GEORGIA
FOREST*A*SYST/FARM*A*SYST

FOREST RESOURCES MANAGEMENT

Georgia's Forest Stewardship Program

FOREST ASSESSMENT SYSTEM

Georgia Cooperative Extension, The University of Georgia, College of Agricultural and Environmental Sciences, Athens

PRE-ASSESSMENT:

Why Should I Be Concerned?

A message from J. Frederick Allen, Director of the Georgia Forestry Commission:

Forest landowners make many decisions concerning the management of their resources. These decisions can have long-range effects on their property. Fortunately, most of those decisions do not have to be made instantaneously. Landowners have time to research topics for themselves and seek professional advice.

The Forest*A*Syst Program was developed to help landowners start making forest management decisions. The Assessment Section will give you an idea of your current forestland management level. This assessment helps determine future forest management practices.

The Forest*A*Syst Program provides a basis for good forest resource management goals. As you develop specific questions, please contact the resource professionals associated with this Program.

How Do I Use This Forest*A*Syst Assessment?

1. Read the Section, "Assessing Your Forest Management Goals and Practices."
2. Complete the Questionnaire on Page 3 to determine your primary forest resource management goals. It is possible to manage your forest with multiple objectives.
3. Read the section, "A Forest is More Than Trees" and "Elements of a Management Plan."
4. Complete the assessment located on page 7. Instructions are located above the assessment.
5. Using the primary goals determined in the Questionnaire, read the Fact Sheets relating to the goals. Complete the assessment(s) that follows the Fact Sheets.
6. Use the answers (ranking) from the assessment(s) to improve the condition of your forest. Information on managing for primary objective is located in the section prior to the assessment(s).
7. The assessment(s) should be conducted by you for your use. If needed, a professional from the Georgia Forestry Commission and/or the Georgia Cooperative Extension Service can provide assistance in completing the assessment(s). For additional resources, see pages 33 and 34.

How Does This Assessment Help Manage My Forest and Protect the Environment?

- This assessment allows you to evaluate the environmental soundness of your forest management practices.
- The assessment(s) use(s) your answers (rankings) to identify practices which should be modified to prevention *pollution*.
- The forest management practice facts provide an overview of sound stewardship practices.
- The assessment(s) assist(s) you in writing a Forest Resource Management Plan based on your needs.

* Words found in *italics* are defined in the glossary.

TABLE OF CONTENTS:

ASSESSING YOUR FORESTRY MANAGEMENT GOALS AND PRACTICES:

As a forest landowner, you should seriously consider creating a Forest Resource Management Plan detailing your management goals for your property. This plan is for you to use to help make informed decisions about the future of your property, even if your decision is to do nothing. The following assessment will assist you in identifying areas where you can enhance your property based on your management goals and reduce the risk of *pollution*.

The assessment will help you to design a plan to promote good *stewardship* of private *forestland* and provide better access to technical information. It will also:

- Help reduce the time and expense necessary to obtain applications for permits, cost-share agreements, and environmental documentation,
- Provide your family with a written record on the history and future plans for the property,
- List available forest professionals and resources, and
- Provide information on the biology and ecology of forest environments to keep your forest healthy.

Contact your natural resources professional for more specific assistance.

QUESTIONNAIRE:

Complete the following questionnaire to better define your management goals and direct a forest professional in assisting with your forest management goals. Please think of your own operations and goals you may have for your forest.

Name _____ Date _____

Address _____

_____

Phone Number _____

Please rank your preferences in order of importance *(1 being the most and 4 being the least):*

Beauty (*aesthetics*)	_____	(See pages 19-22)
Recreation	_____	(See pages 19-22)
Timber Production	_____	(See pages 8-14)
Water/Soil Conservation	_____	(See pages 24-28)
Wildlife	_____	(See pages 15-18)

Forest Resource Management Plan *(See pages 5-7)*

1.	Do you have a forest resource management plan? If you answered no to 1., please skip to question #8.	YES	NO
2.	Was the forest resource management plan developed by a forest professional?	YES	NO
3.	Is it a written forest resource management plan?	YES	NO
4.	Do you follow the forest resource management plan?	YES	NO
5.	Does following the forest resource management plan achieve your landowner objectives?	YES	NO
6.	Do you review your forest resource management plan every five years?	YES	NO N/A
7.	Have you revised your plan when you feel it no longer meets your objectives?	YES	NO N/A

Timber Management *(See pages 8-14)*

8.	Do you want to maintain your forest's health?	YES	NO
9.	Do you want your forest to provide income?	YES	NO
10.	Do you want your forest to provide periodic timber income?	YES	NO
11.	Do you want your forest to provide future timber income?	YES	NO
12.	Do you want to maximize your forest's timber income?	YES	NO
13.	Do you want to manage for timber production and wildlife or recreation? *(See page 23)*	YES	NO
14.	Do you want to maintain soil and water quality (site productivity)?	YES	NO

PLEASE COMPLETE SIDE TWO

Contact your natural resources professional for more specific assistance.

Wildlife Management *(See pages 15-18)*

15.	Do you want to improve wildlife diversity?	YES	NO	
16.	Do you want to attract specific wildlife species (game, songbirds, etc.)? Please indicate wildlife species: _____	YES	NO	
17.	Do you want to hunt in your forest?	YES	NO	
18.	Do you want others to hunt for fee or lease in your forest?	YES	NO	
19.	Do you want to enhance endangered species protection?	YES	NO	

Interest in Recreational and Aesthetic Management *(See pages 19-22)*

20.	Do you want to bird watch or observe/study other wildlife?	YES	NO	
21.	Do you want to ride horseback?	YES	NO	
22.	Do you want to bike or hike on trails?	YES	NO	
23.	Do you want to camp?	YES	NO	
24.	Do you want to fish?	YES	NO	N/A
25.	Do you want to boat?	YES	NO	N/A
26.	Do you want to harvest berries, etc. in your forest?	YES	NO	
27.	Do you want flowering trees?	YES	NO	
28.	Do you want a park-like appearance?	YES	NO	
29.	Do you want to observe fall color?	YES	NO	
30.	Do you have historic or unique areas in your forest?	YES	NO	
31.	Do you want to allow others to use your forest?	YES	NO	

Determining your Level of Soil and Water Quality Protection *(See pages 24-28)*

32.	Do you install road stabilization practices?	YES	NO	N/A
33.	Do you carefully plan and select BMPs before site disturbance?	YES	NO	N/A
34.	Do you leave protective buffer strips next to streams and water bodies?	YES	NO	N/A
35.	Do you establish vegetative cover on bare areas?	YES	NO	N/A
36.	Do you restrict cattle from woodlots and stream side areas?	YES	NO	N/A
37.	Do you test your soil to determine fertilizer rates?	YES	NO	N/A
38.	Do you protect water quality when constructing stream crossings?	YES	NO	N/A
39.	Do you routinely inspect roads, stream crossings and BMPs?	YES	NO	N/A

If you have an interest in any of the above questions, the Georgia Forest*A*Syst guide will assist you with your objectives; however, it is recommended that you seek a natural resources professional to assist you in managing your forest resources. For a list of available state and federal professionals, refer to the “References” on pages 33 and 34.

Contact your natural resources professional for more specific assistance.

FOREST RESOURCES MANAGEMENT FACT SHEETS:

A FOREST IS MORE THAN TREES

Trees take a long time to grow, so today's decisions have long-term impacts on forests and water quality. Georgia Forest*A*Syst helps you plan what you want your forest and wooded acreage to be and sets out the steps you need to take to get there.

Good Forest Management improves soil conservation, water quality, and wildlife management.

Your decisions are influenced by many things, including your family situation, income needs, and philosophy about land ownership and the environment. You also have to consider your resources, skills, time constraints, and applicable regulations in your location. Then you can sit down with your professional forester to create a flexible plan that you and your heirs can follow to reach your goals for your forest, while protecting the quality of the environment.

Where do I begin?
With a natural resources professional, you need to evaluate your property's physical attributes, your management practices, and the actions you can take to safeguard the environment. If you need to identify your primary management goals, please complete the Questionnaire on page 3. The Questionnaire will assist you in making the choices in balancing your desires for managing your forest.

Wanting income through timber production need not be in conflict with environmental concerns. By having a flexible plan, it is possible to link any of the other management choices with timber production.

ELEMENTS OF A MANAGEMENT PLAN

The health of your forest may depend on active forest management. A forest management plan is the road map to successful long-term management of your forest.

Planning is not a single event, but a series of steps leading to a desired goal. Forest resource management plans are, by necessity, long-term. The plan guides activities for decades, providing continuity through successive generations of owners. The plan can be as detailed or as general as you desire, with short-term and/or long-term recommendations (over 10 years). The first step is to determine your priorities, set goals and identify the management activities to reach those goals.

Forest resource management plans traditionally follow a common format. They should be written and revised periodically to update or change according to your wishes. The assistance of professional foresters, wildlife biologists, soil and water specialists, recreation specialists, financial advisors and others are recommended as you develop your plan. A plan should include your goals and objectives for timber management, wildlife management, recreation and *aesthetics*, and/or soil protection.

You may wish to develop your own plan or seek the assistance of a professional forester.

Regardless of who prepares the plan, several points apply to all plans:

- No plan is set in stone and can be modified at any time. The plan you develop is an operating plan which, based on current conditions and facts, will help you in meeting your goals.
- Plans are unique to each owner and forest.
- Plans should be reviewed and updated at least every 5 years, or as conditions change or as the objectives of the owner(s) change. All owners and heirs should be included in the development and modification of a plan to insure continuity of forest resource management activities.
- Plans should be adjusted to take into account new laws and regulations.

Components of a Forest Resource Management Plan

1. Statement of Landowner Goals and Objectives

A well-written plan should begin with a statement of the landowner's goals for ownership. Long-term (more than 10 years) goals are usually general. Short-term goals are more targeted, with specific practices and timetables.

Contact your natural resources professional for more specific assistance.

These include *timber stand* improvement activities, stand *thinning* schedules, timber *harvests, site preparation* timetables and re-growth or re-planting (*regeneration)* methods, *prescribed burning*, wildlife habitat enhancements, and timings.

2. Location

Your plan should include a map and/or aerial photograph showing the location of the property boundaries and road access.

To Know about Your Property:

Location and tax information from:

- Blue-line (tax) maps
- Aerial maps
- Soils and Topography maps
- Property boundaries

3. Stand Descriptions and Inventory Data

Each stand should be described and correctly marked on the property map and/or aerial photograph. Soil types, number of acres, tree species, stand age, range of tree diameters, average tree height, standing timber volume, tree condition and health, and unique water quality or drainage information are essential. For owners with wildlife, recreation, aesthetic or other objectives, a description of the stand's relationship to other plant species and wildlife should also be included.

* Identify areas that are covered by a conservation *easement.* These areas may limit your forest activities.

4. Protection and Maintenance for Forest Resource Management Plan

The "real meat" of a forest resource management plan is applying practices to the actual forest stands you own and then creating a timetable of planned activities.

Include a description of your activities (or planned activities) relative to the following key protection and maintenance requirements for the entire forest or described activity for each timber stand. Protection and maintenance activities include:

- Marking and maintaining property lines and corners,
- Road and trail layout and access control,
- Fire protection practices,
- Timber harvests,
- Regrowth or re-planting (regeneration) practices: site preparation, tree planting, natural regeneration recommendations,
- Forest *fertilization*,
- Commercial timber thinning,
- Pre-commerical thinning,
- Vegetation control,
- Establishing and maintaining wildlife management practices,
- Installing and maintaining water quality protection practices (BMPs),
- Enhancing the stand's aesthetics, recreational use, diversity of plants and wildlife species and wildlife habitat,
- Insect and disease inspection, protection and salvage,
- Timetable for review and update of the forest resource management plan, and
- Requirements to comply with federal/state regulations such as the Endangered Species Act, Clean Water Act, state water quality laws, etc.

Contact your natural resources professional for more specific assistance.

ASSESSMENT:

To Determine the Current Condition of Your Forest using a Forest Management Plan

For each category listed on the left, read across to the right and circle the statement that best describes the current condition of your forest resource management plan and soils. The terms in italics are defined in the glossary.

Forest Resources Management			
	BEST	**GOOD**	**NEEDS IMPROVEMENT**
Forest Resources Management			
Plan Development	Developed a plan with the assistance of natural resource professionals in consultation with family and heirs.	Developed a plan with consultation of family and/or heirs.	No written plan.
Written Forest Resource Management Plan	A written comprehensive plan has been prepared by a forest resource professional including: 1. goals, 2. location, 3. protection and maintenance, 4. timber stand descriptions 5. forest management recommendations, and 6. time schedule for reviewing.	A written plan has been prepared including: 1. timber stand description, 2. forest management recommended activities, and 3. time schedule for reviewing.	No written plan.

PUBLICATIONS:

University of Georgia, Cooperative Extension Service
Athens, Georgia 30602

- Georgia Forest Landowner's Manual, B-950
- Forestry on a Budget, B-1032

US Forest Service (770-536-0541)

- Managing the Family Forest in the South, SA-GR 22

Contact your natural resources professional for more specific assistance.

TIMBER MANAGEMENT

One objective of many landowners is timber production. Even lands managed primarily for wildlife, recreation or water protection can produce timber. Forest management can be both environmentally friendly and profitable.

When selecting how to operate your forest, you need to carefully assess:

- Your goals,
- Your financial and physical limitations,
- The size, condition and capabilities of your forest,
- The availability of technical and contractual services in your area, and
- Expected markets (various publications on a successful timber sale are listed below the assessment). It is strongly suggested that a forestry consultant be used to provide current market values for timber. The consultant fee is cost-effective in selling a landowner's timber.

Well-managed forests generally have several common features:

- Tree species that are suited to the local climate, soils and markets,
- *Crop Trees* with adequate room to grow,
- Minimal numbers of damaged, diseased or insect-infested trees,
- Protection from fire and destructive grazing,
- Easy access,
- Best Management Practices (BMPs) to prevent *soil erosion* and *sedimentation* to protect water quality (See pages 24-28),

For the new *BMPs* update - Call the Georgia Forestry Commission or visit http://www.gfc.state.ga.us

- Boundaries and corners are clearly marked and maintained, and
- A written forest resource management plan that considers all resources that govern activities.

For tree species and stocking information, call your local Georgia Forestry Commission office or another forestry professional. Normally, the Georgia Forestry Commission recommends 500-700 trees/acre (these stocking rates are subject to change based on the objective of the landowner.

The Types of *Forest Stands*

Even-aged

Certain tree species grow in *even-aged* stands, where all the trees are approximately the same age. Strategies for managing even-aged stands are best suited to tree species that do not grow well in the shade. Normally, these stands are harvested by techniques that allow maximum sunlight to reach the *forest floor*.

Two-aged

While similar to even-aged stands, these have two different age classes.

Uneven-aged

Trees of more than two ages and size classes are present in *uneven-aged* stands. Species that thrive in full or partial shade are best suited to these stands. These methods do require more *access roads* and trails when planning for timber harvests. Extreme care must be used to prevent damage to trees left after each selective harvest.

Uneven-aged stand management is complex. It is better suited to larger forests, particularly where the owner wants repeated, frequent timber harvests and income.

Establishing and Managing Forest Stands

Linking timber harvesting, regeneration, and intermediate stand management treatments in a logical sequence to meet your goals is complex. Generally, management practices fall into three categories depending on the age and condition of the forest:

1. Forest establishment or regeneration,
2. Intermediate stand management practices, and
3. Harvest systems.

Contact your natural resources professional for more specific assistance.

The Young Forest

Establishing or regenerating a forest can be achieved by artificial means, primarily planting trees, or by natural methods, which rely on seed, sprouts and/or naturally occurring seedlings. These practices are used to establish the forest with desirable trees.

1. Site Preparation

Site preparation can be the most intensive, soil disturbing activity done to your property. BMPs must be followed to protect water and soil quality. Removing undesirable vegetation or preparing a *seedbed* may be needed. Depending on the soil type, soil moisture, geographic region and the type and density of the competing vegetation, different methods can be used to clear the site. These include prescribed burning, *herbicides*, heavy equipment or manual labor.

2. Stand Establishment

This technique must be identified in pre-harvest planning.

Natural regeneration

Relies on available seed, stump sprouts and/or existing seedlings to produce the new stand. Success depends on whether there is adequate seed, seedling or sprout supply; adequate moisture; a well-prepared seedbed; and control of competing vegetation. Careful planning is required to ensure success.

Artificial seeding

Seed can be sown by either spreading from ground-level or broadcasting by helicopter over the site. Success will be determined by many of the same factors that affect natural regeneration.

Tree planting

This lets you pick the type of tree (species) and the spacing of the seedling and allows you to use genetically superior seedling stock. It will be successful if the selected species are well adapted to the site, and high-quality, healthy seedlings are carefully planted. In rare instances, seedlings may need to be treated with *insecticides* or fungicides to protect from early death. Tree planting may be done by hand or machine. Planting on the *contour* is advised to limit erosion and protect water quality.

3. Competing Vegetation Control Following Planting

Grasses, brush and annual or perennial weeds, which choke out or stunt the growth of seedlings, can be controlled by hand, mechanical means or herbicides. Extreme care must be used to avoid water contamination with *pesticides*.

4. Fertilization

Fertilization is rarely needed during the first four years after planting.

The Middle-Age Forest

Your forest will be healthier and more productive if it is managed by manipulating: the stocking (number of trees per acre); species composition; competition levels, and the use of prescribed burning. Generally speaking, trees or competing vegetation that do not contribute to your objectives for timber production, wildlife, aesthetic or recreational goals can be eliminated in favor of more desirable components in your stand.

1. Competing Vegetation

This can be eliminated by the use of hand tools, mechanically, prescribed burning, or chemical methods. Usually brush and herbaceous weeds are not marketable; therefore, they are killed in place. As they decompose, the recycled *nutrients* become valuable to your forest. Keep in mind that many of these weeds have some benefit to wildlife.

As a method to eliminate less desirable trees, concentrate on removing shade produced from competing vegetation. In most cases, less desirable vegetation sprouts grow rapidly, quickly overtopping planted seedlings. Without release, crop tree seedlings' early growth can suffer, or they may die.

2. Thinning

When competition begins to occur, thinning is usually done in even-aged stands when the tree *crowns* become so dense the trees start to shade each other. Failure to thin will cause the growth rate and vigor of the crop trees to diminish. Also, unthinned stands are more vulnerable to disease and insect infestations and will take longer to reach marketable size.Enough space is needed for the development of selected crop trees. Pre-commercial thinning removes small trees, which are not yet

marketable. In older stands, thinning may produce some income from the sale of the removed trees.

By allowing more sunlight to reach not only the total crown of selected crop trees, but also the forest floor, low vegetation will grow and provide food and cover for many wildlife species.

Thinning

3. Timber Stand Improvement

Timber stand improvement (TSI) is a cutting or culling undesirable species, usually in a sapling stand of less than 4 inches in diameter. By removing undesirable species and poorly formed, diseased or insect-infested trees, the species composition and stand quality will improve. Also, TSI will increase the growth rate of the desirable trees remaining.

Undesirable trees may be killed in place by herbicides, prescribed burning, or removed to use as firewood. Improvement cuttings are done in older stands to accomplish the same result, but the stems removed are sold.

4. Prescribed Burning

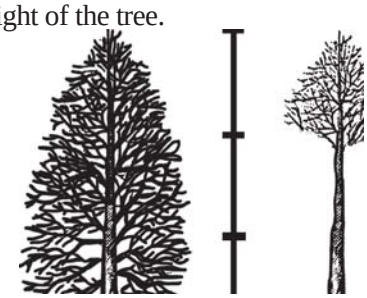
This lowers the risk of *wildfire*, as well as the population of undesirable wood species. Many species, such as most pines, are tolerant of "cool" fires under controlled conditions. Fire can be used to eliminate buildups of leaves, needles, and other fuels that can ignite and cause a major wildfire, as well as removing less fire-tolerant tree and brush species. In addition, prescribed burning returns nutrients to the soil.

An added benefit to prescribed burning is the stimulation of many herbaceous species of plants that provide food and cover for certain wildlife species. For more information, see pages 15-18.

In Georgia, there are specific guidelines for prescribed burning. In order to burn, you must get a burn permit. Call your local Georgia Forestry Commission office for more information.

5. Pruning

Removing persistent low branches improves wood quality by increasing the percentage of valuable clear and knot-free wood. Pruning is best done when branches are less than 2 inches in diameter and the stem diameter is less than 4-inches. But you should never prune higher than two-thirds of the total height of the tree.



Pruning

6. Fertilization

Intermediate aged stands may need nitrogen and phosphorus to increase the growth and yield of the forest. When there is enough sunlight, water and other nutrients, trees -- just like corn -- will respond to nitrogen with larger, more productive foliage. Conducting a foliar test will provide information on fertilization rates. It is best to talk with a professional forester to determine the amount of fertilization needed on a specific timber stand.

Before applying any type of fertilizer, have the foliage analyzed to determine fertilization rates. Please read about Best Management Practices before applying fertilizer. (See pages 24-28). Following BMPs will help to avoid violations of the Clean Water Act.

7. Pine Straw Harvest

Harvesting pinestraw, which can begin in plantations as early as 8 years old, can provide early, regular income until timber is harvested in stands that are properly managed. (Note: CRP plantations cannot be harvested until the contract expires.) If anything other than an occasional harvest (1-2 times over the rotation) is considered, then intensive management should be implemented.

To effectively manage for pinestraw, 90 percent of the understory vegetation needs to be controlled. All stands need crown closure to reduce the invasion of weeds on

Contact your natural resources professional for more specific assistance.

the site. Applications of approved herbicides at release rates can achieve this effect.

Repeated removal of pinestraw without fertilization on forested sites is not recommended. Stand growth declines without fertilization. An increase of straw production and stem growth can be expected with fertilization.

The greatest needle fall is during the autumn months. Therefore, the best time to rake straw is in late winter or early spring.

It is advised that the landowner have a contract with the producer, so both the landowner's and the producer's rights are protected. Producers raking pinestraw are required by law to have a Certificate of Harvest in their possession for each landowner on which straw is being harvested. These certificates can be obtained from the Georgia Forestry Commission.

Harvesting the Mature Forest

Several options can be used that relate to your forest regeneration planning strategy. Actual cutting of trees can be by hand or machine *felling*; moving (*skidding)* of the stems to a loading area (*deck*) by machine or livestock; and the loading and hauling of the cut timber to market.

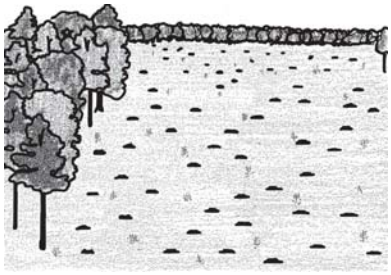
Timber harvesting, skidding, and hauling on forest roads and trails are potential causes of soil erosion, soil degradation and sedimentation. With the assistance of a professional forester, you can make a pre-harvest plan that will result in a good timber sale and harvest contract. For more information on obtaining a list of Master Timber Harvesters, please see the list of Contacts and References on pages 33 and 34. The list can be obtained from the Georgia Forestry Commission or the Georgia Forestry Association.

Before harvesting timber, it is strongly suggested that a forestry consultant be used to determine timber volumes and provide current market values for timber. The consultant fee is cost-effective in selling a landowner's timber. The forestry consultant determines the harvestable products and volume by a *timber cruise*. Cruises should be conducted before timber sales to estimate the value of the *stumpage* (standing timber). For additional information see the publication list following this section.

Clearcutting

This removes the entire marketable portion of the stand in one cutting. It is the most efficient and easiest to administer and is appropriate for mature stands or where the stand is of poor quality and even-aged regeneration is desired.

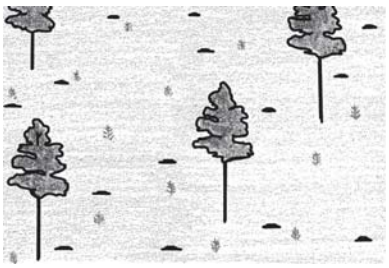
While *clearcutting* creates a drastic landscape change to which some people object, many valu-able species must have full sunlight for regeneration.In addition, it is beneficial to many wildlife species. However, it is critical that you follow the BMPs when clearcutting along *stream sides* (See pages 24-28).



Clearcutting

Seed tree

This method also produces an even-aged forest. It is similar to clearcutting, but 4 to 20 high quality seed producing trees are left per acre to naturally re-seed the site after harvest. It is crucial to plan the timing of the harvest and to assure adequate seedfall. Planning is also required to remove the seed trees after regeneration, since loggers are reluctant to return where there are few trees left. Risks include either not enough seeds or too many seeds, resulting in an *understocked* or *overstocked* stand.



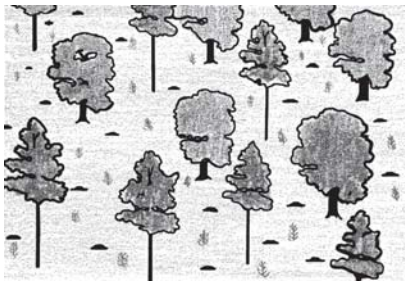
Seed Tree

Shelterwood

This harvest method leaves 21 to 60 seed trees per acre, which can be described as a heavy seed tree harvest. This harvest is a preferred even-aged natural

regeneration system for non-prolific seed producing species and is a visually appealing system for hardwood and conifer species.

A shelterwood harvest provides an abundance of seed and shelter for seedlings, as well as residual shade to control weeds. Since there is a larger number of trees left, loggers are more willing to return and remove the shelter trees after regeneration is established, usually within three to five years.



Shelterwood

Shelterwood with reserves (two-aged forest)

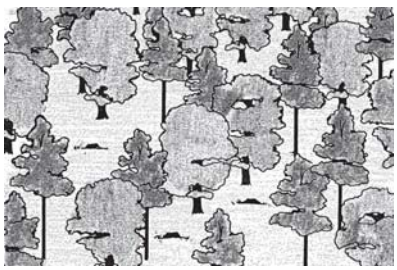
Also called deferment cuts, the shelterwood trees are left to mature until they grow larger and more valuable.

Selection

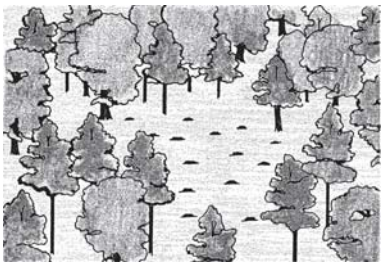
This system regenerates uneven-aged stands of shade tolerant tree species. *Single tree selection* removes scattered individual trees, while *group selection* removes scattered groups of trees to create openings of $^1/_4$ to $^1/_2$ acre in size.

Selective harvest does not work with valuable shade intolerant or moderately shade tolerant species, including many pine and quality hardwoods. While this method removes financially mature and high risk trees, care must be taken to not remove all the biggest and best trees, leaving poor quality trees behind. This practice causes a badly degraded forest with little timber value.

There are many advantages to selective harvest, including frequent income and visual attractiveness. A major disadvantage is that it requires more roads and trails, which greatly increases the potential for soil erosion and sedimentation.



Single tree



Group tree

Aesthetically Pleasing Timber Harvesting

The impacts of timber harvesting can be minimized to protect the aesthetic quality of your land. With proper planning and communication with timber harvesters, your objectives and goals for your forestland can be achieved.

Aesthetically Pleasing Timber Harvesting Practices include:

- Timed to avoid conflicts with seasonal outdoor activities,
- Method and equipment to be used is selected to limit damage to residual stand,
- Harvest area shaped and sized to limit visibility from public roads,
- Skidding lanes and wood roads maintained to limit erosion and impact on public roads, and
- Loading decks should be kept free of limb and brush piles.

Other considerations

Wildfire, insects, diseases and overgrazing are destructive to your forest. Frequent visits by you and a professional forester are recommended to maintain *firebreaks*, provide evaluation of your forest's health and vigor, and protect your investment.

Soil Productivity Related to Timber Harvesting

By following BMPs (see pages 24-28) during all phases of forest operations, soil productivity is maintained. Soil productivity can be enhanced with proper fertilization and sub-soiling of compacted soils.

Contact your natural resources professional for more specific assistance.

ASSESSMENT:

To Determine the Current Condition of Your Forest under Timber Management

For each category listed on the left, read across to the right and circle the statement that best describes the current condition of your timber stand and management practices. The terms in italics are defined in the glossary.

Forest Resources Management			
	BEST	**GOOD**	**NEEDS IMPROVEMENT**
Timber Management			
Tree Population/Stocking	Appropriate stand management practices change the stocking, species, composition, and competition levels.	Established forest meets less than all management goals and needs some stand managment practices (See pages 8-12).	Forest is *overstocked* or *understocked* and is not of ideal species composition. Forest management goals are not met.
Reforestation	*Reforestation* method determined before timber *harvest. Site preparation* and tree planting or natural regeneration methods used will cause little soil disturbance and complies with *Best Management Practices.*	*Site preparation* and tree planting methods used will cause little soil disturbance and complies with *Best Management Practices.*	No plan for open or previously *harvested* areas.
Tree Species	The planned and implemented forestry practices result in adequate tree *stocking* suited to the area. Selected tree speciies meet management goals.	Forest is adequately stocked, but the species mix is not ideal to meet all management goals.	Forest is inadequately stocked with species that may or may not match soil conditions. Tree species do not meet management goals.
Insect and Disease Control	Low tree mortality (less than 5%) due to insect, age, and/or disease. Insect and disease outbreaks are controlled.	Moderate tree mortality (between 5% to 15%) due to insect, age, and/or disease.	High tree mortality (over 15%) due to insect, age, and/or disease.
Fertilization* of a *Timber Stand **(Answer if *fertilization* is used.)**	Fertilizer is applied based on: 1. results of a foliage sample 2. results of soil sample. Fertilizer is applied at recommended rates during time of *thinning* and *crown* closure. Fertilization is performed following pine straw *harvesting*.	Fertilizer is applied based on: 1. results of a soil sample. Fertilizer is applied at recommended rates during time of *thinning*.	Fertilizer is applied without determining the application rates from a foliage or soil sample.

Contact your natural resources professional for more specific assistance.

Forest Resources Management			
	BEST	**GOOD**	**NEEDS IMPROVEMENT**
Timber Management (Con't)			
Harvesting	Timber *harvests* are: 1. planned and conducted using *BMPs* to protect water quality, 2. meet objectives of future land use, 3. monitored by a professional forester, and 4. covered in a written contract protecting the landowner's interest.	Timber *harvests* are: 1. planned and conducted using *BMPs* to protect water quality, 2. monitored by a professional forester, and 3 covered in a written contract protecting the landowner's interest.	Timber buyer or logger *harvests* with no natural resources professional oversight and/or a written contract is not provided by the logger or buyer.
Grazing Animals in the Forest **(Answer if grazing animals are present or desired.)**	Stand maintained with open canopy (30-50%) allowing enough sunlight to reach the *forest floor*. Adequate stand of forage species. Grazing management plan and timber management plan have been developed.	Forest production reduced due to limited amount of sunlight reaching the *forest floor*.	Understory forage is over-grazed, trees are damaged, and/ or heavy tree canopy restricts forage production.
Soil Productivity	Soil productivity is maintained and improved.	Soil productivity is maintained.	Soil productivity is not maintained.
Using *Best Management Practices (BMPs)*	Forest *BMPs* are incorporated into the forest management plan and actively followed.**	*BMPs* are partially utilized and partially understood.**	*BMPs* are not utilized or understood.**
**Recommended Forestry BMPs are carefully structured to protect water quality during all forest management activities. Maintaining water quality is required by law.			

PUBLICATIONS:

University of Georgia, Cooperative Extension Service
Athens, Georgia 30602

- Plant Trees Right!, B-1047
- Pruning Shade Trees, C-628
- Regenerating Southern Pines in Georgia, B-755

For information on Foliage Sampling, visit the University of Georgia, Cooperative Extension Service website: http://www.bugwood.caes.uga.edu/fertilization/

- Sampling Loblolly, Longleaf, and Slash Pine Foliage for Nutrient Analyses
- Decision-Making Aid for Loblolly and Slash Pine Mid-Rotation Fertilization
- Fertilizing Pine Plantations

Georgia Forestry Commission

P. O. Box 819, Macon, GA 31202 (1-800-GATREES)

- Best Management Practices for Forestry
- Keys to a Successful Timber Sale
- Sample Timber Sales Contract
- Reforestation, Site Preparation, Management Protection
- Silvicultural Guidelines for Pinestraw Management in the Southeastern United States
- Timber Harvesting and Road Construction

USDA-Natural Resources Conservation Service

- Working Trees for Livestock-Agroforestry: Silvopasture in the Southeast

Contact your natural resources professional for more specific assistance.

MANAGING FOR WILDLIFE HABITAT

Wildlife and forest management are not only compatible, but are interrelated. Developing an active forest resource management plan allows you to place a special emphasis on wildlife species in which you are interested, while improving forest productivity and increasing biodiversity, beauty and personal enjoyment. See the table below for species commonly managed in Georgia.

Game	Non-Game
White-tailed deer	Red-tailed hawk
Eastern wild turkey	Gopher tortoise
Bobwhite quail	Indigo snake
Gray squirrel	Great horned owl
Fox squirrel	Barred owl
Eastern cottontail rabbit	Indigo bunting
Raccoon	Bald eagle
Black bear	Brown bat
Grey fox	Box turtle
Red fox	Red-headed woodpecker
Waterfowl	Pileated woodpecker
Ruffed grouse	Red-cockaded woodpecker
Mourning Dove	Song Birds

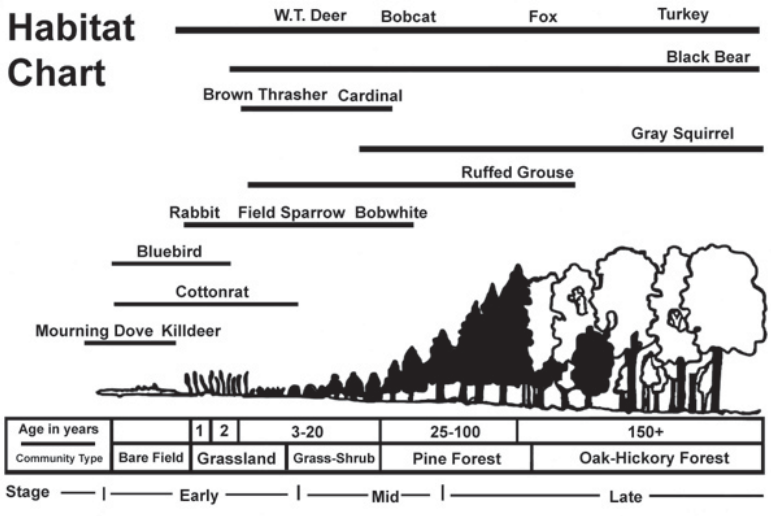
Linking the forest and wildlife

Wildlife have four basic requirements: food, cover, water and space. Different wildlife species require different stages of forest growth to meet these needs. The arrangement and ratio of these stages dictates the kinds of wildlife that can live on your land. The key to wildlife diversity and abundance is habitat diversity. How you choose to manage your forest contributes to the presence and arrangement of habitats, directly impacting the use of your land by wildlife. Several aspects of your property determine how many species can live and thrive in your forest: plant cover, harvest operations, water resources and topography.

Your forest may have streams, swamps, rivers, ponds, and areas that adjoin fields, pastures, roads and other openings. Even managing these *"edges"* of your forest is crucial to abundant populations of some wildlife species. Edge is easy to manage but some interior species can be harmed by creating edge habitat.

The relationship between vegetation management and wildlife species habitat is well established. Understanding relationships is the first step in determining how your own forest can be managed to promote the wildlife species you want to attract.

For example, quail, many songbirds and some small mammals feed on seeds of annual and perennial weeds and grasses that occur in young stands of timber, where sunlight reaches the forest floor. This is early successional habitat. Pileated woodpeckers, gray squirrels, and other songbirds depend on mature forests. This is late successional habitat. Still other wildlife prefer mid-successional habitat, the stage between early and late *succession*.



Contact your natural resources professional for more specific assistance.

There are several ways you can improve the value of even-aged harvest/regeneration areas for wildlife:

- Small harvest areas (up to 50 acres) scattered over the landscape provide more edge and landscape diversity,
- Irregularly shaped areas provide more edge than square or round areas,
- Planting at low density stocking rates (less than or equal to 500 trees per acre),
- Separating harvest areas with 100-foot (or wider) areas of uncut timber enhances diversity of habitats and provides travel *corridors* between fragmented habitats,
- *Buffer strips* adjacent to streams and other water bodies protect water quality, but are also critical wildlife corridors, and
- Islands of uncut timber within harvest areas will enhance wildlife habitat by leaving *mast* (food) producing trees. Oaks, hickories, dogwoods, persimmons and berry producing shrubs are excellent hard and soft mast species to leave.

Uneven-aged forests

This method simulates minor natural disturbances such as windthrow, insect and disease mortality, or spot fires. Mid and late successional habitat types are maintained with single tree harvest selection. Group selection harvests provides pockets of early successional vegetation interspersed within the mid and late successional habitat. A multi-layered forest canopy, from 5 to 30 feet, benefits native and migrating songbirds by providing nesting habitats.

Thinning

Thinning stands allows more sunlight to reach the forest floor resulting in more vigorous understory growth. This practice encourages the development of early successional growth in the understory, yet leaves some mid and late successional trees in the overstory.

Prescribed Burning

This controls woody vegetation, releases nutrients and increases seed germination and herbaceous vegetation — including legumes, forbs, and grasses. Prescribed burning in stands of fire resistant tree species sets back succession and does not damage timber crop trees. Burning cannot be used in many regions and certain types of forests.

Prescribed fire improves wildlife habitat by controlling succession and making wildlife browse more digestible, palatable, and nutritious food, without damaging potential timber crop trees. Fire also stimulates the production of soft trees from fruit bearing shrubs.

Most controlled burns to improve wildlife habitat are low intensity burns conducted during the winter months. Burning should be avoided during the primary nesting season of desired wildlife species. Contact your local wildlife biologists to determine the nesting seasons of the desired species on your land.

Before prescribed burning

After several cycles of prescribed burning

To control fire, firebreaks must be constructed to keep the flames from spreading to areas where burning is not appropriate.These breaks can be managed as linear openings or food plots to benefit certain wildlife.

Contact your natural resources professional for more specific assistance.

In Georgia, there are specific guidelines for prescribed burning. In order to burn, you must get a burn permit. Call your local Georgia Forestry Commission office for more information.

Den trees, mast trees, and snags

These trees are critically important for food and cover. Den trees have one or more cavities used by birds, reptiles, and mammals for roosting or nesting. As a rule, two to four den trees per acre should be left in any unthinned or harvested area.

Small den trees might house chickadees, woodpeckers, screech owls or flying squirrels. Large den trees are used by squirrels, raccoons, wood ducks and occasionally, even a bear. Mast trees produce fruits and nuts used by wildlife for food. Hickory, oaks, beech, persimmon, serviceberry, black gum, hollies, hawthornes, dogwoods, grapevines, and many other species are valuable to wildlife. The ideal time to select and mark den and mast trees is before you thin or harvest your timber.

Snags are dying or dead trees still standing. They provide perch sites for birds of prey, act as a food source for insect-eating birds, reptiles, amphibians, and mammals, and serve as den trees to various wildlife species. Snags and potential snags should be left during harvest and site preparation of forest stands.

Road construction and maintenance

Access to your property is essential and can provide multiple benefits. Proper location, design, and construction increases the value and enjoyment of your forest. One practice that benefits wildlife is *'daylighting.'* In this process, trees shading the road surface are removed. Sunlight on the road surface enhances the growth and proliferation of grasses and weeds which are food plants for wildlife. Insects attracted to the vegetation are also an important food source for many wildlife species. Restricting vehicle traffic also increases wildlife use, particularly during nesting season.

Wildlife Openings

Permanent wildlife openings are important in the annual life cycles of many game and non-game species. Wildlife openings by definition are areas composed primarily of low, grassy, herbaceous vegetation. Maintain a minimum of 2.5 percent of the total tract acreage in permanent wildlife openings. These openings may be maintained in early successional native vegetation by periodic prescribed burning, disking, or mowing or by use of herbicide. Agricultural plantings, such as corn, sorghum, wheat, oats, millet, ryegrass, and clover may also be planted within these openings. Call your local wildlife biologist for a list of selected wildlife plants.

Establishing ground cover or wildlife food

Along roads, forest edges, and logging decks, food and ground cover vegetation controls soil erosion, improves water quality, and enhances wildlife food and cover. These areas create diversity in the forested landscape by providing early and mid successional components throughout the life of the forest.

Seeding and establishment recommendations vary widely depending on geographic region, soil type, moisture availability and fertility. Successful plantings require soil testing, fertilization, adequate seedbed preparation and planting at the appropriate time. Most ground covers require maintenance by mowing, disking, burning, fertilization or liming. Establishment of native or naturalized ground cover through natural succession often is more valuable to wildlife and is less expensive for the landowner. Consult a natural resources professional for specific recommendations for your area. A soil sample should be analyzed to determine liming and fertilizer rates.

Streamside Management Zones and Upland Corridors

Corridors, both streamside and upland, serve many valuable wildlife functions. They provide safe travel, food, nesting, denning, and foraging sites, as well as cool refuges during the hot summer months. These corridors also protect your property from soil erosion and help maintain water quality in streams. To maintain their value, corridors should be areas of mature timber and a minimum of 300 feet wide to accommodate the needs of various wildlife that rely on these areas. Corridors should connect similar habitats together to help offset the effects of forest fragmentation. Integrity of the canopy is very important in managing corridors, especially streamside management zones. The key to successfully managing these sites is to provide an open understory to facilitate travel by species such as wild turkey and maintain a condition similar to interior forest habitat.

Contact your natural resources professional for more specific assistance.

ASSESSMENT:

To Determine the Current Condition of Your Forest under Wildlife Management

For each category listed on the left, read across to the right and circle the statement that best describes the current condition of your wildlife management practices. The terms in italics are defined in the glossary.

Forest Resources Management			
	BEST	**GOOD**	**NEEDS IMPROVEMENT**
Wildlife Management			
Habitat	Forest management practices are used to create ideal habitat for the desired species. For a species list, see page 15.	Forest management practices are used to protect some habitat components of desired species.	Forest management practices do not protect or enhance wildlife species.
Young *Even-Aged* Habitat	Young *even-aged* stands are: 1. small (50 acres or less), scattered and 2. planted at low density *stocking* rates (less than or equal to 500 trees per acre).	Young *even-aged* stands are: 1. moderate (between 50 to 119 acres) and 2. planted at moderate density *stocking* rates (between 501 to 725 trees per acre).	Young *even-aged* stands are: 1. large (more than or equal to 120 acres) and 2. planted at high density *stocking* rates (greater than or equal to 726 trees per acre).
Intermediate and Older Stands	Intermediate and older stands are improved for habitat by *thinning*, *prescribed burning*, and *den* and/or *mast tree* protection.	Some level of stand improvements are used in intermediate and older stand to improve habitat.	Intermediate and older stands are not managed to create habitat *diversity* or protect *den* and *mast trees*.
Roads, Trails, Firebreaks, and Openings	Roads, trails, firebreaks, and openings are *daylighted*, seeded to vegetation valuable to wildlife, or managed to remain in native early *succession* vegetation. The maintained roads are a minimum of 30 feet wide to allow for sunlight.	Roads, trails, firebreaks, and openings are seeded.	Roads, trails, firebreaks, and openings are bare, eroding, and provide no food or cover for wildlife.
Indangered Species	Endangered species are identified and included in the forest resource management plan.	_____	Endangered species are not considered.

PUBLICATIONS:

University of Georgia, Cooperative Extension Service
Athens, Georgia 30602

- Selected Practices and Plantings for Wildlife, B-733
- Tips for Hunting Leases, L-397

Contact your natural resources professional for more specific assistance.

RECREATION AND AESTHETICS

Many landowners do not realize that they can simultaneously manage their forest for profit, wildlife habitat, investment, recreation and beauty. In fact, properly planned forestry activities can enhance visual appearance, improve recreational opportunities and sustain and increase wildlife populations.

Enhancing Visual Appearance

Integrating forest management for scenic beauty and diversity can be viewed as landscaping on a grand scale. It is the arrangement of sizes, colors, textures and form across your forest.

1. Protecting, shaping, and creating open spaces

It is preferable to protect and manage existing openings rather than to create new openings from scratch. However, large tracts of similar age or species can be made more diverse by creating openings. They can enhance views, improve wildlife habitat and increase plant diversity.

Maintenance activities include:

- Mechanical clearing: periodically mowing or disking strips on an alternating two to three year cycle keeps woody vegetation in check. However, mowing should be restricted in the spring to allow ground nesting wildlife to rear their young without disturbance.
- Herbicide control: Using selective herbicides to maintain the species composition of the opening. A legally-labeled, safe and effective herbicide that is known to control the targeted species should be selected.
- Prescribed Burning: Burning should be conducted at two to seven year intervals, based on a cycle compatible with wildlife, aesthetics and timber objectives.
- Farming: while farming techniques maintain fields and open spaces, edge treatments can be modified or intensified to meet wildlife, aesthetic and diversity objectives.
- Timber harvesting: thinning young trees or harvesting mature trees creates openings and dramatically changes the forest landscape. Your plan should lay out the timber sale area, log decks, skid trails, roads and accumulation areas to match your aesthetic objectives.
- Controlled grazing: to control growth in pastures and fenced clearings, supervised livestock grazing can be used.

2. Managing the forest edge

Minimizing the contrast between the opening and the forest is the primary goal in managing aesthetics on the forest edge. It defines the shape and texture of the forest setting. A soft transition from the low vegetation of the opening to shrubs and then to taller trees is desired.

Contact your natural resources professional for more specific assistance.

Considerations for managing the forest edge include:

- Create or maintain wavy edges with indentations to improve visual diversity,
- Introduce irregularity to straight forest edges,
- Establish or maintain irregular outlying clumps of trees to create a natural appearance of the forest edge,
- Favor a mixture of hardwood and conifer species for variety of the edge,
- Retain or establish trees and shrubs of varied shape, form, flower or foliage color, and
- Plant vegetation to support desired wildlife.

3. Reforestation

Reforestation is an opportunity to establish attractive, diverse forest edges. Alignment and spacing of planted trees and the intensity of site preparation and competition control create different looks.

Practices for reforestation include:

- Varying site preparation techniques to favor species diversity,
- Plant seedlings in rows that follow the natural contour to minimize erosion,
- Mix the species composition where practical,
- Vary planting density, leave openings and opt for mixed stands, especially where practical from an economic and soil productivity standpoint, and
- Establish or protect stream side management zones to enhance water quality, provide wildlife habitat and scenic diversity.

Contact your natural resources professional for more specific assistance.

4. Prescribed Burning

Burning is an inexpensive tool to manage some thick barked fire-tolerant tree species. It is an often overlooked opportunity to impact the visual diversity of the landscape.

Prescribed burning creates an open stand and stimulates the growth of many fire-enhanced flowers and legumes. With aesthetics as a consideration:

- Leave unburned islands around critical habitat or highly-valued areas,
- Level and re-seed plowed firelines with scenic and wildlife-friendly plant mixtures,
- Mimic a natural transition or edge around the burned area curving the firelines,
- Put in properly constructed firebreaks prior to prescribed burning, and
- Cut timber (if desired) to keep the aesthetic qualities of the land (See page 16).

In Georgia, there are specific guidelines for prescribed burning. In order to burn, you must get a burn permit. Call your local Georgia Forestry Commission office for more information.

Improving Recreational Opportunities

Many people enjoy hiking, bird watching, hunting, camping, picnicking, picking berries and just being in the great outdoors, but the majority of land suitable for outdoor recreation is privately owned. Some owners open their lands up to the public, while others restrict the use of their land.

In Georgia it is illegal to trespass on another individual's land; however, it is strongly suggested that landowners properly post the land and gate access points.

Managing Access

Access can be managed several ways:

Open public use requires no effort. Preferably, you should require verbal or written permission from recreationists, but this is difficult to enforce. Uncontrolled public use often decreases the quality of recreational opportunities available to you or your friends.

Access to family, friends, neighbors and responsible recreationists who ask permission. This requires that the land be posted and/or that you issue guest permits. The

obvious advantages of posting and granting written permission are better control of activities on your land and reduced abuse of your property.

Lease your land for recreational access.Landowners who lease recreational rights usually charge at least enough to pay their property taxes.Often the lessee posts the land, polices trespassers, maintains roads, trails and gates and picks up litter.

Permit daily use for a fee. Daily written permits are issued by the owner.This is often used by owners of hunting and fishing preserves, campgrounds and waterfowl impoundments.

Form a cooperative with neighbors. Landowner cooperatives build a sense of community among neighbors with similar recreational goals.The acres entered into the cooperative can be for personal enjoyment or made available to the public through one of the methods above.

When leasing land or allowing permit users fees, a legal advisor should be used to limit the liabilities and provide a legal, written contract.

Constructing Roads and Trails

Two types of roads are built on forestland, permanent and/or temporary. Most temporary roads are built during timber harvesting; however, proper construction is necessary to prevent soil compaction and soil erosion.

Correct construction of roads and trails is essential for timber, wildlife, scenic beauty or recreation. Roads should be built following BMPs (See pages 24-28). Roads and trails should be posted and gated to deter trespass.

Roads and trails provide access for harvesting timber, monitoring the growth and health of your forest, exercising, recreation, education and observing nature. Well planned roads or trails provide low-cost access and require minimal maintenance.

Scenic beauty and recreational opportunities can be enhanced by good forest management.

To improve the aesthetic quality of roads:

- Manage roadsides with perennial vegetation to enhance wildlife, visual quality and soil erosion prevention,
- Plan road placement to minimize the number and extent of roads and *skid trails*,
- Expand openings adjacent to roads (*daylighting*) to enhance plant diversity and for rapid drying of the road surface,
- Place roads on the contour, taking advantage of natural curves within the landscape, and
- Surface heavily used roads with low-cost native or natural materials, such as wood chips, bark, or *mulch*.

Improve the aesthetic quality of recreational trails:

- Keep slopes on trails below 10 percent grade to minimize soil erosion and maintenance,
- Place trails on the contour, taking advantage of natural curves within the landscape,
- Develop narrow paths into environmentally sensitive areas, instead of major trails,
- Surface heavily used trails with low-cost native or natural materials, such as wood chips, bark, or mulch,
- Vary the direction of the trail for variety, points of interpretive interest and to maximize users' exposure to natural features, water bodies and vegetative changes, and
- Provide trail markers, benches, and picnic tables to increase the enjoyment of recreational trails.

Contact your natural resources professional for more specific assistance.

ASSESSMENT:

To Determine the Current Condition of Your Forest under Recreation and Aesthetic Management

For each category listed on the left, read across to the right and circle the statement that best describes the current condition of your recreation and aesthetic management practices. The terms in italics are defined in the glossary.

Forest Resources Management			
	BEST	**GOOD**	**NEEDS IMPROVEMENT**
Recreation and Aesthetics Management			
Management plan for recreation and *aesthetics*	Forest management practices enhance recreational and *aesthetic* goals.	Some forest management practices protect some of the visual and recreational values of the property.	Forest management practices are not used to enhance recreational and *aesthetic* goals.
Visual Appearance	Visual appearance of forest is enhanced through management activities resulting in a level of beauty desired by the landowner.	Some visual appearances are protected through management activities.	Visual appearance is not considered, protected, or enhanced through management activities.
Access	Access is controlled by properly posting the land, requiring written permission, and gating access points.*	Access is controlled by properly posting the land.	Access is uncontrolled.
Roads and Trails	Roads and trails for recreation are built using *BMPs***; and maintained for compatible access for other management activites.	Roads and trails are constructed for timber *harvesting* using *BMPs*.**	Roads and trails are not built using *BMPs*.**
* When leasing land or requiring permit users fees, a legal advisor has been used to limit the liabilities and provide a legal, written contract. Sample contracts are available through the Department of Natural Resources, see "Contacts and References."			
* *Recommended Forestry BMPs are carefully structured to protect water quality during all forest management activities. Maintaining water quality is required by law.			

PUBLICATIONS:

American Forest and Paper Association (1-800-878-8878)

- Forestry Aesthetics Guide - Image and Opportunity

Contact your natural resources professional for more specific assistance.

MULTIPLE USE FORESTS

Blending Wildlife with Forestry

Many forest landowners want to improve wildlife populations while still growing a merchantable stand of timber. This can be easily done by taking advantage of natural or man-made openings, improving stands of food producing trees, or thinning existing stands. Typical pine reforestation plans can also be altered to improve habitat for various species of wildlife.

Planting fewer seedlings per acre or thinning a stand to less than normal stocking rates leads to a longer period of time in which sunlight will reach the forest floor. Sunlight reaching the floor stimulates growth of desirable vegetation for wildlife. Prescribed burning or some other means of controlling that growth will become a valuable component of your forest/wildlife management plan. Incorporating openings into the forest landscape increases diversity creating habitat for a variety of wildlife.

Developing good wildlife habitat in a forest stand typically will mean a trade off in timber growth. Thinnings to favor wildlife and incorporating wildlife openings will reduce tree stocking rates below normal rates for timber production. The landowner will actually receive more income at the first thinning for wildlife than would normally occur. The second thinning would be about normal in terms of volume removed. The final harvest would result in lower volumes than would have been normal, thus lower income.

Contact your natural resources professional for more specific assistance.

USING BMPs TO PROTECT WATER QUALITY

The role forests play in stabilizing soils and protecting watersheds is universally recognized. Best Management Practices (BMPs) are practical and efficient technologies to protect water quality. When a forest is disturbed, the potential for soil erosion and degrading water quality increases. Water quality is affected by sediment levels, water temperature, streamflow, nutrient levels, and dissolved oxygen levels. BMPs can minimize, eliminate or reverse water quality impacts.

The following forest management practices require BMPs regardless of whether the purpose is for timber, wildlife, recreation, aesthetic or other reasons:

- Road and trail construction, maintenance and use,
- Timber harvesting and skidding logs to loading areas,
- Mechanical equipment operation,
- Prescribed burning, particularly fireline construction,
- Site preparation by hand, chemical or mechanical methods,
- Fertilizer application, particularly near water-bodies,
- Minor drainage alterations, and
- Pesticide applications.

** Recommended Forestry BMPs are carefully structured to protect water quality during all forest management activities. Maintaining water quality is required by law.

Planning Phase

The BMPs you select to manage your property will be a unique mix. Prior to beginning any activities, you need to walk your property and identify such things as restrictive/sensitive zones around water bodies and streams, soil types, areas of steep slopes, unique natural areas, and wildlife habitats.

Pre-harvest planning

Roads, trail and log decks should be kept at the minimum number to allow efficient timber harvesting while protecting water quality. Determine what type of logging equipment will have the least environmental impact on your forest.

Site preparation and regeneration planning

Select the practice(s) which accomplishes the required vegetation control and seedbed preparation with the minimum soil/site impact.

Fertilizer or pesticide application planning

From a planning standpoint, learn the chemical characteristics, topography, soils, drainage, and other factors that might be important for preventing water pollution during application.

Roads, trails and firelines planning

Roads, trails and firelines are the major source of sediment from forestry operations.A well-planned road, trail and fireline system minimizes the number of stream crossings, fits the topography of the site, locates the disturbance outside of critical stream side areas and uses appropriate drainage and water control structures. Hand constructed firelines should be used on steep terrain.

Operational BMPs

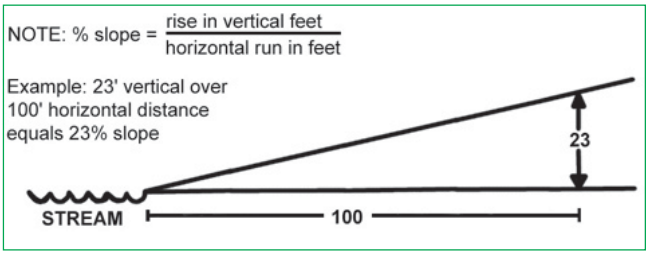
Streamside Management Zone (SMZ)

An SMZ is the zone along an intermittent or perennial stream (which flows more than 30 percent of the year) where extra precaution is used during activity. Its purpose is to slow and spread surface water flow, and trap and filter suspended sediments before they reach the stream channel. SMZs also provide stream shade and function as buffers to filter and capture fertilizers, pesticides, and other potential pollutants.

The recommended width of an SMZ will vary from 20 to 100 feet depending on the stream, the soils, and the topography or the slope of the land. Limited tree harvesting is allowed in the SMZ if trees can be felled away from the stream channel and removed with extreme care, leaving the forest floor and ground cover vegetation largely undisturbed. Heavy equipment use is discouraged in the SMZ.

Contact your natural resources professional for more specific assistance.

Diagram Showing How to Determine Slope



SMZ Widths by Slope Class and Stream Type

Slope Class	Minimum Width (ft.) of SMZ on Each Side		
	Perennial (feet)	Intermittent (feet)	Trout (feet)
Slight (<20%)	40	20	100
Moderate (21-40%)	70	35	100
Steep (>40%)	100	50	100

Practices to Avoid Within SMZ's :

- Cutting streambank trees,
- Unnecessary access roads and main skid trails,
- Log decks,
- Portable sawmills,
- Significant soil compation and rutting by harvesting equipment,
- Removal of ground cover or understory vegetation,
- Felling trees into the streambed or leaving logging debris in the stream,
- Servicing or refueling equipment,
- Mechanical site preparation and site preparation burning
- Mechanical tree planting,
  Broadcast application of pesticides or fertilizers,
  Handling, mixing, or storing toxic or hazardous materials (fuels, lubricants, solvents, pesticides, or fertilizers.)

BMPs for fertilizer and pesticide application:
Assess the rates, timings, and application technologies (delivering the right amount of chemical to the right place at the right time) for optimum effectiveness, and minimal water quality impact.

Applicable BMPs for pesticides (herbicides, insecticides, fungicides, and rodenticides) include:

- Apply only according to label directions, using the minimal rate to accomplish the desired result,
- Apply pesticides carefully, avoiding direct and indirect entry of pesticides into streams or water bodies,
- Do not broadcast apply in SMZs; utilize injection, stump treatment or directed spray in areas immediately adjacent to open water,
- Comply with applicable federal and state regulations for buffer zones/filters strips, such as around roads, schools, residences, etc.,
- Mix chemicals and clean tanks only where spills will not enter streams, lakes or ponds,
- Maintain and adjust application equipment to prevent spillage and excessive application,
- If a spill should occur, immediately contain it (Note: some spills require immediate notification of appropriate authorities),
- Dispose of containers according to label recommendations and applicable state laws,
- If hiring a commercial applicator, require a written contract and proof of appropriate licenses, insurance and bonding of the contractor,
- Aerial application will cease when 1) wind speeds exceed six miles per hour; 2) temperature reaches 90 degrees F; 3) in advance of/or during unstable weather patterns, and
- Aerial and ground equipment and techniques used are designed to assure maximum control of the spray swath (width) with minimal drift.

Applicable BMPs for fertilizers include:

- Perform a soil test to determine fertilizer needs and
- Carefully apply fertilizer, avoiding direct and indirect entry of fertilizer into streams or water bodies.

Contact your natural resources professional for more specific assistance.

For the new BMPs update - Call the Georgia Forestry Commission or visit http://www.gfc.state.ga.us

BMPs for roads, trails, and firelines

A road system, temporary or permanent, provides access for timber harvesting and management activities, recreation or wildlife enjoyment. Improper road construction and maintenance is the major cause of soil erosion and sediment from forestry activities.

Well-designed road and trail systems have the following characteristics:

- Roads should be allowed to stabilize/ settle before use,
- Roads should be as narrow as possible (12 - 16 feet),
- Roads should be on gentle slopes, avoiding flood plains when possible,
- Roads should be placed outside of SMZs,
- Roads should cross streams at right angles, using bridges, *culverts* or constructed *fords*,
- Roads should be daylighted to maximize drying and promote vegetation,
- Water should be effectively controlled through diversion or drainage, and
- Frequent inspection and maintenance.

Planning will identify the specific BMPs that will assure that your road and trail system is water quality friendly.

Road BMPs

Water Turnouts

Water *turnouts* are ditches, trenches or waterways that divert water away from the road surface. They carry water into an undisturbed area where the flow slows and sediments are filtered and trapped.

Cross-road drainage by culvert

Cross-road drainage is the transfer of water across or under the road, usually by a round culvert.It is used on any road or trail where storm water runoff, ditch-to-ditch transfer, slope or overland seepage might cause soil erosion.Pipe culverts 14 inches or larger are normally installed on permanent roads and trails.

Broad based drainage dip

Broad based dips create a reverse uphill slope in a road surface, effectively slowing and moving water off the road surface into an undisturbed adjacent area.

Rolling dip

Rolling dips are a rounded hump which creates a reverse slope and turnout. They are often used in skid trails where logs are skidded (dragged) to a log loading area (deck). The rolling dip provides cross drainage and slows water flow and holds up better under heavy traffic.

Water bars

Water bars are a combination mound/trench built into a road or trail and sloped slightly downslope to move water off the road surface into an undisturbed, adjacent area. Water bars are usually installed after the road is no longer used.

Stream-crossing BMPs

Forest harvesting and management activities often require crossing intermittent or perennial streams. Plan to use as few crossings as possible. Road and trail approaches to stream crossings must have good surface drainage that turns water into undisturbed areas away from the stream course.

Streams may be crossed in several acceptable ways:

Pipe culverts

Considered expensive, they are usually used on permanent roads. However, following use on temporary roads and trails, they can be carefully removed to minimize

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soil disturbance.It is important that culverts be of adequate diameter to handle above-normal water flows; long enough to extend slightly upstream and downstream from the crossing, and be installed with a 2-4 percent downstream angle to aid in flushing out debris. A single culvert, sized to handle the water flow, is less likely to clog than several smaller stacked culverts.

Backfill material should be free of debris and the culvert should be covered with fill to a depth of one-half the diameter of the culvert, or a minimum of one foot.

Bridges

Temporary or permanent, there are numerous styles of bridges used to cross streams where culverts won't handle the stream flow. Bridges should be built to handle heavy loads using the proper type, size and materials. Professionals can help design your bridge. Stream channel and stream banks should be protected from soil erosion during construction by continual mulching or vegetated ground cover. Abutments and headwalls may be needed to handle flood conditions and stabilize the approaches to the crossing area. Use vegetation or ground cover to stabilize road approaches and road banks.

Fords

For temporary or minimum-use crossings, fords should only be used where the stream has an applied or existing firm base. *Riprap* stone, brush, poles or other materials stabilize the road or trail approach to a ford, and the streambed to protect the stream channel. Stone is usually not removed after road use ceases, but poles, brush and other materials are. Fords should not be used for skidder crossings.

Site preparation and regeneration BMPs

The condition of the tract, the desired species you wish to regenerate and environmental concerns including water quality need to be addressed. SMZs, road layout and design, equipment limitations, and management options should be planned in detail and documented on the ground and/or on a map. There are numerous options for site preparation including bulldozers (chopping, disking, rake and pile, *bedding*, *furrowing*, *scalping*), hand tools, herbicides and fire.

Site preparation techniques which create bare soil conditions increase the risk of soil erosion. Site preparation and regeneration BMPs include:

- Use the least site disturbing activity to accomplish the planned result,
- A SMZ should be maintained on all perennial and intermittent streams,
- Soil disturbance in *ephemeral* areas should be minimized or avoided,
- On steep terrain and/or on fragile soils, herbicides, prescribed fire or manual site preparation is preferred over heavy equipment,
- No debris, oil or other waste should be placed in or close to streams, and
- Machine planting of trees should be done on the contour. Steep slopes should be hand planted.

Permanent stabilization

At the conclusion of any *silvicultural* activity:

- All temporary stream crossings should be carefully removed,
- Roads, trails, and firelines should be inspected to be certain that all water control structures are in place and functional,
- All toxic waste, tires, oil and trash should be removed and properly disposed, and
- Mulch, brush, or vegetative cover should be provided on bare soil areas to stabilize the area and reduce the potential for surface runoff and accelerated soil erosion.

For copies of the new BMPs - Call the Georgia Forestry Commission or visit http://www.gfc.state.ga.us

Contact your natural resources professional for more specific assistance.

ASSESSMENT:

To Determine the Current Condition of Forest's Soil and Water Quality

For each category listed on the left, read across to the right and circle the statement that best describes the current condition of your soil and water quality management practices. The terms in italics are defined in the glossary.

Forest Resources Management			
	BEST	**GOOD**	**NEEDS IMPROVEMENT**
Soil and Water Management			
Forest Soil Erosion	No severe movement of soil or gullies are present. Precautions are being taken to prevent the loss of topsoil.	_____	Severe movement of soil is occurring and gullies are present.
Using *Best Management Practices*	Forest *BMPs* are incorporated into the forest management plan and actively followed.**	*BMPs* are partially utilized and partially understood.**	*BMPs* are not utilized or understood.**
**Recommended Forestry *BMPs* are carefully structured to protect water quality during all forest management activities. Maintaining water quality is required by law.			

PUBLICATIONS:

Environmental Protection Agency (EPA)
Information Center
401M Street, SW
Washington, DC 20460

- Summary of Current State Nonpoint Source Control Practices for Forestry, EPA 841S93
- Evaluating the Effectiveness of Forestry Best Management Practices in Meeting Water Quality Goals or Standards, EPA 841B94

Georgia Forestry Commission
P.O. Box 819
Macon, Georgia 31202-0819
(1-800-GATREES)

- Best Management Practices for Forestry
- Reforestation, Site Preparation, Management and Protection
- Timber Harvesting and Road Construction

Contact your natural resources professional for more specific assistance.

GLOSSARY:

The following list of terms are commonly used in conservation matters by foresters, loggers, soil scientists, biologists, engineers, conservation planners, etc.

Access road A temporary or permanent access route normally used by motorized vehicles.

Aesthetics (a) Sensitivity to, or appreciation of, the forest's beauty through recognition of its unique and varied components.

(b) Beauty through an orderly appearance.

Bedding A site preparation method where special equipment is used to concentrate surface soil and forest litter into a ridge 6 to 10 inches high, on which forest seedlings are to be planted.

Best Management Practices A method or combination of methods that is an effective and practical (including technologically and economically) way to prevent or reduce pollution.

Broad base dip A surface drainage structure built into the roadway to remove storm water from an access road.

Buffer strips A strip of permanent vegetation established or left undisturbed downslope from disturbed forest areas to filter out sediment from runoff before it reaches a watercourse.

Clearcutting A forestry practice where all the merchantable trees are in a specified area are harvested in one operation.

Contour An imaginary line on the surface of the earth or a line on a map connecting points of the same elevation.

Prescribed Burning The use of fire under specific environmental conditions to achieve forest management objectives. Used to reduce hazardous fuel level, control unwanted vegetation, favor desired vegetation and improve visibility and wildlife habitat, and prepare soils for seed fall in natural regeneration.It is critical to the survival of some species, such as longleaf pine.

Corridors A narrow strip of land used to connect similar habitat types together.

Crop trees A group of managed trees located within a specific area that will eventually be harvested.

Crown The branches and foliage of a tree; the upper portion of a tree.

Culvert A metal, plastic, or concrete pipe which surface water can flow through under roads and trails.

Daylighting Cutting trees along the edges of roads, reducing the shade on the surface to allow faster drying.

Deck See logging deck.

Den tree A living or dead tree with a cavity suitable for animals to use for shelter, escape, or as a nursery.

Disking A practice used for harrowing or plowing the land, commonly used in site preparation operations.

Diversity The variety of life and its processes in a given area. Diversity can be categorized in terms of the number of species, the variety in the area's plant and animal communities, the genetic variability of the animals or a combination of these elements.

Easement An interest or right to limited use of land granted by the owner to another party. Easements are usually granted to allow passage across property.

Edge An area where two habitat types come together producing valuable wildlife species diversity.

Ephemeral stream	A stream that flows only during and for short periods following precipitation and flows in low areas that may or may not have a well-defined channel.
Even-aged	A forest containing trees that are about the same age (usually within 10 years.) Pine plantations are even-aged forests that result from clearcut harvesting and reforestation with seedlings.
Felling	The process of severing trees from stumps.
Fertilization	The process of applying fertilizer that is used as a source of plant food or soil amendment.
Firebreak	Naturally occurring or man-made barriers to act as a line from which to work during prescribed burning or fire-fighting efforts.
Fireline	A barrier to stop the spread of fire by either removing fuel or rendering fuel inflammable.
Forbs	Herbaceous, early successional vegetation, which supports some wildlife species.
Ford	A submerged stream crossing which is firm enough to support intended traffic.
Forest floor	A layer of accumulated dead organic material, consisting of partially or fully decomposed leaves, needles, twigs, etc., at the surface of a forest soil.
Forestland	All land which is capable of supporting a merchantable stand of timber and whose current use is not incompatible with timber growing.
Furrowing	Site preparation work done by a V-blade or fire plow, pushing aside debris and vegetation and/or cutting a trench into the mineral soil to enhance tree planting.
Group selection	The practice of managing a forest by periodically selecting and harvesting groups of trees to create openings of 1/4 to 1/2 acre in size from the stand while preserving its natural appearance.
Harvesting	Removing trees on an area to (1) obtain income from the wood products; (2) develop the environment necessary to regenerate the forest.
Herbicide	Any substance or mixture of substances intended to prevent the growth of or destroy terrestrial or aquatic weeds (wood or non-woody undesirable vegetation).
Insecticide	Any substance or mixture of substances intended to prevent, destroy, repel or control any insect or other arthropods.
Logging deck	Place where logs are gathered in or near the forest for further transport. Sometimes called a "landing."
Mast	Fruits or nuts used as a food source by wildlife. Soft mast include most fruits with fleshy coverings, such as persimmon or blackgum seed. Hard mast refers to nuts, such as acorns, beech, pecan and hickory nuts.
Mulch	Natural or artificial layer of plant residue or other materials covering the land which conserves moisture, holds soil in place, aids in establishing plant cover and minimizes temperature fluctuations.
Non-point pollution	Water pollution which is (1) induced by natural processes, including precipitation, seepage, percolation and runoff; (2) not traceable to any one source or point; and (3) controlled through best management practices.
Nutrients	Mineral elements such as nitrogen, phosphorus or potassium that is naturally present, or may be added as fertilizer or a fire retardant. While these substances are necessary for the growth and reproduction of organisms, they may promote the growth of algae and bacteria (chiefly nitrates and phosphates).
Overstocked	Where a forest contains too many trees per acre as determined by a tree's size and physical needs to remain healthy. Overstocking reduces growth, causes more trees to die, and makes a stand more susceptible to disease and insects.

Contact your natural resources professional for more specific assistance.

Overtopping	Shading occurring from undesirable tree species (hardwood sprouts in a planted pine forest) which grow faster than the planted tree seedlings reducing sunlight and causing early growth to suffer.
Perennial stream	A stream that flows throughout a majority of the year (greater than 90 percent of the time) and flows in a well-defined channel.
Pesticides	A chemical used to kill pests, including insecticides, herbicides, and rodenticide.
Pollution	Presence of substances that impairs or renders harm to life, health and the productivity of the environment, or is offensive to the senses.
Reforestation	Re-establishing a forest by planting, seedling or natural regeneration methods on a harvested tract of land.
Riprap	Relatively large stone placed on erodible sites to reduce the impact of rain or surface runoff.
Rolling dip	Shallow depression built diagonally across a road or trail to remove storm water (broad based dip).
Runoff	Portion of precipitation that flows from a drainage area or in open channels.
Scalping	Site preparation work by plow or blade removing unwanted vegetation by cutting and peeling back the upper layer of the mineral soil and forest floor.
Seedbed	Soil exposed by natural or artificial means to promote germination of seeds and seedling growth.
Seed tree	(1) A type of regeneration harvest where between 4 to 20 trees are left per acre to provide a seed source on the harvested tract. Trees left for seed should be of superior quality, healthy, and vigorous seed producers. In most cases, the old stand is partially removed in a single harvest cut that leaves only the seed trees standing. These remaining trees are left for three to seven years until the forest of seedlings become established from seed. After the new stand is established, the seed trees are harvested, leaving the young seedlings to produce a new even-aged forest. (2) Trees remaining for three to seven years to produce seeds and allow for regeneration of a new-even aged forest.
Silviculture	The scientific practice of establishing, tending and reproducing forest stands with desired characteristics. It is based on the knowledge of tree characteristics and environmental requirements.
Single tree	The practice of managing a forest by periodically selecting and harvesting scattered individual trees while preserving its natural appearance.
Site preparation	Preparing land for planting, direct seeding, or natural regeneration by clearing, herbicide application, burning, disking, bedding, and/or raking.
Skid trail	Temporary path used to drag or transport felled trees or logs and other material to a logging deck.
Skidding	Transporting felled trees or logs by dragging them behind heavy equipment to the log deck.
Slope	Degree deviation of a surface from the horizontal, measured as a numerical ratio. (2:1, the first number is the horizontal distance-run, and the second number is the vertical distance-rise); percent (a 2:1 slope is 50 percent); or degree (the angle from the horizontal plane, 90 degrees is the vertical maximum and 45 degrees being a 1:1 slope).
Soil erosion	Process by which soil particles are detached and transported by wind, water, and gravity to a downslope or downstream point.
Soil Productivity	Capacity of soil to produce a specified plant, or sequence of plants, under a specific system of management.

Shelterwood	Similar to the seed tree harvest, the shelterwood cut leaves between 21 to 60 trees per acre on a tract to act as a seed source. The greater number of trees reduces the chance of loss or damage through windthrow and insures better seed dispersal. In addition, when the timber is harvested the landowner can expect to receive more money because of the greater volume available for harvest.
Snags	Dying or dead trees still standing that provide perch sites, food source for insects, and dens for wildlife.
Stewardship	The management of land in such a manner as to supervise any forest practices, keep records of events, and protect and conserve the natural resources.
Streamside Management Zone (SMZ)	Area adjacent to both sides of perennial and intermittent stream and perennial water bodies where extra precaution is used in carrying out forest practices to protect water quality.
Stumpage	(1) The value of timber as it stands uncut in the woods, or in general sense, the standing timber itself; or (2) The sum paid the owner for the tree as it stands on the stump.
Suspended sediments	Soil particulate matter (both mineral and organic) which can be seen with the unaided eye being transported by water (suspended).
Succession	The replacement of one plant community by another over time. For example, an abandoned farm, if left to nature, would gradually go through different stages of vegetative cover.
Thinning	Cutting or removing certain trees to allow those remaining to grow faster. Usually a commercial operation in younger stands which provides an income to the landowner while improving the remaining forest.
Timber cruise	To inventory a stand of timber to determine the harvestable products and volume. Cruises should be conducted before timber sales to estimate the value of the stumpage (standing timber).
Timber stand	A group of trees large enough to incorporate forest management practices.
Timber Stand Improvement	Improving the quality of a forest stand by removing or deadening undesirable species or trees to achieve desired stocking and species composition. TSI practices include applying herbicides, burning, girdling, or cutting.
Turnout	(1) A widened space in a road to allow vehicles to pass one another, (2) A ditch that drains water away from roads.
Uneven-aged	The practice of managing a forest by periodically selecting and harvesting individual trees or groups of trees while preserving its natural appearance. Most common in hardwood forests. A forest composed of trees of different ages and sizes.
Understocked	Where a forest contains too few trees per acre as determined by the open areas throughout a forest.
Water bar	Diversion ditch and/or hump across a road or trail on the uphill side for carrying storm water runoff to vegetation, forest floor, ditch or dispersion area, preventing increased volume and velocity which causes soil movement and erosion.
Watershed	Area within which all runoff collects into a single stream or drainage system, exiting through a single mouth or outlet.
Wildfires	Uncontrolled fires occurring on forestland, brushland and grassland.
Wildlife openings	Areas composed and maintained in early successional vegetation to provide diversity in the forest.
Windthrow	"Up rooted" trees due to winds. Usually associated with a stand recently thinned.

Contact your natural resources professional for more specific assistance.

REFERENCES:

STATE AGENCIES/DEPARTMENTS

Contacts and References			
Organization	**Responsibilities**	**Address**	**Phone Number/ Website**
Cooperative Extension Service-UGA	Assist on questions related to agricultural and animal production; home, soils, and water; analysis of soil and water tests.	Conner Hall University of Georgia Athens, GA 30602	Local - See blue pages of phone book www.ces.uga.edu
Georgia Department of Natural Resources - Wildlife Resources Division	Assistance on wildlife resources questions and technical assistance.	2111 U. S. Highway 278, S.E. Social Circle, Georgia 30025	770-918-6416 www.ganet.org/dnr/wild/
Georgia Forestry Commission	Develop Forest Resource Managment Plan and technical assistance.	P. O. Box 819 Macon, Georgia 31202-0819	1-800-GA TREES
Georgia Soil and Water Conservation Commission	Assistance on erosion and sediment control	624 South Milledge Ave. Athens, Georgia 30605	706-542-3065
Pollution Prevention Assistance Division (P^2AD)	Pollution prevention references	Georgia DNR 7 Martin Luther King, Jr. Dr. Suite 450 Atlanta, Georgia 30334	404-651-5120 or 1-800-685-2443 www.ganet.org/dnr/p2ad/
Warnell School of Forest Resources-Extension Forest Resources	Research, technology transfer, and educational materials	Warnell School of Forest Resources Forest Resources Building UGA Athens, Georgia 30602	706-542-2686 www.forestry.uga.edu/efr/
Warnell School of Forest Resources-Center for Forest Business	Research and education on improved planning and financial analyses to industry and landowners.	Warnell School of Forest Resources Forest Resources Building UGA Athens, Georgia 30602	706-542-2686 www.uga.edu/wsfr

FEDERAL AGENCIES

Contacts and References			
Organization	**Responsibilities**	**Address**	**Phone Number/ Website**
USDA - Farm Service Agency (FSA)	Aerial photographs, past and current land use	355 East Hancock Avenue Athens, Georgia 30601	Local - See blue pages of phone book www.fsa.usda.gov
USDA - Natural Resources Conservation Service	Conservation planning, woodland conservation planning, conservation cost share programs, and soil maps	355 East Hancock Avenue Athens, Georgia 30601	Local - See blue pages of phone book www.nrcs.usda.gov

Contact your natural resources professional for more specific assistance.

FEDERAL AGENCIES (CON'T)

Contacts and References			
Organization	**Responsibilities**	**Address**	**Phone Number/ Website**
U. S. Forest Service	Information on quality land management, multiple-use land opportunities, and recreational and *aesthetic* land use	1755 Cleveland Highway Gainesville, Georgia 30501	770-536-0541 www.fs.fed.us

NON-PROFIT ORGANIZATIONS/ASSOCIATIONS

Contacts and References			
Organization	**Responsibilities**	**Address**	**Phone Number/ Website**
Association of Consulting Foresters	Lists of consulting foresters and assistance programs to landowners	Addresses listed for association members	Visit the following website to obtain an updated listing www.acf-foresters.com
The Conservation Fund	Establishing partnerships to conserve land and water; combining economic and environmental goals through conservation easements, land acquisition, and other sustainable conservation solutions.	Georgia Office P. O. Box 1362 Tucker, Georgia 30085	770-414-0211 www.conservationfund.org
Georgia Forestry Association	Landowner advocacy, tax policies, state legislation, and education.	500 Pinnacle Court Suite 505 Norcross, Georgia 30071	770-416-7621 www.gfagrow.org
Georgia Wildlife Federation	Landowners working to protect Georgia's wildlife and natural communities; updates on issues	1930 Iris Drive Conyers, Georgia 30094	770-929-3350 www.gwf.org
The Nature Conservancy	Landowners working to preserve plants, animals and natural communities, and the lands and water they need to survive	Georgia Field Office 1401 Peachtree Street, NE Suite 236 Atlanta, Georgia 30309	404-873-6946 www.tnc.org

Contact your natural resources professional for more specific assistance.

NOTES:

Georgia Forest Assessment System is a cooperative project of the the University of Georgia, College of Agricultural and Environmental Sciences, Cooperative Extension Service; the Georgia Forestry Commission; the Pollution Prevention Assistance Division and the Wildlife Division, Georgia Department of Natural Resources; State Soil and Water Conservation Commission; USDA, Natural Resources Conservation Service; The Conservation Fund; and Georgia Forestry Association.

This publication is an adaptation of the National Forest*A*Syst , Forest*A*Syst: A self-assessment guide for managing your forest for timber production, wildlife, recreation and aesthetics, and water quality (revised from the North Carolina prototype version) author Rick A. Hamilton, Department of Forestry, North Carolina State University.

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