

FINAL FOREST STEWARDSHIP STANDARD

for the

OZARK - OUACHITA REGION (USA) Version 6.4

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OZARK-OUACHITA WORKING GROUP
OF THE
FOREST STEWARDSHIP COUNCIL -U.S.

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Introduction

The Ozark-Ouachita region of FSC includes the state of Missouri and highland portions of Arkansas, Oklahoma, and Kansas. It adjoins the Mississippi Alluvial Valley region to the east and south, the Lake States-Central Hardwoods region to the north, and extends westward into Oklahoma and Kansas until prairies begin. Forest owners and managers who are uncertain if they fall within the Ozark-Ouachita region and those who operate in both the Ozark-Ouachita region and one or more of the contiguous FSC regions should consult with FSC-U.S. and an FSC-accredited certifier to determine which standard(s) should apply to their management.

Description of the region

Forested areas in this region are critically important for water quality maintenance functions, and recreational amenities in the region are high. Forest types range from oak-hickory, to oak-hickory-pine-cedar, to pine savanna. The region supports a wide diversity of hardwood tree species as well as other species.

The Ozark Mountain Forests were a refuge for lowland species during the Pleistocene Era. Fossilized bones of the arctic muskox on the Buffalo River suggest that species from the far north migrated into the region (Smith 1967). Accordingly, pockets of the region remain highly biodiverse. Endemic earthworms, cavefish, crawfish, and vascular plants make highland areas sensitive to degradation from disturbances.

Only about three percent of the region's forests remain intact (Ricketts et al. 1999). The upper level forests are in relatively good condition, but lowland forests have been severely modified and destroyed to make room for agriculture in the valleys. Logging, fire suppression, and grazing also contribute to habitat loss. The Boston Mountains (in the Ozark subregion) and the Ouachita Mountains contain the only relatively intact blocks in the region, and corridors between those two areas are degraded by agricultural activities. Much of the region was heavily logged around the beginning of the 20th century, and stands over 100 years old are rare.

The quality of water and aquatic habitat in the Boston Mountains and Springfield Plateau is the highest of any North American temperate ecoregion (Abell et al. 2000). This region hosts forty-four species of aquatic snakes, salamanders and frogs, as well as fifteen endemic species of crawfish. The Ouachitas are even more remarkable: twenty-one of thirty-four species of crawfish are endemic to the region.

The high quality of water in the region is accompanied by vulnerability to its degradation. In parts of the region, limestone surface geology is underlain by karst formations, and surface water moves quickly into underground streams and aquifers. Because of this, surface water pollution has significant potential to affect domestic water supply quality and long-term regional water quality. Nitrate pollution from poultry manure applications has already affected groundwater quality in some communities.

Prior to European settlement, the Ouachita Mountain subregion was the largest shortleaf pine forest in the world (Smith 1986). Over 3,000,000 acres were dominated by shortleaf pine, sometimes in pure stands that grew in open, glade-like conditions. Shortleaf stands have been nearly completely converted to loblolly plantations and loblolly-hardwood semi-natural forests. The Ozark subregion has been subject to degradation from high-grade logging, and poor silvicultural management has resulted in forests of low economic value where more valuable forests once stood.

The region's forests are under various pressures. There is pressure to shorten harvest rotations in both hardwood and pine forests. Fragmentation of forest ownership and physical fragmentation is a growing problem. Hardwood and hardwood-softwood stands are being converted to pine plantations, which are more economically profitable in the short run. Water quality is compromised by agricultural and forestry activities. There is pressure, particularly with respect to hardwood growing stock, toward harvest in excess of growth.

The social context in this region is characterized by conflicts between individual property rights and community interests, with property rights historically retaining the upper hand in most disputes. Non-industrial private landowners own the majority of the region's forests. Education and income in this region are often below national averages. Forest management ranges from good to poor to nonexistent. There is little or no conflict between tribal rights and the management of the region's forests.

The Ouachita sub-region differs from the Ozark sub-region in several ways. The former has historically undergone more intensive silvicultural management including extensive conversion to plantations of both native and non-native pines. The latter, although having undergone extensive logging throughout during the early part of the 20th century, retains more natural characteristics than the Ouachitas.

The native fire regime of the Ouachita subregion included non-catastrophic fires every five to ten years in many stands. That regime has been interrupted by road and land-use fragmentation. In the Ozark subregion, where hardwoods dominate, the fire regime has not been altered as dramatically as it has been in the Ouachitas. Due to these and other differences, there are a few cases where indicators in the regional standard vary between sub-regions.

Literature Cited

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Working group history

In January 1997, the FSC-US contracted with Nick Brown, a consulting ecologist, to begin coordination of the Ozark-Ouachita Working Group (OOWG). Over 300 contacts were made between January and June of 1997, to loggers, consulting foresters, landowners, environmental groups, community leaders, and forest management companies. Although leading industrial companies such as Georgia-Pacific, International Paper and Weyerhaeuser Corporation were contacted at this time, they all elected not to participate in the drafting of a Standard for this region. From those stakeholders contacted, a group of 20 forestry leaders volunteered to participate on the working group.

Although all 20 members were not present at each meeting of the OOWG or each drafting committee meeting, chamber balance was maintained at all meetings. A list of working group members is attached in Appendix B. Throughout the operation of the Working Group, decisions were made by consensus. Members not present at meetings were routinely consulted by telephone. The OOWG is a standing group, which will remain constituted for the purpose of making future revisions in the Regional Standard. The present coordinator will continue in that capacity. A review-and-revision process will be initiated no less than three years following approval by FSC.

Throughout 1997, 1998 and 1999, the OOWG met in Russellville, Arkansas (AR Tech University), Fox, Arkansas (Meadowcreek Project), Salem, Missouri (Pioneer Forest), and Tallequah, Oklahoma (near the forests of the Cherokee Nation). The coordinator also traveled extensively through the region to discuss FSC and the OOWG with relevant stakeholders. In 2001 and 2002, three working group meetings were held in Fayetteville, Arkansas and Mountain View, Arkansas.

During the creation of National Indicators by the FSC-US Working Group (USWG) from January through October of 2000 and their approval by the USWG in January 2001, the progress of all regional working groups was halted. Subsequent to the creation of the National Indicators, the OOWG began to focus on harmonization of its Regional Standard with other Regional Standards. This was accomplished by the presence of an FSC-US Working Group member at all OOWG drafting committee meetings.

The OOWG was reconvened in December 2001 with Kent Landrum, a forest landowner in Stone County, AR serving as regional coordinator. In February 2002, a drafting committee was formed which worked on the integration of FSC-US National Indicators with previous OOWG drafts. The resulting draft of the regional standard was submitted for public review from March 18, 2002 until May 18, 2002. In May 2002, representatives of SmartWood used this draft at Pioneer Forest to field test the regional standard. Results of that field test were subsequently incorporated into the draft standard.

During the public review, the Working Group solicited input that would strengthen the content and viability of the regional standard. At this time the Working Group conducted extensive outreach by letter, phone and meeting, to professional foresters and organizations in the region, soliciting comments on the draft regional standard.

The drafting committee of the FSC-US Working Group also responded to the Regional Draft Standard during the public review period. In May 2002 and in August 2002, the OOWG regional coordinator met with members of this committee to integrate results of the public commentary and FSC-US Working Group drafting committee into the Regional Standard.

On October 8, 2002, the FSC-US Standards Committee approved this standard.

Principle Level Failure

The Ozark-Ouachita region has the highest quality water of any non-boreal North American ecoregion. Parts of the region have a karst topography, which allows surface water to intrude into aquifers quickly, and which consequently allows contaminants to degrade groundwater. Because of the importance of maintaining water quality in the region, and because of the susceptibility of the region to water quality degradation, failure to meet the requirements of indicator 5.5.a. (see below) is considered a major failure, and certification is not possible until that requirement is met.

In the Ozark-Ouachita region, an FSC Principle level failure (which precludes award of certification until appropriately corrected, or necessitates revocation of certification) results from the fundamental inability to achieve the goal of an FSC Principle through a major non-compliance that

1. has continued for one year or longer,
2. is systematic throughout the management organization,
3. has created adverse effects over a wide area, which is defined as either the entire set of lands controlled by the forest owner or manager or a subwatershed, which ever is smaller (for definition of subwatershed see:
http://watershed.org/news/fall_94/terminology.html.)

In addition failure to meet any of the following indicators is considered as a principle level failure:

*5.5.a. Forest management maintains (does not degrade) or enhances water quality, fish habitats, or riparian habitats.

Periodic Review Process

The FSC-US Board will periodically review this standard during the accreditation period. At a minimum a comprehensive review will be conducted no later than 6 months prior to the expiration of the endorsement period (e.g. no later than January 7, 2009). During the review period the FSC-US Board will solicit feedback from Working Group members, certificate holders, certifying bodies, FSC members, interested individuals and the general public. Information from scoping will be reviewed by the FSC-US Board and incorporated into the standard as needed.

FINAL FOREST STEWARDSHIP STANDARD

for the

OZARK OUACHITA REGION (USA)

Version 6.3

Applicability Note to Regional Standard regarding certification of federal lands. The process for certifying federal lands must comply with the FSC-US Board approved Federal Lands Policy and Federal Lands Findings, both of which are available at www.fscus.org. Certifiers should consult the Federal lands policy and findings to determine whether there are FSC-US approved indicators specific to the type of federal property being assessed, which must be used in addition to these regional standards.

Applicability note to this standard: This standard does not abridge or compromise the legal rights of landowners in any way, beyond the voluntarily accepted constraints that are explicitly stated herein.

PRINCIPLE #1: COMPLIANCE WITH LAWS AND FSC PRINCIPLES

Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is signatory, and comply with all FSC Principles and Criteria.

1.1. Forest management shall respect all national and local laws and administrative requirements.

1.1.a. Forest (see Glossary) management plans and operations comply with federal, state, county, municipal, and tribal laws, case law, and regulations.

1.1.b. Forestry operations meet or exceed the current state forest practice regulations, best management practices for forestry, and other protective measures for water quality that exist within the state(s) or other appropriate jurisdiction(s) in which the operations occur.

1.1.c. The forest owner or manager shares public information, provides open records, and conducts procedures for public participation, as required by law.

1.2. All applicable and legally prescribed fees, royalties, taxes and other charges shall be paid.

1.2.a. Taxes on forestland and timber, as well as other fees related to forest management, are paid in a timely manner and in accordance with federal, state, county, municipal, and tribal laws.

1.3. In signatory countries, the provisions of all binding international agreements such as CITES, ILO Conventions, ITTA, and Convention on Biological Diversity, shall be respected.

1.3.a. The forest owner or manager complies with treaties ratified by the U.S. Senate, which includes treaties with American Indian tribes.

1.4. Conflicts between laws, regulations and the FSC Principles and Criteria shall be evaluated for the purposes of certification, on a case by case basis, by the certifiers and the involved or affected parties.

Applicability note to Criterion 1.4.: When the certifier (i.e., the FSC-accredited certification body) and the forest owner or manager determine that compliance with laws and the FSC Principles cannot be simultaneously achieved, the matter is referred to FSC.

1.5. Forest management areas should be protected from illegal harvesting, settlement and other unauthorized activities.

1.5.a. The forest owner or manager implements measures to prevent illegal and unauthorized activities in the forest.

For example, efforts may include posting boundary notices; using gates, making periodic inspections, and reporting suspected illegal or unauthorized activities to the proper authorities.

1.5.b. If theft and/or poaching take place, their occurrence and impacts are documented and assessed. Modifications in the management plan and in field activities are made to address the problem(s).

1.6. Forest managers shall demonstrate a long-term commitment to adhere to the FSC Principles and Criteria.

Applicability note to Criterion 1.6.: Assessment of this criterion is guided by FSC Policy and Guidelines on certification including: Partial Certification for Large Ownerships (FSC POL 20-002). May 2000
(http://www.fsc.org/en/whats_new/documents/Docs_cent/2)

1.6.a. Where opportunities afford, FSC Principles and Criteria are explicitly supported in the public arena.

For example:

- *The management plan explicitly endorses FSC Principles and Criteria.*
- *Where they conform to FSC management standards, a history of participation in the Wetlands Reserve Program, the Forest Incentive Program, the Conservation Reserve*

Program, state heritage programs, and other available stewardship incentive programs are employed.

1.6.b. The forest owner or manager notifies the certifying body of changes in ownership and/or management planning.

PRINCIPLE #2: TENURE AND USE RIGHTS AND RESPONSIBILITIES
Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.

2.1. Clear evidence of long-term forest use rights to the land (e.g., land title, customary rights, or lease agreements) shall be demonstrated.

2.1.a. The forest owner or manager documents and makes available information on legal and customary use rights, (including the nature of the use rights) associated with the forest. These rights include both those held by the landowner and those held by other parties.

2.1.b. Boundaries of land ownership are clearly identified on the ground by the forest owner or manager prior to commencement of management activities.

2.2. Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.

2.2.a. Forest owners or managers allow well established customary uses of the forest (by local people or the wider public) which are sustained and encouraged only to the extent that they are consistent with the conservation of forest resources and the objectives stated in the management plan.

2.2.b. Where necessary to assure the safety of the public, to protect the forest resources, augment a forest owner's income derived from the forest resources, or address additional landowner liability, some recreational activities are allowed only on a limited or exclusive access basis.

2.2.c. On forests where customary use rights and traditional and cultural areas/sites exist, the forest owner or manager consults with concerned groups in the planning and implementation of forest management activities with a view to obtaining their free and informed consent. .

2.3. Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial

magnitude involving a significant number of interests will normally disqualify an operation from being certified. (see Criterion 4.5.)

2.3.a. The forest owner or manager maintains relations with community stakeholders to identify disputes in their early stages. If disputes arise, the forest owner or manager initially attempts to resolve them through open communication, negotiation, and/or mediation. If negotiation fails, federal, state, local, and/or tribal laws are employed to resolve claims of land tenure (see Glossary).

2.3.b. The forest owner or manager provides information regarding unresolved and ongoing disputes over tenure and rights of use to the certifying body.

PRINCIPLE #3: INDIGENOUS PEOPLE'S RIGHTS

The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.

3.1. Indigenous peoples shall control forest management on their lands and territories unless they delegate control with free and informed consent to other agencies.

3.1.a. Forest management planning on tribal lands includes a process for input by tribal members in accordance with their laws and customs.

3.1.b. Forest management on tribal lands takes place only after securing the informed consent of tribes or individuals whose forest is being considered for management.

3.1.c. The forest owner or manager utilizes tribal experience, knowledge, practices, and insights in forest management planning and operations on tribal lands when requested to do so by the tribal landowner.

3.2. Forest management shall not threaten or diminish, either directly or indirectly, the resources or tenure rights of indigenous peoples.

3.2.a. The forest owner or manager identifies and contacts American Indian groups that have current legal or customary use rights to the management area, and invite their participation in jointly planning forestry operations that affect their resources.

3.2.b. On lands adjacent to tribal lands or falling within watersheds that affect tribal lands, steps are taken to ensure that forest management does not adversely affect tribal resources.

3.3. Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in cooperation with such peoples, and recognized and protected by forest managers.

3.3.a. The forest owner or manager invites the participation of tribal representatives in the identification of sites of current or traditional significance within the property proposed for certification.

For example, areas of special significance may include:

- ceremonial, burial, or village sites
- areas used for hunting, fishing, or trapping
- current gathering areas for culturally important or ceremonial materials, such as basket materials, medicinal plants, or plant materials used in dances
- current gathering areas for subsistence uses, such as mushrooms, berries, acorns, etc.

3.3.b. Forest owners or manager invite tribal representatives to help develop measures to protect or enhance areas of special significance.

3.3.c. Confidentiality of disclosures is maintained in keeping with applicable laws and the requirements of tribal representatives.

3.4. Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation is formally agreed upon with their free and informed consent before forest operations commence.

3.4.a. The forest owner or manager respects the confidentiality of tribal knowledge and assists in the protection of tribal intellectual property rights.

3.4.b. A written agreement is reached with individual American Indians and/or tribes prior to commercialization of their indigenous intellectual property, traditional knowledge, and/or forest resources. The individuals and/or tribes are fairly compensated when such commercialization takes place. .

3.4.c. When traditional ecological knowledge is requested for use in forest management, protocols are jointly developed with local tribes to protect the intellectual property rights of those tribes.

PRINCIPLE #4: COMMUNITY RELATIONS AND WORKERS' RIGHTS
Forest management operations shall maintain or enhance the long-term social and economic well being of forest workers and local communities.

4.1. The communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services.

4.1.a. Forest work is offered in ways that create quality work opportunities for employees, contractors, and their workers.

For example, quality work may include the following attributes:

- *Employee and contractor relationships that are long term and stable*
- *A mixture of diverse tasks that require varying levels of skill*
- *Opportunities for advancement*
- *A comprehensive package of benefits*
- *Opportunities for employee and contractor participation in decision-making*

4.1.b. Equity in the conditions of employment is maintained between local workers and non-local workers doing the same job. (e.g., remuneration, benefits, safety equipment, training, and workman's compensation)

4.1.c. The forest owner or manager utilizes qualified local foresters, loggers, and contractors. The forest manager and his or her contractors give preference to qualified local workers. .

For example:

- *Employment, , and contractual opportunities are offered to people of local communities before they are offered to workers outside the region.*
- *Timber is offered for local processing and use.*
- *Locally based insurance and financial institutions are used.*

4.1.d. The forest owner or manager supports training opportunities for workers to improve their skills.

4.1.e. The forest owner or manager procures goods and services locally.

4.1.f. The forest owner or manager contributes to public education about forestry practices in conjunction with schools, community colleges, and/or other providers of training and education.

For example:

- *Forests are offered as a training and/or educational resource.*
- *The forest owner or manager makes presentations about responsible forestry in local schools.*

4.1.g. Employee compensation and hiring practices meet or exceed the prevailing local norms for work that requires equivalent education, skills, and experience.

4.1.h. The forest owner or manager and his or her contractors comply with the letter and intent of applicable state and federal laws and regulations (see also 1.1.a).

For example:

- *Employees are not discriminated against because of gender, race, religion, age, and/or disability with respect to hiring, dismissal, remuneration, or other conditions of employment.*
- *People who work as employees are classified as employees, and not as contractors.*

4.2. Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.

4.2.a. The forest owner or manager and/or his or her contractors develop and implement safety programs and procedures that include:

- Well-maintained and safe machinery and equipment
- Use of safety equipment appropriate to each task
- Documentation and posting of safety procedures in the workplace
- Educational efforts
- Contracts with safety requirements
- Safety records, training reports, and certificates

4.3. The rights of workers to organize and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labor Organization (ILO).

Applicability Note to Criterion 4.3.: Compliance with this criterion can be accomplished with guidance from FSC Certification and the ILO Conventions, FSC Policy paper and Guidelines, 20 May 2002.

4.3.a. The forest owner or manager and his or her contractors develop effective and culturally sensitive mechanisms to resolve disputes between workers and management.

Examples of culturally sensitive mechanisms are:

- *Translation and cultural interpretation, when needed*
- *Cross-cultural training, when needed to integrate the workers*

4.3.b. Employees are provided all rights afforded under the Federal Fair Labor Practices Act.

4.3.c. Forest workers are free to associate with other workers for the purpose of advocating for their own employment interests.

4.4. Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups directly affected by management operations.

Applicability Note to Criterion 4.4.: People and groups directly affected by management operations may include: employees and contractors of the landowner, neighbors, fishers and hunters, recreationalists, local water users, and forest products processors.

4.4.a. The forest owner or manager contributes to designing and achieving goals for the use and protection of forest and natural resources as articulated in local and regional conservation plans.

4.4.b. The owner or manager of a large forest provides opportunities for people and groups affected by management operations to provide input into management planning.

4.4.c. Individuals and groups affected by management operations are apprised of

proposed forestry activities (e.g., logging, burning, spraying, and traffic) and associated environmental and aesthetic effects in order to solicit their comments or concerns. Significant concerns are addressed in management policies and plans.

4.4.d. Significant archeological sites and sites of cultural, historical, or community significance, as identified through consultation with state archeological offices, tribes, universities, and local experts, are designated as special management zones or otherwise protected during harvest operations.

4.5. Appropriate mechanisms shall be employed for resolving grievances and for providing fair compensation in the case of loss or damage affecting the legal or customary rights, property, resources, or livelihood of local peoples. Measures shall be undertaken to avoid such loss or damage. (see Criterion 2.3.)

4.5.a. The forest owner or manager attempts to resolve grievances and mitigate damage resulting from forest management activities through open communication and negotiation prior to legal action.

4.5.b. The forest owner or manager and his or her contractors have adequate liability insurance.

PRINCIPLE #5: BENEFITS FROM THE FOREST

Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

5.1. Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.

5.1.a. The forest owner or manager is financially able to support long-term forest management, i.e., decades rather than quarter-years or years.

5.1.b. Financial planning, such as tax and estate planning, is adequate to support long-term management activities.

5.1.c. Responses (for example, increases in harvests or debt load) to short-term financial factors, such as fluctuations in the market, requirements for cash flow, need for sawmill equipment and log supplies, are limited to levels that enable fulfillment of the management plan.

5.1.d. Investment and reinvestment in forest management are sufficient to fulfill long-term management objectives and maintain and/or restore forest health and productivity.

For example, recognition is given to the value of retained standing timber in addition to assets generated from timber harvests.

5.1.e. The forest owner or manager integrates the environmental impacts and costs assessment required in Criterion 6.1 with the social cost assessment required in Criterion 4.4 and ensures that the financial resources of the forest operation can cover these costs.

5.2. Forest management and marketing operations should encourage the optimal use and local processing of the forest's diversity of products.

5.2.a. Preference is given to local, financially competitive, value-added processing and manufacturing facilities.

5.2.b. New markets are explored and developed for common but less-used species (e.g., ash, maple, and cherry), grades of lumber, or an expanded diversity of forest products (e.g., furniture).

5.2.c. The technical and financial specifications of some sales of forest products are scaled to allow successful competition by small businesses.

For example, small-scale harvesting, on-site milling and small-scale drying are used when they match the owner's environmental and financial requirements.

5.2.d. When non-timber products are harvested, the management and use of those products (e.g., wood and vine craft stock, potpourri) are incorporated into the management strategy.

5.3. Forest management should minimize waste associated with harvesting and on-site processing operations and avoid damage to other forest resources.

5.3.a. Felling, skidding/yarding, bucking, sorting, and handling are carried out in a way that maximizes log scale and grade.

For example, merchantable logs are removed from the forest floor.

5.3.b. Timber harvest is implemented in a way that protects the integrity of the residual stand. Provisions concerning acceptable levels of residual damage are included in operational contracts.

For example, bumper trees are utilized and equipment is selected and used in a way that minimizes unintentional damage to crop trees.

5.3.c. After woody debris has been left on site to provide nutrient cycling and habitat, additional byproducts of harvest and in-the-field milling operations are used as an input in other productive processes.

For example:

- *Chips and sawdust are used for mulch, filler, or fuel.*
- *Small diameter boles are used for fence posts, flooring, and furniture stock.*

5.4. Forest management should strive to strengthen and diversify the local economy, avoiding dependence on a single forest product.

5.4.a. Forest uses and products are diversified through management practices that simultaneously maintain forest composition, structures, and functions.

For example, compatible uses may include recreation, ecotourism, hunting, fishing, and specialty products.

5.4.b. The forest owner or manager reinvests in the local economy and the community through both ongoing capital investment and active civic engagement.

5.5. Forest management operations shall recognize, maintain, and, where appropriate, enhance the value of forest services and resources such as watersheds and fisheries.

5.5.a. Forest management practices maintain (do not degrade) or enhance water quality, fish habitat and riparian habitats. (see also Criterion 6.5) *Note: Failure to meet this indicator is interpreted as a major failure.*

5.6. The rate of harvest of forest products shall not exceed levels which can be permanently sustained. (see also Criterion 8.2.)

5.6.a. The sustainability of harvest levels is based on clearly documented growth and regeneration data, site index models, and soils classification as well as taking account of other uses. The required level of documentation is determined by the scale and intensity of the operation.

For example:

- *Stocking rates and volumes conform to projections of the management plan.*
- *The age-class distribution required for sustainability and predicted yields in volume are justified by empirical data.*

5.6.b. Records of harvest and growth show that growth rates meet or exceed harvest rates over a period of no more than 10 years (after the age-class distribution commensurate with long-term sustainability is achieved). Exceptions to this constraint may be granted to the forest owner or manager whose periodic re-entry cycle is longer than 10 years. In such cases, allowable harvest is determined by examining the volume of re-growth and harvest since the previous harvest and the owner's or manager's commitment to allow an equivalent amount of re-growth before additional harvests.

PRINCIPLE #6: ENVIRONMENTAL IMPACT

Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

6.1. Assessment of environmental impacts shall be completed -- appropriate to the scale, intensity of forest management and the uniqueness of the affected resources -- and adequately integrated into management systems. Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities. Environmental impacts shall be assessed prior to commencement of site-disturbing operations.

Applicability Note to Criterion 6.1.: Small landowners that practice low-intensity forestry may meet this requirement with brief, informal assessments. More extensive and detailed assessments (e.g., formal assessments by scientists) are expected by mid-scale and large landowners and/or those who practice more intensive forest management (see Glossary).

The assessment of environmental impacts consists of: (1) an assessment of current conditions; (2) an assessment of relevant historical conditions; (3) an assessment of potential short- and long-term impacts; and (4) an assessment of actual impacts of management activities. (see also indicators 7.1.f. and 8.2.d.)

6.1.a. Using scientific and local expertise, an assessment of current conditions is completed that includes:

- ecological processes, such as disturbance regimes
- common plants, animals, and their habitats
- vulnerable, imperiled, and critically imperiled plant community types (G1-G3, N1-N3, and S1-S3 according to NatureServe or natural heritage databases)
- sensitive, threatened, and endangered species and their habitats (according to state and federal listings) and G1-G3, N1-N3, and S1-S3 species and their habitats (according to NatureServe or natural heritage databases)
- water resources
- soil resources
- the activities and conditions on adjacent lands (see also subcriteria 7.1.b.7.)

6.1.b. Using scientific and local expertise, current ecological conditions are compared to the historical conditions within the landscape context by using the baseline factors identified in 6.1.a.

6.1.c. Prior to the commencement of management activities, an assessment of potential short-term environmental impacts and their cumulative effects is carried out.

6.1.d. Using assessments derived from the above information, options are developed and implemented to maintain and/or restore the long-term ecological functions of the forest. (see also subcriterion 7.1.c.)

6.2. Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collecting shall be controlled.

Applicability Note to Criterion 6.2.: This criterion applies to sensitive, threatened, and endangered species and their habitats (according to state and federal listings) and G1-G3, N1-N3, and S1-S3 species and their habitats (according to NatureServe and natural heritage databases); and to vulnerable, imperiled, and critically imperiled plant community types (G1-G3, N1-N3, and S1-S3 according to NatureServe or natural heritage databases).

6.2.a. If a database indicates the likely presence of a species or plant community type noted above, either the forest owner or manager conducts a survey prior to management activities being carried out (to verify the species' presence or absence) or manages as though the species were present. If an applicable species is determined to be present, its location is reported to the manager of the database.

For example:

- *US Department of Interior, The Nature Conservancy, the National Speleological Society, NatureServe, and state heritage and game and fish agencies are consulted.*
- *The presence of caves, wetlands, glades, and unique landscape features may indicate the occurrence of listed species.*

6.2.b. When a species or plant community type noted above is present or assumed to be present, the necessary modifications are made in both the management plan and its implementation. Management activities are compatible with the maintenance, improvement, or restoration (see Glossary) of the species and its habitat.

6.2.c. Conservation areas with buffer zones for *existing* applicable species and plant community types are created and/or maintained to enhance the viability of the population or community, including their connectivity within the landscape.

6.3. Ecological functions and values shall be maintained intact, enhanced, or restored, including:

a) Forest regeneration and succession.

b) Genetic, species, and ecosystem diversity.

c) Natural cycles that affect the productivity of the forest ecosystem.

Note: For management of old-growth forests and stands, see indicators 9.3.a. and 9.3.b.

6.3.a. Forest regeneration and succession

6.3.a.1. Natural regeneration is used rather than plantings, except when the latter are necessary to restore a specific habitat, stand type, and/or a species. (see also indicator 10.1.a.).

For example:

- *High quality seed trees are maintained in the stand.*
- *Fire is used to promote regeneration of fire-controlled species. (pine)*
- *Advanced regeneration is present before harvest. (hardwoods)*

6.3.a.2. Diameter-limit cuts are prohibited. High grading and complete removal of low-grade trees is not allowed.

6.3.a.3. The forest owner or manager uses the following information to make management decisions:

- landscape patterns (e.g., land use/land cover, non-forest uses, habitat types)
- ecological characteristics of adjacent forested stands (e.g., age, productivity, health, and species' requirements)
- frequency, distribution, and intensity of natural disturbances

Applicability Note to indicator 6.3.a.3.: This indicator may have limited applicability for an owner or manager of a small or mid-sized forest property because of their limited ability to coordinate their activities with other owners or managers within the landscape, or to significantly maintain and/or improve landscape-scale vegetative patterns.

6.3.a.4. Only species of trees native to the Ozark-Ouachita region that are suited to the latitude are used for plantings. Local seed stock is used when it is available.

6.3.a.5. The forest owner or manager maintains or restores portions of the forest to the range and distribution of age classes of trees that result from processes that would naturally occur on the site.

6.3.a.6. Silvicultural practices provide disturbances and generate stand conditions that result in a successional phase that would occur naturally on the site.

6.3.a.7. In the Ozark subregion, harvest openings with no retention (clear-cuts) are limited to two acres. Harvest openings, in which at least 20 – 30% of the canopy is retained (shelterwood and variable retention cuts), are limited to 20 acres. (This requirement is for natural forest management. See 10.2.a for acreage limitations for plantation management). Tree-species retention is representative of natural forest composition in the area.

Note to indicator 6.3.a.7.: Although the Ozark and Ouachita subregions are physiographically similar, the geologic underlays and plant community types of the two subregions are very different. Karst topography underlies the Ozark Mountains, and that makes the Ozarks more vulnerable to underground water pollution than the Ouachitas. While the Ozarks are almost exclusively hardwood or hardwood-softwood forests, the

Ouachitas include softwood and softwood-hardwood stands as well. For these reasons, smaller harvest openings are appropriate in the Ozarks, and larger openings may be acceptable in the Ouachitas. The opening size allowed for the Ouachitas given below is a maximum size, and smaller openings may be required to maintain the quality of surface water (see also Criterion 6.5).

See indicator 10.2.a. for the limits to harvest-opening size for plantations in both subregions.

6.3.a.8. In the Ouachita subregion, when even-aged management (see Glossary) is employed, live trees and other native vegetation are retained within the harvest unit in a proportion and configuration (see Glossary) that is consistent with the characteristic natural disturbance regime in each plant community type (see Glossary), unless retention at a lower level is necessary for the purposes of restoration or rehabilitation. Even-aged opening sizes are limited to a maximum of 20 acres.

6.3.a.9. Clear-cuts and shelterwood cuts are limited to 10% of the timber-producing area per decade.

6.3.a.10. The percentage limits of indicator 6.3.a.9. may be increased to harvest dead trees that result from unforeseen natural events, such as storms, disease or insect pests, if the additional removal is ecologically justified.

6.3.b. Genetic, species, and ecosystem diversity

6.3.b.1. The forest owner or manager selects trees for harvest, retention, and planting in a manner that maintains or enhances the productive capacity, genetic diversity and quality, and species diversity of the residual stand.

6.3.b.2. A diversity of habitats for native species (see Glossary) is protected, maintained, and/or enhanced.

For example:

- *Adequate quantities of dead and down wood, snags, and den trees are maintained.*
- *Vertical and horizontal structural complexity exists.*
- *Understory species diversity is evident.*
- *Coarse and fine woody debris is well distributed.*
- *Habitats and refugia exist for sedentary species and those with special habitat requirements.*
- *Harvest openings create corridors for the migration of wildlife.*

6.3.b.3. Rare and under-represented species of trees are maintained.

For example, where restored and natural forests are to be maintained, several species are used in plantings.

6.3.b.4. The naturally occurring mid-story and understory tree layer, shrub layer, and herbaceous layer appropriate to the successional stage are maintained.

6.3.c. Natural cycles that affect the productivity of the forest ecosystem

6.3.c.1. Coarse woody debris, in the form of large fallen trees, large logs, and snags of various sizes, is maintained.

6.3.c.2. Post-harvest management activities maintain soil fertility, structures, and functions.

For example:

- *Slash is randomly distributed across the harvest area.*
- *Burning is used only where it is appropriate to the natural disturbance regime.*

6.3.c.3. Prescriptions for salvage harvests balance ecological and economic considerations.

For example:

- *Den trees and snags are maintained.*
- *Natural background levels of 'pest' populations are allowed before actions to control pest are carried out.*

6.3.c.4. If declining fertility or forest health are observed, related to soil degradation, the forest owner or manager modifies soil management techniques.

For example:

- *Primary management objectives shift from commercial production to restoration.*
- *Site preparation is minimized.*
- *The design and construction of the road system is upgraded (or abandoned).*
- *The lightest practical equipment with the lowest ground pressure is used.*
- *Whole-tree harvesting is discontinued, and tops are left in the forest.*
- *Longer rotations than currently employed and a diversity of species are used in lieu of artificial fertilization.*
- *Natural, early successional processes are allowed or encouraged.*

6.4. Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.

Applicability Notes:

When forest management activities (including timber harvest) create and maintain conditions that emulate an intact, mature forest or other successional phases that may be under-represented in the landscape, the management system that created those conditions may be used to maintain them, and the area may be considered as a representative sample for the purposes of meeting this criterion.

Ecologically viable representative samples are designated to serve one or more of three purposes: (1) to establish and/or maintain an ecological reference condition; (2) to create or maintain an under-represented ecological condition (e.g., successional phases of a forest type or natural community (see Glossary)); and (3) to protect a feature that is sensitive, rare, or unique in

the landscape. Areas serving the purposes of (1) and (2) may move across the landscape as under-represented conditions change, or may be fixed in area and managed to maintain the desired conditions. Areas serving the purposes of (3) are fixed in location.

For managed forest communities in the Ozark-Ouachita region, ecologically mature or late-successional phases (not including old growth) are generally under-represented and would qualify as representative sample areas under purposes 1 and 2. Tolerant or long-lived mid-tolerant species (e.g., white pine.) typically dominate such stands. Depending on the site and forest community, characteristics may include a well-developed understory flora, relative stability of species composition, multi-layered canopies, stable or declining live timber volume, live trees in upper quartile of expected diameter growth for the site, presence of recognized late-successional indicator species (such as certain mosses, lichens or other epiphytes), and accumulation of large snags and large downed woody material. Examples of classification systems that include some of these concepts are: "Types of Old Growth Forests" as defined by Minnesota Department of Natural Resources (<http://www.dnr.state.mn.us/forests/oldgrowth/types.html>), and, Minnesota DNR Old-Growth Forest Policy - Goals and Results, at <http://www.dnr.state.mn.us/forests/oldgrowth/policy.html>.

For representative sample areas that may move across the landscape as conditions change (purposes 1 and 2), the length of time that an area is maintained as a representative area will vary with the rarity of the ecosystem type and specific ecological value to be conserved, the uniqueness of the represented condition, the rate at which areas with similar characteristics develop.

Examples of representative samples fixed in place and serving purpose 3 include relatively exceptional features such as fens, vernal pools, areas surrounding caves, and areas of special soils containing endemic plant species.

In most cases, intact old-growth (see Glossary) will qualify as representative sample under purpose 3 due to their rarity in the Ozark-Ouachita region. Unentered old-growth stands (see Glossary) are also prime candidates for designation as representative sample areas under purpose 3. In both cases, the burden is on the landowner/manager to demonstrate that these areas should NOT qualify as representative sample areas under purpose 3. Other very old forests (over 150 years old) that do not meet the Ozark-Ouachita strict definition of "old growth" (e.g., there is some evidence of past harvesting) should also be considered as potential representative sample areas under purpose 3

Forests of all sizes may be conducive to protection of fixed features, such as rock outcrops and bogs. Medium sized and large forests may be more conducive to the maintenance of successional phases and disturbance patterns than small forests.

While public lands (see Glossary) are expected to bear primary responsibility for protecting representative samples of existing ecosystems, FSC certification of private lands can contribute to such protection.

Representative samples may be protected solely by the conditions of the certificate and/or through the use of conservation easements or other instruments of long-term protection.

6.4.a. Forest owners and managers protect and reserve ecologically viable representative areas that are appropriate to the scale and intensity of the operation.

6.4.b. Where existing protected areas within the landscape are not of adequate size and configuration to serve as representative samples of commonly occurring forest types as defined above, owners or managers of mid-sized and large forests, whose properties are conducive to the establishment of such areas, designates ecologically viable areas to serve these purposes.

Applicability notes to 6.4.b.: When evaluating the need for representative sample areas, the assessment should consider the relative rarity and degree of protection of similar areas at the state-wide scale, or at the biophysical region scale (as defined by state Natural Heritage programs) if Natural Heritage program or other assessments suggest that there is significant variation in community or ecosystem types between biophysical regions. Where existing protected areas adequately represent commonly occurring forest types in the landscape, these areas may suffice as the representative samples and no representative sample need be established on the forest

The owner or manager of a small forest may not be expected to designate representative sample(s) of commonly occurring forest types, except where there is an exceptional opportunity to contribute to an under-represented protected areas system. For small forests or low-intensity managed forests, this criterion is satisfied by meeting the standards of Criteria 6.2.

The size and configuration of the representative areas depend on the:

- (1) extent of representation of their forest types within the landscape (less protection calls for more representative samples);*
- (2) ecological importance of setting aside stands and tracts to other conservation efforts (a minimum size and ecological value is needed to make representative samples useful); and*
- (3) intensity of forest management within the forest and across the landscape (a less intensively managed forest or landscape calls for less area of representative samples, and a more intensively managed forest or landscape calls for more).*

6.4.c. The size and arrangement and time scale of on-site representative sample areas are designated and justified using assessment methods and sources of up-to-date information described in 6.1.

Note: Known protected off-ownership areas that are in proximity to the management unit may be used to meet the goal in the landscape.

6.4.d. Unless exceptional circumstances can be documented, known areas of intact old-growth forests are designated as representative sample areas under purpose 3. (See Applicability Note under 6.4 above) and are reviewed for designation as High Conservation Value Forests (HCVF- see also Applicability note under 6.3). Known areas of unentered stands of old-growth are carefully reviewed, screened for uniqueness, and considered as potential representative sample areas prior to undertaking any active management within them (see Applicability Note under 6.4). Old growth stands not designated as either a HCVF or a representative sample area are, at a minimum, managed to maintain their old-growth structure, composition, and ecological functions under purpose 3.

6.4.e. Forest owners and managers of public land determine the size and extent of representative sample areas through a transparent planning process that is accessible and responsive to the public.

6.4.f. The process and rationale used to determine the size and extent of representative samples are explicitly described in the public summary.

6.4.g. Forest owners and managers of large, contiguous public forests (see glossary) create and maintain representative protected areas sufficient in size to allow natural disturbances to occur in their natural state.

6.5. Written guidelines shall be prepared and implemented to: control erosion; minimize forest damage during harvesting, road construction, and all other mechanical disturbances; and protect water resources. (see Criterion 7.1.)

Logging and Site Preparation

6.5.a. Logging operations and construction of roads and skid trails are conducted such that soil compaction, surface erosion, or sediment transport into streams and other bodies of water is minimized.

For example, soils are either dry enough or frozen enough to minimize disturbance and compaction.

6.5.b. Logging damage to regeneration and residual trees is minimized during harvest operations.

6.5.c. Silvicultural techniques and logging equipment vary with slope, erosion-hazard rating, and/or soil instability in order to minimize soil disturbance. Areas that exhibit an extreme risk of erosion or landslide are excluded from logging.

For example, deepening and scouring of existing drainages due to silvicultural or logging operations are absent.

6.5.d. Plans for site preparation specify the following mitigations to minimize impacts to the forest resources:

- (1) Slash is concentrated only as much as necessary to achieve the goals of site preparation and fuel reduction.
- (2) Scarification of soils is limited to the minimum necessary to achieve successful regeneration of desired species.
- (3) Topsoil is minimally disturbed.

Transportation System (including permanent and temporary haul roads, skid trails, and landings)

6.5.e. The transportation system is designed, constructed, maintained, and/or reconstructed to minimize the extent of the road network and its potential adverse cumulative effects.

For example:

- *Road density is minimized.*
- *Displacement of soil and the sedimentation of streams, as well as impacts to water quality, are minimized.*
- *Patches of habitat and migration corridors are conserved.*
- *The integrity of riparian management zones (see Glossary) and buffers (see Glossary) surrounding other valuable ecological elements (e.g., wetlands, habitat for sensitive species, and interior old-growth forest) is conserved.*

6.5.f. Access to temporary and permanent roads is controlled to minimize impacts to soil and biota while allowing legitimate access, as addressed by Principles 3 and 4 and identified in the management plan.

For example:

- *Roads without a weather resistant surface (e.g., soil or native-surfaced roads) are used only during periods of weather when conditions are favorable to minimize road damage, surface erosion, and sediment transport.*
- *Access is restricted to roads not immediately necessary for management purposes.*

6.5.g. Failed drainage structures or other areas of active erosion caused by roads and skid trails are identified, and measures are taken to correct the drainage problems and stabilize erosion.

Stream and Water Quality Protection

6.5.h. Streamside-management zones (SMZs) are established for all perennial and intermittent watercourses. Single-tree harvest may be carried out in SMZs, except in no-cut zones. A minimum of 80% crown cover is maintained throughout the SMZ. A 10-foot no-cut zone (from each bank) is established to maintain stream-bank stability for perennial and intermittent watercourses.

6.5.i. Watercourse crossings are minimized and constructed perpendicularly to the waterway. Where stream banks are highly erodible, mats, culverts, or bridges are used to avoid damage to the stream.

6.5.j. Use of chemicals is prohibited in SMZs.

6.5.k. Skid trails and operation of heavy equipment are prohibited in SMZs, except at designated crossings.

6.5.l. Forest owners and managers do not allow livestock grazing to degrade water quality.

6.5.m. Streamside-management zone widths are:

***Streamside management zone widths
 for perennial and intermittent watercourses****

<i>Slope (%)</i>	<i>0</i>	<i>10</i>	<i>20</i>	<i>30</i>	<i>40</i>	<i>50</i>
<i>Soil erosion susceptibility</i>			<i>SMZ width (ft)</i>			
<i>Slight</i>	75	75	80	105	130	155
<i>Moderate</i>	75	75	100	140	170	200
<i>Severe</i>	75	90	130	170	210	250

All distances are horizontal measure (per side) from the mean high water mark (see Glossary).

**No-cut-zone rules are covered in the text of section 6.5.h.*

6.6. Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks.

Applicability Note to Criterion 6.6.: This criterion is guided by FSC policy paper and guidelines: Chemical Pesticides in Certified Forests: Interpretation of the FSC Principles and Criteria. Revised July 2002. In addition, World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited.

6.6.a. The forest owner or manager employs silvicultural systems, integrated pest management, and strategies to control vegetation through credible scientific analysis have been proven to have the lowest number of non-target effects . Chemical pesticides are used only when non-chemical management practices have been proven ineffective or require expenditures exceeding economic gains. .

Components of silvicultural systems, integrated pest management, and strategies to control unwanted vegetation may include:

- *Creation and maintenance of habitat that discourages pests and encourages native predators*
- *Evaluation of pest populations and establishment of action thresholds*
- *Diversification of species composition (see Glossary) and structure*
- *Use of mechanical methods*
- *Use of prescribed fire*

6.6.b. The forest owner or manager develops written strategies to control pests which are documented in the management plan and which are in accordance with official FSC policy. (see Criterion 7.1.)

6.6.c. When chemicals are used, a written prescription is prepared that fully describes the risks and benefits of their use and the precautions that workers employ. Records are kept of pest occurrences, control measures, and incidences of worker exposure to chemicals.

6.6.d. Over time, targeting of chemical applications narrows, e.g. there is more injection (by hypo hatchet) and less broadcast application (by spraying).

6.6.e. Only chemical mixtures whose full composition is known and listed on the label, including carriers, surfactants, and inert ingredients are permitted for use.

6.6.f. Chemicals and potentially dangerous biological materials are used in strict accordance with label advisories and legal requirements.

6.6.g. Use of chemical pesticides, fungicides, herbicides, and fertilizers is limited to ground applications (i.e., aerial application is not used).

6.7. Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner at off-site locations.

6.7.a. Management operations incorporate programs to recycle and reuse resources when such programs are available. Waste oil is disposed of in containers at off-site collection centers.

6.7.b. The forest owner or manager implements a procedure to track the effectiveness of his or her waste-disposal system.

6.7.c. In the event of a spill of hazardous material, the forest owner or manager sees that the material is immediately contained, reports the spill as required by applicable regulations, and engages qualified personnel to perform the appropriate removal and remediation.

6.7.d. Broken and leaking equipment and parts are repaired or removed from the forest; discarded parts are taken to a designated disposal facility.

6.7.e. Equipment is parked away from riparian management zones, sinkholes, or ground water supplies, where fluids might leak into them.

6.8. Use of biological control agents shall be documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.

Applicability Note to Criterion 6.8.: Genetically improved organisms (e.g., Mendelian crossed) are not considered to be genetically modified organisms (i.e., results of genetic engineering), and may be used. The prohibition of genetically modified organisms applies to all organisms, which includes trees. This criterion is guided by the FSC policy paper: GMOs: Genetically Modified Organisms: Interpretation for FSC. Revised October 1999.

6.8.a. Exotic (i.e., non-native) non-invasive predators or biological control agents are used only as part of a pest management strategy for the control of exotic species of plants, pathogens (see Glossary), insects, or other animals when other pest control methods are ineffective. Such use is contingent on peer-reviewed scientific evidence that the agent(s) in question is non-invasive and is safe for native species.

6.9. The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.

6.9.a. The use of exotic species of plants (see Glossary) is contingent on peer-reviewed scientific evidence that any species in question is non-invasive and does not diminish biodiversity. If non-invasive, exotic species of plants are used, their provenance and the location of their use are documented, and their ecological effects are actively monitored.

6.9.b. The forest owner or manager develops and implements control measures for invasive, exotic plants.

6.10. Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion:

- a) Entails a very limited portion of the forest management unit; and**
- b) Does not occur on high conservation value forest areas; and**
- c) Will enable clear, substantial, additional, secure, long term conservation benefits across the forest management unit.**

Note to Criterion 6.10.: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

PRINCIPLE #7: MANAGEMENT PLAN

A management plan -- appropriate to the scale and intensity of the operations -- shall be written, implemented, and kept up to date. The long-term objectives of management, and the means of achieving them, shall be clearly stated.

7.1. The management plan and supporting documents shall provide:

- a) Management objectives.**
- b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and a profile of adjacent lands.**

- c) Description of silvicultural and/or other management system, based on the ecology of the forest in question and information gathered through resource inventories.**
- d) Rationale for rate of annual harvest and species selection.**
- e) Provisions for monitoring of forest growth and dynamics.**
- f) Environmental safeguards based on environmental assessments.**
- g) Plans for the identification and protection of rare, threatened and endangered species.**
- h) Maps describing the forest resource base including protected areas, planned management activities and land ownership.**
- i) Description and justification of harvesting techniques and equipment to be used.**

Applicability Note to Principle 7: The management plan may consist of a variety of documents that are not necessarily unified into a single planning document but which represent an integrated strategy for managing the forest.

7.1.a. Management objectives

7.1.a.1. A written management plan is prepared that includes the landowner's short-term and long-term vision, goals, and objectives (ecological, silvicultural, social, and economic). The objectives are specific, achievable, and measurable. *Appropriate to the scale, intensity, and context of management*, the plan includes descriptions and rationales for the elements of forest management. (see Appendix A)

7.1.b. Description of forest resources to be managed, environmental limitations, land use and ownership status, socioeconomic conditions, and profile of adjacent lands

7.1.b.1. Using statistically valid data collected proportional to the scale and intensity of management, the forest owner or manager describes the following resources:

- timber
- fish and wildlife
- harvested non-timber forest products (e.g., botanical and mycological)
- non-economic, natural resources (e.g., water and soil)

7.1.b.2. The inventory includes information on methods of data sampling and their reliability.

7.1.b.3. The management plan includes descriptions of the following elements: special management areas; species and communities that are protected by Criterion 6.2.; and other ecologically sensitive features in the forest.

7.1.b.4. The management plan includes a description of past land uses and incorporates this information into goals and objectives.

7.1.b.5. The management plan identifies the legal status of the forest and its resources (e.g., ownership, usufruct rights, treaty rights, easements, deed restrictions, and leasing arrangements).

7.1.b.6. The management plan identifies relevant cultural and socioeconomic issues (e.g., traditional and customary use rights, issues of access, recreational uses, and issues of employment), conditions (e.g., composition of the workforce, stability of employment, and changes in forest ownership and tenure), and areas of special significance (e.g., ceremonial and archeological sites).

7.1.b.7. The management plan incorporates landscape-level considerations within the ownership and among adjacent and nearby lands, which include:

- natural disturbance regimes
- successional patterns
- major bodies of water
- critical habitats
- riparian corridors shared with adjacent ownerships

7.1.b.8. The management plan includes a landscape-level forest management strategy.

For example, analyses are included for:

- *regional conservation*
- *the regional protected-areas system*
- *commercial and industrial development*
- *the conservation of watersheds*
- *forest connectivity and fragmentation*
- *wildlife habitats and corridors*
- *buffer zones*

7.1.c. Description of silvicultural and/or other management system, based on the ecology of the forest in question and information gathered through resource inventories.

7.1.c.1. The silvicultural system(s) and prescriptions are based on resource inventories and upon the integration of ecological and economic characteristics (e.g., successional processes, soil characteristics, existing species composition and structures, desired future conditions, and market conditions). (see also indicator 6.3.a.)

7.1.c.2. Prescriptions are prepared prior to harvesting, site preparation, pest control, burning, and planting, and are made available to people who carry out the prescriptions.

7.1.d. Rationale for the rate of annual harvest and species selection

7.1.d.1. The management plan includes reliable data on growth, yield, stocking, regeneration, and market information. (see also indicator 5.6.b.)

7.1.d.2. The method of calculating the periodic allowable cut is detailed in the management plan.

7.1.d.3. The method for determining the periodic allowable cut includes strategies for addressing the effects of insect pests, ice, wind throw, drought, and fire.

7.1.d.4. Species selection meets the economic goals and objectives of the forest owner or manager, while maintaining or improving the ecological composition, structures, and functions of the forest.

7.1.e. Provisions for monitoring forest growth and dynamics

7.1.e.1 The management plan contains a description of monitoring objectives and protocols (see also Criterion 8.2.).

7.1.f. Environmental safeguards based on environmental assessments (see also Criterion 6.1.)

Note to subcriterion 7.1.f.: The Working Group considers this subcriterion sufficiently explicit and measurable. Indicators are not required.

7.1.g. Plans for the identification and protection of rare, threatened, and endangered species.

7.1.g.1. The management plan describes the activities to conserve species and plant community types listed in Criterion 6.2.

7.1.h. Maps describing the forest resource base including protected areas, planned management activities and land ownership

7.1.h.1. The management plan includes maps of the forest's characteristics, such as: relevant landscape-level factors; property boundaries; roads; areas of timber production; forest types by age class; topography; soils; riparian zones (see Glossary); springs and wetlands; archaeological sites; areas of cultural significance and/or customary use; locations of species and communities that are protected by criterion 6.2; and designated High Conservation Value Forests.

7.1.i. Description and justification of harvesting techniques and equipment to be used.

7.1.i.1. The management plan describes, in general terms, the rationale for the type and size of the harvesting machinery and techniques employed in the context of stand and landscape conditions (see also Criterion 6.5.).

7.2. The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.

7.2.a. Relevant provisions of the management plan are modified (1) every 10 years or in accordance with the frequency of harvest for the stand or forest, whichever is longer; (2) in response to effects from illegal and/or unauthorized activities (e.g., damage to roads, depletion of timber and non-timber resources), (3) in response to changes caused by natural disturbances, and/or (4) in response to the results of monitoring.

7.2.b. Management plans are reviewed at least every five years and revised at least every ten years.

7.3. Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plans.

(see indicators 4.1.b. and 4.1.c.)

Note to Criterion 7.3.: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

7.4. While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan, including those listed in Criterion 7.1.

Applicability Note to Criterion 7.4.: The forest owner or manager of private forests may withhold proprietary information (e.g., the nature and extent of their forest resource base, marketing strategies, and other financial information). (see also Criterion 8.5.)

Note to Criterion 7.4.: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

PRINCIPLE #8: MONITORING AND ASSESSMENT

Monitoring shall be conducted -- appropriate to the scale and intensity of forest management -- to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

Applicability Note to Principle 8: On small and medium-sized forests, an informal, qualitative assessment could be appropriate. On large forests and intensively managed forests, formal, quantitative monitoring is probably required.

8.1. The frequency and intensity of monitoring should be determined by the scale and intensity of forest management operations as well as the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of change.

- 8.1.a. Implementation of the management plan is periodically monitored to assess:
- The degree to which the management vision, goals, and objectives have been achieved
 - Deviations from the management plan
 - Unexpected effects of management activities
 - Social and environmental effects of management activities

8.2. Forest management should include the research and data collection needed to monitor, at a minimum, the following indicators:

- a) Yield of all forest products harvested.**
- b) Growth rates, regeneration, and condition of the forest.**
- c) Composition and observed changes in the flora and fauna.**
- d) Environmental and social impacts of harvesting and other operations.**
- e) Cost, productivity, and efficiency of forest management.**

8.2.a. Yield of all forest products harvested

8.2.a.1. The forest owner or manager maintains records of standing timber and timber harvested by species, volume, and grade.

8.2.a.2. The forest owner or manager maintains records of the yield of harvested, non-timber forest products by species, volume, and grade.

8.2.a.3. The forest owner or manager monitors and records significant, unanticipated removal of forest products (i.e., theft and poaching).

8.2.b. Growth rates, regeneration, and condition of the forest

- 8.2.b.1. A technically sound inventory system is maintained to monitor:
- timber growth, mortality, stocking, and regeneration
 - stand composition and structure
 - effects of disturbances to the resources (e.g., disease, wind, fire, damage by insects and/or mammals)
 - abundance, regeneration, and habitat conditions of non-timber forest products
 - quality and quantity of water
 - quality of terrestrial and aquatic habitat (see Glossary)
 - ecosystem composition, structures, and functions
 - soil characteristics
 - vulnerability to fire and pests

8.2.c. Composition and observed changes in the flora and fauna

8.2.c.1. The forest owner or manager periodically monitors the forest for changes in major habitat elements and changes in the occurrence of sensitive, threatened, or endangered species.

8.2.d. Environmental and social impacts of harvesting and other operations

8.2.d.1. Monitoring is carried out within six months following each timber harvest or other site disturbing operation. Monitoring includes:

- impacts to the transportation system
- regeneration of native species of plants
- water quality
- threatened and endangered species and their habitats
- the condition of sensitive environmental features (e.g., seeps, vernal pools, fens), and special geomorphic features (e.g., cliffs, caves, overhangs)
- the condition of pest populations

For example: Before and after management activities, water samples upstream and downstream are sent to state experiment stations for analysis.

8.2.d.2. Social impacts are monitored and management strategies are adjusted as needed.

8.2.d.3. The creation and/or maintenance of local jobs, and the public's responses to management activities are monitored.

8.2.d.4. Management of sites of special significance (see indicators 3.2 and 3.3) is jointly monitored with tribal representatives to determine the adequacy of management prescriptions.

8.2.e. Cost, productivity, and efficiency of forest management

8.2.e.1. Financial aspects of forest management are monitored in accordance with provisions of Principle 7, and Criteria 5.1. and 5.2. Records allow analyses of costs, efficiency, productivity, and tax benefits and liabilities of forest management.

8.3. Documentation shall be provided by the forest manager to enable monitoring and certifying organizations to trace each forest product from its origin, a process known as the "chain-of-custody."

Note to Criterion 8.3.: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

8.4. The results of monitoring shall be incorporated into the implementation and revision of the management plan.

8.4.a. Discrepancies between outcomes (i.e., yields, growth, ecological changes) and expectations (i.e., plans, projections, anticipated impacts) are appraised and taken into account in the subsequent management plan.

8.5. While respecting the confidentiality of information, forest managers shall make publicly available a summary of the results of monitoring indicators, including those listed in Criterion 8.2.

Applicability Note to Criterion 8.5.: The forest owner or manager of private forests may withhold proprietary information (e.g., the nature and extent of their forest resource base, marketing strategies, and other financial information).

8.5.a. A summary of the information generated by the monitoring program (including the effects of forest management on environmental conditions, populations of threatened and endangered species and their habitats, and water quality), is maintained up-to-date and is available upon request either at no cost or at a reasonable price.

PRINCIPLE #9: MAINTENANCE OF HIGH CONSERVATION VALUE FORESTS

Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach. High Conservation Value Forests are those that possess one or more of the following attributes:

- a) Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia); and/or large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance**
- b) Forest areas that are in or contain rare, threatened or endangered ecosystems**
- c) Forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control)**
- d) Forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).**

Applicability note to Principle 9: Forest and community types in the Ozark-Ouachita region that have HCVF attributes include:

- *forest and other community types listed by NatureServe as critically endangered, endangered, and vulnerable ecosystems (G1, G2, G3) in the region, unless further refined by consultations with heritage programs, local native plant societies, local experts, and ENGOS;*
- *old-growth stands and forests;*

- *roadless areas (areas without roads, logging roads, or skid trails), larger than 500 acres;*
- *habitats for threatened or endangered species, either intact or in need of restoration;*
- *unique and sensitive geomorphic features, such as caves and rock outcrops; and buffers designed to protect their integrity, and*
- *forested wetlands or glades, including springs, fens, and seeps.*

9.1. Assessment to determine the presence of the attributes consistent with High Conservation Value Forests will be completed, appropriate to scale and intensity of forest management.

9.1.a. Attributes and locations of High Conservation Value Forests (see “applicability to old-growth” note in Criterion 6.3.) are determined by:

- (1) identification of globally scaled HCVF attributes that may be present in the forest
- (2) identification and description of nationally, regionally, and locally scaled HCVF attributes and areas that may be present in the landscape and/or certified forest
- (3) consultations with stakeholders and scientists
- (4) public review of proposed HCVF attributes and areas
- (5) integration of information from consultations and public review into proposed HCVF delineations
- (6) delineation by maps and habitat descriptions

9.2. The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof. (see also indicator 9.1.a.)

9.2.a. Consultations are held with stakeholders and scientists to confirm that proposed HCVF locations and their attributes have been accurately identified. On public forests, a transparent and accessible public review of proposed HCV attributes and HCVF areas is carried out. Information from stakeholder consultations and other public review is integrated into HCVF descriptions and delineations.

9.3. The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.

9.3.a. Old-growth forests and stands are designated HCVF.

9.3.b. Intact old-growth forests (see Glossary) and unentered old-growth stands (see Glossary) are protected for their intrinsic aesthetic and ecological values, and are allowed to undergo natural successional processes. Management to control exotic species may be carried out.

9.3.c. Stands and forests designated as HCVPs, which have been entered for timber harvest, are managed to assure that both the quality of their HCVP attributes and their area are maintained or enhanced over the long term.

9.3.d. The forest owner or manager of HCVPs (forests and/or stands) coordinates conservation efforts with owners and/or managers of other HCVPs within their landscape.

9.3.e. Unique and sensitive geomorphic features and their biological components remain intact. No physical management activities take place in HCVP areas that are sensitive to very light impacts.

For example, cliffs, caves, rock outcrops, and glades are protected from change and degradation by human uses.

9.4. Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain and enhance the applicable conservation attributes.

Note to Criterion 9.4.: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

PRINCIPLE #10: PLANTATIONS

Plantations shall be planned and managed in accordance with Principles and Criteria 1 - 9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

10.1. The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.

10.1.a. Where plantations exist, they are managed to restore the natural habitat of game and non-game species.

10.2. The design and layout of plantations should promote the protection, restoration, and conservation of natural forests, and not increase pressures on natural forests. Wildlife corridors, streamside zones, and a mosaic of stands of different ages and rotation periods, shall be used in the layout of the plantation, consistent with the scale of the operation. The scale and layout of plantation blocks shall be consistent with the patterns of forest stands found within the natural landscape.

10.2.a. On areas already converted to plantations, even-aged harvests lacking within-stand retention are limited to 20 acres or less in size in the Ozark subregion and 40 acres or less in size in the Ouachita subregion, unless a larger opening can be justified by scientifically credible analyses (see Glossary).

10.2.b. Regeneration in previously harvested areas reaches a mean height of at least ten feet or achieves canopy closure (see Glossary) before adjacent areas are harvested.

10.2.c. Buffers between harvest units are arranged to allow contiguous populations of native species.

10.3. Diversity in the composition of plantations is preferred, so as to enhance economic, ecological, and social stability. Such diversity may include the size and spatial distribution of management units within the landscape, number and genetic composition of species, age classes, and structures.

10.3.a. Forests containing plantations are managed to create and maintain structural and species diversity that results in viable wildlife habitat and populations across the landscape, and long-term soil maintenance and replenishment.

For example:

- *Thinnings provide light to the forest floor, which enhances diversity of understory species.*
- *Less frequent cycles of burning allow the establishment of well-developed herbaceous, shrub, and mid-story layers.*

10.3.b. Plantation-management activities are planned to generate and maintain long-term employment.

10.4. The selection of species for planting shall be based on their overall suitability for the site and their appropriateness to the management objectives. In order to enhance the conservation of biological diversity, native species are preferred over exotic species in the establishment of plantations and the restoration of degraded ecosystems. Exotic species, which shall be use only when their performance is greater than that of native species, shall be carefully monitored to detect unusual mortality, disease, or insect outbreaks and adverse ecological impacts.

10.4.a. The use of exotic species of plants is contingent on credible scientific analysis that any species in question is non-invasive and does not diminish biodiversity. If non-invasive exotic plants are used, their provenance and the location of their use are documented, and their ecological effects are actively monitored.

10.4.b. Potentially invasive species of exotic plants are not used (see also indicator 6.9.a.).

10.5. A proportion of the overall forest management area, appropriate to the scale of the plantation and to be determined in regional standards, shall be managed so as to restore the site to a natural forest cover.

10.5.a. The ratio of plantations to natural and semi-natural forests (see Glossary), as well as a plantation's spatial distribution, maintains and/or restores the landscape to a

condition that includes a diversity of plant community types, wildlife habitats, and ecological functions similar to a mosaic of native forest types.

10.5.b. Where forestlands were previously converted to plantations, a percentage of the total converted plantation management area will be restored to natural and semi-natural forest. The minimum required percentage is:

- for 100 acres or less, at least 10 percent.
- for 101 - 1,000 acres, at least 15 percent.
- for 1,001 to 10,000 acres, at least 20 percent.
- for 10,000+ acres, at least 25 percent

10.5.c. Areas of forest and/or plantation to be restored to natural conditions are chosen through a landscape analysis that focuses on enhancing ecological integrity and habitat connectivity.

For example, areas that are best suited for such restoration include riparian areas, migration corridors between areas of existing natural forest, and unstable slopes.

10.6. Measures shall be taken to maintain or improve soil structure, fertility, and biological activity. The techniques and rate of harvesting, road and trail construction and maintenance, and the choice of species shall not result in long-term soil degradation or adverse impacts on water quality, quantity, or substantial deviation from stream course drainage patterns. (see Criterion 6.5. and its indicators)

10.6.a. Site preparation maintains herbaceous and shrub root systems. .

For example: Minimal scarification (chisel plowing) and well-timed burns prepare the site for regenerating the stand.

10.6.b. Site disturbances do not result in siltation of waterways or degradation of aquatic habitats

10.7. Measures shall be taken to prevent and minimize outbreaks of pests, diseases, fire, and invasive plant introductions. Integrated pest management shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than chemical pesticides and fertilizers. Plantation management should make every effort to move away from chemical pesticides and fertilizers, including their use in nurseries. The use of chemicals is also covered in Criteria 6.6 and 6.7.

10.7.a. Management techniques are used that minimize reliance on chemicals.

For example:

- *A diversity of species is maintained within and among stands.*
- *A diversity of age classes is maintained across the landscape.*
- *Rotation lengths are extended.*
- *Sufficient habitat for native species of predators is maintained within or adjacent to*

the stand

- *Acceptable background levels of pest populations are maintain with the aid of a monitoring program.*

10.8. Appropriate to the scale and diversity of the operation, monitoring of plantations shall include regular assessments of potential on-site and off-site ecological and social impacts (e.g., natural regeneration, effects on water resources and soil fertility, and impacts on local welfare and social well-being), in addition to those elements addressed in principles 8, 6, and 4. No species should be planted on a large scale until local trials and/or experience have shown that they are ecologically well-adapted to the site, are not invasive, and do not have significant negative ecological impacts on other ecosystems. Special attention will be paid to social issues of land acquisition for plantations, especially the protection of local rights of ownership, use or access.

Note to Criterion 10.8.: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

10.9. Plantations established in areas converted from natural forests after November 1994 normally shall not qualify for certification. Certification may be allowed in circumstances where sufficient evidence is submitted to the certification body that the manager/owner is not responsible directly or indirectly for such conversion.

Note to Criterion 10.9.: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

Appendix A – Elements of a management plan (subcriterion 7.1.a.)

1. Management systems
 - a. Statement of vision, goals, and objectives
 - b. Monitoring management effectiveness
 - c. Monitoring forest conditions
 - d. Equipment and personnel needs
 - e. Employee and contractor policies
 - f. Mapping

2. Ecological and silvicultural systems
 - a. Ecological description of forest and landscape
 - b. Rationale for selection of silvicultural system
 - c. Regeneration/harvest strategies and equipment
 - d. Restoration strategies
 - e. Evaluation of environmental impacts
 - f. Pest control (vegetation, pathogens, insects, vertebrates)
 - g. Soil and water conservation
 - h. Method of harvest calculation by species and product
 - i. Management of sites of special significance
 1. Streamside management zones
 2. Representative samples of existing ecosystems
 3. Rare plant community types (vulnerable, imperiled, critically imperiled)
 4. Rare species (sensitive, threatened, or endangered)
 5. High Conservation Value Forests
 - j. Landscape-level analysis and strategy
 1. Gap analysis
 2. Watershed analysis
 3. Ecoregional conservation analysis
 - k. Transportation system
 1. Roads, skid trails, landings
 2. Stream crossings
 - l. Fish and wildlife and their habitats (including non-game species)
 1. Hunting, fishing, trapping, and gathering
 2. Habitat management strategies
 - m. Fire management
 1. Fuel load management
 2. Prescribed fires
 3. Wildfires
 - n. Non-timber forest products
 1. Methods and annual rates of harvest, by species and products
 2. Regeneration strategies

Appendix A – Elements of a management plan (subcriterion 7.1.a.), continued

3. Socioeconomic issues
 - a. Community relations
 1. Public access to and use of the forest
 2. Public input process
 3. Employee and contractor policies and procedures
 4. Stakeholder notification
 5. Aesthetic values
 - b. Rights
 1. Legal rights
 2. Customary rights
 3. Usufruct rights
 4. American Indian and other indigenous issues
 - a. Protection of legal and customary rights
 - b. Intellectual property
 - c. Integration of tribal concerns into forest management
 - c. Conservation of historical and cultural resources
 1. Archeological elements
 2. Historical elements

Appendix B. Working Group Members

Name	Affiliation	FSC chamber
(A)Fran Alexander	landowner	economic
Brad Archote	Meadowcreek Project	environmental
Doug Bane	Cherokee Nation	economic
Vernon Bates	Ouachita Watch League	environmental
Alice Beets	Nat'l Center for Appropriate Tech.	environmental
*Al Brooks	Arkansas Watershed Alliance	environmental
Aaron Chadwick	landowner	economic
Herb Culver	AR Public Policy Panel	environmental
Jim Derby	OK Pecan Growers' Association	economic
(A)Hank Dorst	land manager	economic
Rex Dufour	Nat'l Center for Appropriate Tech.	social
John Harbison	Ozark Chapter, Sierra Club	environmental
George Imrie	Newton County Wildlife Association	environmental
Bob Knight	OK Pecan Growers Association	economic
(A)Fay Knox	Nat'l Network of Forest Practitioners	social
(A)Kent Landrum	Non-industrial private forest owner	social
Brownie Ledbetter	AR Public Policy Panel	social
Teresa Maurer	Nat'l Center for Appropriate Tech.	social
Bruce McMath	Central AR Sierra Club	environmental
(A)Larry Morris	Larry Morris Timber Services	economic
James Norman	landowner/logger	economic
John Norris	Forest Land Management	economic
Bryan Rogers	Central AR Sierra Club	environmental
Tim Snell	landowner	environmental
(A)Clint Trammel	Pioneer Forest	economic
(A)Roger Watson	Spider Creek Mill	economic

With the exception of the following members*, each member of the working group:

- 1.) was contacted by phone in January-February 2002
- 2.) was apprised of the upcoming February drafting meeting
- 3.) was given access to OOWG draft 4.0 (from December, 2001)
- 4.) was asked their status (active or inactive) with respect to the working group [(A) before name denotes active status] and
- 5.) if inactive, was asked whether they endorsed the current and continuing work of the working group.

*John Harbison, Brownie Ledbetter, and Rex Dufour no longer live in the region

*Bob Knight was contacted through Jim Derby.

The following could not be contacted in Dec 2001, or thereafter:

- *Bryan Rogers
- *James Norman
- *Doug Bane

Among those contacted, all but one** endorsed draft (4.0). Subsequent amendments made by the active working group were mostly editorial.

**Al Brooks removed himself from the working group February, 2002 due to a conflict of interest between the working group and other organizations to which he belongs.

Appendix C - Glossary of terms

Age class

Intervals (commonly 10 years) of age into which the age a tree crop is divided; also the trees falling into such an interval.

Aquatic habitat

A local environment that is in or near water, that provides food, a location in which to reproduce, and shelter to water-dependent species.

Biological diversity

The condition of having a variety of biotic characteristics and traits; including genes, species, life history stages, structural forms (stratification, zonation, and plant physical structures), biotic patterns (reproductive, activity, food web, social, and interactive), community types, and functions.

Biological control agents

Living organisms used to eliminate or regulate the population of other living organisms.

Buffer

A strip of vegetation that is left or managed to reduce the adverse impacts of a treatment or action of one area on another. Example: land, usually along a road or waterway, managed to lessen visual or environmental impacts.

Canopy

The more or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

Canopy closure

The progressive reduction of space between and among tree crowns as they spread laterally.

Chain of custody

The channel through which products are distributed from their origin in the forest to their end-use.

Chemicals

The range of fertilizers, insecticides, fungicides, and hormones that are used in forest management.

Criterion (p. Criteria)

A means of judging whether or not a Principle (of forest stewardship) has been fulfilled.

Community

A group of organisms consisting of several or many species that co-exists in the same habitat or area, and interacts through trophic and spatial relationships, commonly characterized by one or more dominant species.

Community type

A generalized category comprising a number of similar units or stands of vegetation, which includes animal life.

Configuration

The shape or outline of a forest stand or plant community; the degree of irregularity in the edge between forest stands or communities; varying from simple to mosaic.

Conversion

The substantial or severe modifications of the physiognomy, structure, and dynamics of a forest as a result of management activities that significantly reduce the complexity of the forest system; or the transformation of a forest into permanently non-forested area.

Customary rights

Rights, which result from a long series of habitual or customary actions, constantly repeated, which have by such repetition and by uninterrupted acquiescence acquired the force of a law within a geographical or sociological unit.

Ecosystem

A holistic concept of the plants, the animals associated with them and all the physical and chemical components of the immediate environment or habitat that together form a recognizable self-contained entity .

Endangered species

A species officially designated by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service as having its continued existence threatened over all or a significant portion of its range .

Erosion

The displacement of soil from one place to another by water, wind, gravity, logging, road building, or other means.

Even-aged management

A system of forest management in which stands are produced or maintained with relatively minor differences in age.

Exotic species

Species that occur in a given area, place, or region as a result of direct or indirect deliberate or accidental introduction; not native.

Exotic species of plants

For the purpose of this standard, exotic plant species are those that meet one of the two following definitions:
(1) they do not occur naturally in temperate or sub-tropical North America, *or*
(2) they occur naturally in temperate or sub-tropical North America, but come from a forest category that is different from the certified forest. (Kuchler, A.W. 1975. Potential natural vegetation of the conterminous United States (map). Second edition. American Geographical Society. New York. [Scale: 1:3,168,000]).

Forest

(A) The property or portions of a property that is under certificate or being assessed for certification; the corresponding FSC International nomenclature is "Defined Forest Area." (B) Generally, an ecosystem characterized by tree cover; more particularly, a plant community predominantly of trees and other woody vegetation that is growing closely together.

Forest management/manager

The people responsible for the operational management of the forest resource and of the enterprise, as well as the management system and structure, and the planning and field operations.

Genetically modified organisms

Organisms that have been modified by splicing genes and/or recombining DNA.

High Conservation Value Forest

High Conservation Value Forests are those that possess one or more of the following attributes:

- a) forest areas containing globally, nationally, or regionally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia); and/or large, landscape-level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance
- b) forest areas that are in or contain rare, threatened or endangered ecosystems
- c) forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control)
- d) forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

High water mark

The edge of the streambed channel, typically where herbaceous vegetation begins.

Indigenous lands and territories

The total environment of the lands, air, water, sea, sea-ice, flora and fauna, and other resources that indigenous peoples have traditionally owned or otherwise occupied or used. (Draft Declaration of the Rights of Indigenous Peoples: Part VI).

Indigenous peoples

"The existing descendants of the peoples who inhabited the present territory of a country wholly or partially at the time when persons of a different culture or ethnic origin arrived from other parts of the world, overcame them and, by conquest, settlement, or other means reduced them to a non-dominant or colonial situation; who today live more in conformity with their particular social, economic and cultural customs and traditions than with the institutions of the country of which they now form a part, under State structure which incorporates mainly the national, social, and cultural characteristics of other segments of the population, which are predominant." (Working definition adopted by the UN Working Group on Indigenous Peoples).

Intact old-growth forest

A forest that is unroaded or lightly roaded, with no evidence of previous logging, and of sufficient size and configuration to maintain ecological integrity—500 acres or larger in size. Such forests differ from old-growth stands (see Glossary) in that they are not only rare but are also large enough to maintain significant biological diversity, genetic diversity, and a broad array of ecological functions on given acres through long periods of time..

Integrated pest management (IPM)

The use of chemical, physical and biological means to control pests, including insects, pathogens, and competition from unwanted vegetation, at levels below pre-established acceptable threshold levels. The use of scouting, low toxicity materials, narrow targeting of pesticides, and minimal environmental impacts are integral to IPM.

Intensive forest management

The practice of forestry to obtain a high level of volume of wood products per unit of area; accomplished through the application of the best techniques of silviculture and management.

Locally adapted

Seeds, seedlings or other propagative material obtained from within the region where the forest exists. Example: seeds or seedlings available from local or state DNR Agencies.

Landscape

A geographical mosaic composed of interacting ecosystems that result from the influence of geological, topographical, soil, climatic, biotic and human interactions in a given area.

Large forest

A forest that is at least 50,000 acres in size.

Local laws

Includes all legal norms given by organisms of government whose jurisdiction is less than the national level, such as departmental, municipal, and customary norms.

Long term

The time-scale of the forest owner or manager as manifested by the objectives of the management plan, the rate of harvesting, and the commitment to maintain permanent forest cover. The length of time involved will vary according to the context and ecological conditions, and will be a function of how long it takes a given ecosystem to recover its natural structure and composition following harvesting or disturbance, or to produce mature or primary conditions.

Managed forest

A forest that has been brought under management to accomplish specified objectives.

Mid-sized forest

A forest between 5,000 and 50,000 acres in size.

Native species

A species that occurs naturally in the region; endemic to the area.

Natural cycles

Nutrient and mineral cycling as a result of interactions among soils, water, plants, and animals in forest environments that affect the ecological productivity of a given site.

Natural forests

Forest areas without documented evidence of human activities (e.g. timber harvesting, cattle grazing, road building, etc.) that retain most of the principal characteristics of native ecosystems, such as a rich diversity of native species and many of the structural components and functional diversity associated with an undisturbed forest.

Nutrient cycling

The circulation of elements, such as nitrogen and carbon, via specific pathways from abiotic to biotic portions of the environment and back again; all mineral and nutrient cycles involving human, animals, and plants, such as the carbon cycle, phosphorous cycle, and nitrogen cycle.

Old-growth forests

Forests over 500 acres in size that have developed without active management and contain a significant number of canopy trees over 100 years old. Broadleaf dominated forests will typically have complex forest structures developed from natural mortality and natural disturbances and contain well-developed understories with late successional (often shade tolerant) species. Conifer dominated stands may or may not have complex structures and well developed understories. Both broadleaf and conifer dominated forests will contain well-distributed coarse woody debris and a well-developed herbaceous layer consistent with the late successional phase of the forest type.

Old-growth stands

Areas less than 500 acres in size that possess the attributes of old-growth forests.

Pathogens

Any agent that causes disease, especially microorganisms, such as bacteria or fungi.

Perennial streams

A water body that is designated as a solid blue line on 7.5 minute quads and contains water year round.

Plant community type

A vegetative complex unique in its composition and with boundaries that are recognizable in the field. The composition is a result of environmental influences on the site, such as an available source of seeds, soils, temperature, elevation, solar radiation, slope, aspect, and rainfall.

Plantation

Forest areas lacking most of the principal characteristics and key elements of native ecosystems as defined by FSC-approved national and regional standards of forest stewardship, which result from the human activities of either planting, sowing, or intensive silvicultural treatments.

Precautionary approach

Tool for the implementation of the precautionary principle.

Principle

An essential rule or element; in FSC's case, of forest stewardship.

Public land (public forests)

Any land, including public forestland, held in government ownership in trust for the citizens of a city, county, state, or nation.

Refugium

A small island of habitat in which a species can survive and from which it can disperse when the surrounding habitat becomes suitable for it to live in.

Restoration

The process of modifying a habitat or ecosystem to introduce or reintroduce composition, structures, and functions that are native to the site

Regeneration cut

even-aged:

Removal of all trees in a stand, in a single harvest or in several harvests over a short time, to produce stands comprised of trees of the same age. Shade-intolerant tree species are usually managed with even-aged management. For this standard, green retention shall equal 20 square ft basal area per acres.

Uneven-aged:

Removal of trees, individually or in small groups, throughout a stand to create small openings and provide growing space for the remaining trees. Selection of trees to be removed is based on a combination of factors, but residual stand quality, species diversity, and individual tree quality, are to be maintained (not diminished). Opening size should emulate natural disturbances, which are usually less than 2.5 acres.

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- Riparian zone**
An area identified by the presence of vegetation that requires free or unbound water or conditions more moist than normally found in the area.
- Riparian management zone**
A strip of land, along both sides of a watercourse or around the circumference of a lake or spring, where additional practices may be required for protection of the quality and beneficial uses of water, fish and riparian wildlife habitat, other forest resources and for controlling erosion.
- Scientifically credible analyses**
Scientific opinions supported by data and explanations in articles published in peer-reviewed natural or social science professional journals relevant to the matter in question. Greater depth of analysis should be associated with management decisions to create larger openings. When peer-reviewed studies are not available, scientific data compiled by experts in the field may be substituted. In all cases, management decisions must be based on a review of the science. When necessary to gain clarity and perspective, the U.S. Standards Committee may consult with scientists, forestry specialists, FSC members, and other stakeholders. Scientific credibility as it applies to this criterion is, thus, based on a body of scientific work and on the judgment of experienced professionals.
- Sediment**
Material suspended in liquid or air; the deposition of that material onto the surface underlying this liquid or air.
- Semi-natural forest(s)**
A forest ecosystem containing many of the characteristics of native ecosystems. Semi-natural forests exhibit a history of human disturbance (e.g., harvesting or other silvicultural activities) and make up a considerable percentage of the managed and unmanaged forestland in the Southeastern United States.
- Silviculture**
The art and science of producing and tending a forest by manipulating its establishment, composition and growth to best fulfill the objectives of the owner. This may, or may not, include timber production.
- Small forest**
A forest less than or equal to 5,000 acres.
- Snag(s)**
A standing dead tree from which the leaves and most of the limbs have fallen.

Species composition

The species that occur on a site or in a successional or vegetative stage of a plant community.

Stand

A grouping of vegetation sufficiently uniform in species composition, age, and condition to be distinguished from surrounding vegetation types and managed as a single unit.

Structural diversity

The diversity in a plant community resulting from the variety of physical forms of the plants within the community (such as the layering or tiering of the canopy of a forest from the ground-level to the tops of the tallest trees).

Succession

Progressive changes in species composition and forest community structure caused by natural processes (nonhuman) over time.

Tenure

Socially defined agreements held by individuals or groups, recognized by legal statutes or customary practice, regarding the "bundle of rights and duties" of ownership, holding, access and/or usage of a particular unit of land or the associated resources there within (such as individual trees, plant species, water, minerals, etc).

Threatened species

Any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Uneven-age techniques

Techniques that product forest containing 3 or more age classes.

Use rights

Rights for the use of forest resources that can be defined by local custom, mutual agreements, or prescribed by other entities holding the rights of access. These rights may restrict the use of particular resources to specific levels of consumption or particular harvesting techniques.

Water quality

The quality of water determined by a series of standard parameters—turbidity, temperature, bacterial count, pH, and dissolved oxygen.

Woody debris

All woody material, from whatever source, that is dead and lying on the forest floor.

Proposed Appendix D, Laws, Rules and Regulations in the Ozark-Ouachita Region

International Treaties and Agreements to Which the U.S. is a Signatory:

1. Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere (Washington, 1940)
2. Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR) (2 Feb 1971)
3. Convention for the Protection of the World Cultural and Natural Heritage (16 Nov 1972)
4. Convention concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)
5. Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, 1973)
6. International Plant Protection Convention (1979 Revised Text) (Rome, 1979)
7. Convention on the Conservation of Migratory Species of Wild Animals (23 Jun 1979)
8. Amendment to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (Art.XI) (Bonn, 1979)
9. Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 1991)
10. Convention for the Conservation of Anadromous Stocks (Moscow, 1992)
11. Agenda 21, United Nations Convention on Environment & Development (UNCED), Rio de Janeiro, 1992. (NI V4.0)
12. Forest Principles, UNCED, 1992. (NI V4.0)
13. Convention on Biological Diversity (5 Jun 1992)
14. Framework Convention on Climate Change, UNCED, 1992. (NI V4.0)
15. International Tropical Timber Agreement (Geneva, 1994)

Federal Laws and Policies:

1. Endangered Species Act.
2. Migratory Bird Treaty Act.
3. Lacey Act (concerning trade in illegally taken fish, wildlife, or plants).
4. Federal Plant Pest Act and the Plant Quarantine Act.
5. Coordinated Framework for the Regulation of Biotechnology, Office of Science & Technology, 19986.
6. Federal Water Pollution Control Act/Clean Water Act.
7. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)/Federal Environmental Pesticide Control Act (FEPCA).
8. Resource Conservation & Recovery Act (RCRA), in relation to hazardous chemicals.
9. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, commonly known as "Superfund").
10. Clean Air Act.

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11. National Historic Preservation Act, including in relation to American Indian sites.
 12. Occupational Safety & Health Act.
 13. Federal policy on income taxes, capital gains taxes, inheritance taxes, reforestation tax credits, and other relevant taxes.
 14. Federal business practices law.

State Laws and Policies – Arkansas

1. Non-mandatory - Arkansas Forestry Best Management Practices For Water Quality Protection. March, 2002.
2. Ark. Reg. 18.20, Regulations prohibit trafficking in endangered species but do not require their recovery
3. Ark. Reg. 18.01.00-c, has listed species include state and federally listed species of plants and animals
4. Ark. Code Ann. §2-16-207, Plant Act restricts introductions of plants and insects
5. Act 58 of 1967 Arkansas State Antiquities Act, , An Act For The Protection And Preservation Of Arkansas' Archeological Heritage, Its Antiquities, Artifacts And Sites, And For Other Purposes.
6. Act 753 of 1991, An Act To Be Entitled "An Act To Prohibit The Desecration Of Human Skeletal Burial Remains In Unregistered Cemeteries; To Prohibit Trade Or Commercial Display Of Human Skeletal Burial Remains Or Associated Burial Furniture; And For Other Purposes."

State Laws and Policies – Illinois

1. Forestry Best Management Practices for the State of Illinois, August 2000.
2. Rivers, Lakes and Streams Act (615ILCS5, 1994). Permits are required for dams, for any construction within a public body of water, and for construction within floodways.
3. 92 Illinois Administrative Code, Part 704 for projects in or along Lake Michigan are subject to the Regulation of Public Waters rules
4. Interagency Wetlands Policy Act of 1989 20 ILCS, established Illinois' goal of no overall net loss of wetlands due to state-supported activities
5. 515 ILCS 5/5-5. Fish Protection.
6. Ill. Rev. Stat. ch. 520, para. 10/1 et seq. endangered species law that covers plants and animals.
7. Ill. Rev. Stat. ch. 525, para. 10/1 et seq. Exotic Weed Act.
8. 20 ILCS 3410/ 1 through 3410/ 2, Historic Preservation Act.
9. 20 ILCS 3420/6, Illinois State Agency Historic Resources Protection Act: review of private undertakings
10. 20 ILCS 3435/.01 through 3435/2, and 3435/3-3435/11. Archeological and Paleontological Resources Protection Act: definitions; reservations of right to state.
11. 20 ILCS 3440/ 0.01 through 3440/ 3, Human Skeletal Remains Protection Act.
12. 525 ILCS 5, Cave Protection Act.

State Laws and Policies – Missouri

1. Missouri Revised Statutes Chapter 254 State Forestry Law.
2. 254.130, Compliance with forest management rules and regulations required.
3. State Of Missouri, Nonpoint Source, Management Plan, non-mandatory BMP requirements, though very little on forestry. Revised January, 2004.
4. Mo. Rev. State. §252.240 authority to protect state and federal listed species through state statute
5. Mo. Rev. Stat. §§263.190; .205, .230, .241, .250, several state statutes govern noxious weeds and noxious weed seeds
6. §194.400 through §194.407, Unmarked Human Burial Sites
7. §253.408, State Historic Preservation Act--state historic preservation officer to be director of natural resources.

State Laws and Policies – Oklahoma

1. §59-1212 registered forester law.
2. §82-862, forest management in the Grand River area.
3. Title 2, Article 16 of the Oklahoma Statutes, The Oklahoma Forestry Code
4. Title 2, Sections 16-28 and 16-28.2 of the Oklahoma Forestry Code provide some liability protection for landowners conducting prescribed burns
5. Title 2, Section 1301-103 of the Oklahoma Statutes to "administer silvicultural best management practices in cooperation with forest land users under the provisions of state and federal water pollution laws
6. Forestry Best Management Practice Guidelines For Water Quality Management In Oklahoma, 1976, approved by EPA, 1991.
7. Okla. Stat. tit. 29, §5-412, 412.1; 7-206, Oklahoma does not have an endangered species act, although the state has several scattered provisions. Under these provisions, threatened and endangered wildlife can be listed based on scientific criteria
8. Okla. Stat. title 29, §6-601, import or release any noxious aquatic plant or seed into state waters
9. Title 21 §1168.1 through 21 §1168.7, Human skeletal remains.
10. Title 53 § 2.1, Historical preservation.
11. Title 53 §361 (A-M), Oklahoma State Register of Historic Places Act