should be disked after 2 years of becoming established so that natural vegetation such as broomsedge, ragweed, and partridge pea can grow. This will provide great nesting and bugging areas for quail. No planting is necessary along field borders, but you will have to control for trees and hayfield grasses that will try to reseed the open ground.

STRIP DISKING

Fields and pastures that have been abandoned are ideal for disking in strips. The timing of the disking will determine the species of plants that invade the strips. Disking between November and early March will generally stimulate the growth of plants such as beggarweed, ragweed, and partridge pea, which are desirable quail foods and good at attracting insects. Undisked strips of fallow land should be alternated with the disked strips. These will provide nesting and escape cover. Strips should be 50-100 feet in width and extend the length of the field. Once the strips are established, the fallow strips should be disked the next year and some other strips be allowed to develop into fallow land, preferably one of the spring strips. Liming and fertilizing (0-15-30, 0-14-14 or similar nitrogen-free fertilizer) freshly disked strips may improve growth of desirable plants.

TREE / SHRUB PLANTINGS (ORCHARDS)

Native and/or non-native trees, such as apples, plums, or pecans, can be planted in orchards or “wildlife” orchards, depending upon the target audience for consumption. Spacing for orchards should be greater than 20' x 20' between rows and trees. Plant at least 4-5 rows; with lengths dependent upon the area in which you will be planting. Other fruiting/flowering trees and shrubs can be planted within openings, preferably in “clumps” or formed into stringers along the edge. To avoid deer damage, purchase tree shelters or use chicken wire to protect the newly planted seedlings. A list of nurseries is provided in the **Appendix**. The following is a short list of important wildlife plantings.

Persimmon (*Diospyrus virginiana*)

Oaks (Southern red, Laurel, Post, Water, Swamp Chestnut, white oak)

Southern Crab Apple (*Malus angustifolia*)

Hawthorn (*Crategeous spp.*)

Black cherry

Elderberry

Flowering Dogwood (prefers shade)

Holly (*Ilex spp.*)

American beautyberry

Red Mulberry

Wild plum (*Prunus spp.*)

Eastern Red cedar

** Be sure to inventory your property before purchasing any native flowering or fruiting trees/shrubs. They may already occur there and may be easily transplanted into openings. Transplant seedlings during the dormant season (winter) to reduce root disturbance.

Wildlife Habitat Recommendations (3 of 6)

ALL OF THE ABOVE (Best option for promoting diversity)

Use a combination of managing field borders, strip disking, and fruit trees to manage this area for multiple resources. Utilize irregularly shaped blocks and intersperse openings throughout any pine plantings.

American Kestrel boxes (member of the Falcon Family)

Although no kestrels were observed during the site visit, this stand displays an optimum open mid-story and understory preferred by kestrels. Artificial nesting boxes can be used to provide additional nesting habitat for kestrels. Plans and a natural history of the species are included in **Supplemental Information Section**. Box placement is the best deterrent from non-target nesting bird species, such as starlings. Boxes should be placed away from houses and a southern orientation of the box hole. This will help prevent starling use of the boxes. Boxes should also be placed, if possible, in grassy areas and not particularly on a woodland edge. This will help prevent squirrel and other non-target bird species use. Two kestrel boxes on different sides of this property should be sufficient (a distance of approximately half-mile apart is desirable).

Permanent Openings / Food plots

A note to remember: Food plots are usually less than 10% of the entire property; the other 90% will provide the best wildlife habitat if managed properly. Food plot establishment cannot be a replacement for overall habitat management and diversification of your property. Food plots should be managed only after other management practices, such as operator select thinning & prescribed burning, have been applied.

Recommendations: Manage in Conjunction with Other Habitat Manipulations

The following guidelines should be followed when establishing permanent openings/food plots for wildlife:

It is recommended that approximately 5-10% of the total property be in various types of permanent openings or early stage vegetation. This can include firebreaks, roads, food plots, natural open areas (such as those in the pines created by the high mortality rates).

To minimize over-browsing, plot size should be a minimum of one acre. Connect smaller openings to firebreaks/roads to increase size.

A soils test should always be conducted before planting to determine the appropriate fertilizer and liming rates. This is a “garden” for wildlife. Plant it just like you would your own garden for best germination and production.

Shape can vary, but linear openings are more visually appealing and will attract more use (30' x 1452' = ~ 1 acre). Deer are more likely to use a linear opening because of its proximity to cover. Within a large square opening, deer would have to venture farther from cover in order to feed, thus increasing their use of the opening during low light hours and nighttime and decreasing the hunting and viewing possibilities.

Plot location will vary; however, it is recommended that openings be several hundred yards away from the property boundary, adjacent to good escape cover, and about a 1/4 mile apart for distributing hunting opportunities and pressure. Old logging decks and natural open areas within the stand would be an optimum location.

Diversify your plantings to provide year-round forage for a variety of wildlife species. Divide the area into thirds and use strip plantings; plant approximately 2/3 of the field with cool season forages & 1/3 in warm season plants.

Wildlife Habitat Recommendations (4 of 6)

Agricultural plantings to include in your strips are:

Cool Season (Fall-winter Planting)

Rye Better on sandy soils
Wheat Better on heavy soils
Oats
Clovers

Warm Season (Spring-summer planting)

Soybeans
Cowpeas
Corn
Sorghum
Joint Vetch (aeschynomene)
Clovers
Sunflower
Millet

Firebreaks could provide an excellent area for supplemental plantings, if full sunlight is available to encourage vegetation growth (~ 6 hours). One side of a woods road (or firebreak) can be widened (to ~ 30'), with part of it planted in food crops or left in native vegetation to concentrate wildlife for hunting and viewing.

Recommended plantings for white-tailed deer, along with wild turkey and northern bobwhite quail, are presented in the **Supplemental Information Section**. Also in this Section is a publication on food plots that may be helpful in determining what type of supplemental plantings are needed in your area.

You may also consider only winter disking some areas to encourage native vegetation instead of planting supplemental forages. By disking during winter months, native legumes such as partridge pea are encouraged, as well as ragweed and other native plants preferred by quail, dove, white-tailed deer, turkeys and songbirds.

Another consideration is to allow the areas planted to remain fallow every few years to reduce soil erosion from farming practices and to return nutrients to the soil. Fallow fields provide excellent cover and nesting areas for birds such as quail, turkey and many songbirds.

At your discretion, plant cultivated blueberry bushes and wild grapes (muscadines or scuppernogs) for your consumption & for wildlife. Two blueberry cultivars are recommended and adapted to South Carolina, rabbiteye, and Southern highbush. A Clemson extension publication is included in the **Supplemental Information** section, outlining planting and care of blueberries. It is also recommended that you contact your local Clemson Extension Agent or County Agent for additional planting advice.

Non-native trees, such as apples, figs, or pecans, can be planted in orchards or "wildlife" orchards, depending upon the target audience for consumption. Spacing for orchards should be greater than 20' x 20' between rows and trees. Plant at least 4-5 rows; with lengths dependent upon the area in which you will be planting.

Other fruiting/flowering trees and shrubs can be planted within openings, again, preferably in "clumps" or formed into stringers along the edge. To avoid deer damage, purchase tree shelters or use chicken wire to protect the newly planted seedlings. A list of nurseries is provided in the

Wildlife Habitat Recommendations (5 of 6)

Supplemental Information section. The following is a short list of important wildlife plantings.

- Persimmon (*Diospyros virginiana*)
- Oaks (Southern red, Laurel, Post, Water, Swamp Chestnut)
- Hawthorn (*Crataegous* spp.)
- Black Cherry
- Elderberry
- Flowering Dogwood (prefers shade)
- Holly (*Ilex* spp.)
- American Beautyberry
- Red Mulberry
- Wild Plum (*Prunus* spp.)
- Eastern Red Cedar

** Be sure to inventory your property before purchasing any native flowering or fruiting trees/shrubs. They may already occur there and may be easily transplanted into openings. Transplant seedlings during the dormant season (winter) to reduce root disturbance. (see the **Supplemental Information** section for additional guidelines).

Consult the Supplemental Materials Section of your plan for further assistance with wildlife openings/food plots.

Quality Deer Management

Quality deer management is difficult to achieve on small acreages (< 1000 ac), therefore, combining efforts between neighbors will be necessary for success. It's also difficult to set your standards if you do not know the deer population in your area. A relative abundance can be determined through a variety of methods including deer harvest data, spotlight counts, & deer sighting data during hunting efforts. Each method has its pro / cons and none will give you a "count" of your deer; just a relative abundance index. Continue to collect your data over a period of years. You can then use your data to look at trends in the population or bring your data to your local SC DNR biologist for assistance.

Methods: Keep accurate records of your harvest in terms of sex, age (use jawbone aging technique), and overall health (weight, lactating females, and antler development) of the individuals taken. Jot down sexes and numbers of deer seen during your hunting efforts; be sure to keep track of your effort (days / hours hunted); this is a relative abundance number based on your time. If you wish to complete a spotlight survey, in addition to the above-mentioned data collection methods, contact Mr. Charles Ruth, Statewide Deer Project Coordinator, SC DNR at 803-734-3886. Since spotlighting is **ILLEGAL**, you will need a permit from Mr. Ruth to conduct your counts. Additional information and a how-to brochure are provided in the **Supplemental Information** section at the end of the plan.

Wildlife Habitat Recommendations (6 of 6)

Example and General Guidelines (based on the 2004 statewide harvest data)

In 2004, approximately 12 – 13 total deer were harvested in Greenwood and Abbeville County per 1 square mile (640 acres); of that 6-7 were does. Extrapolating the data, approximately 40 deer is an average number per 1 square mile in Greenwood and Abbeville County. County deer populations, over the last few years, are holding steady. If you wish to set harvest standards for the buck population, then you must make room for those “extra” deer you pass up and harvest additional does. If 6-7 does were harvested last season and the population is holding steady, then you must take more than the county average of does harvested if you intend to “leave” bucks in the population. Remember: a particular habitat can only hold a certain number of animals. Does will compete with your bucks for food/cover and “slots” need to be made in the population if you intend to pass up particular bucks during the hunting season. *For additional information / guidance, please contact Mr. Charles Ruth, Statewide Deer Project Coordinator.*

All burning should be conducted in accordance with the SC Smoke Management Guidelines.

Hardwoods

It is recommended that you protect your residual hardwood stands from any significant changes. Hardwood forests can be excellent wildlife habitat and also provide a travel corridor through the property. Corridors are important for access between adjacent properties & habitats while providing a stable and secure environment in which to travel. Many songbirds will use these areas for breeding, wintering, feeding, and migrating stop-overs. Other forest interior species, such as the barred owl and pileated woodpecker, need these areas to maintain breeding populations. Leave live cavity trees standing as well as dead snags. Also leave rotting logs as a foraging substrate for squirrels, raccoons, and birds. Mushrooms will grow on the rotting wood, providing valuable food (high in protein and phosphorus) for deer, squirrels, and box turtles.

However, to maintain forest health, have a forester re-examine this area periodically for insect, disease, and stocking levels. Maintaining proper stocking levels within a stand is one of the most effective tools for preventing disease and insect infestation.