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# **Planted Forests and the Production of Renewable Woody Biomass: The Role of Forest Stewardship Plans**

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A Policy Statement approved by Resolution  
by the National Association of State Foresters



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## Background

The National Association of State Foresters (NASF) supports the sustainable management of both natural and planted forests consistent with the intent of the 2008 Farm Bill definition of renewable woody biomass (Sec 9001(12), Food, Conservation and Energy Act of 2008) as a key component of the forested landscape to meet the increasing demand for forest goods and environmental services while maintaining working forests. Specifically, the ability of planted forests through afforestation and reforestation to produce these benefits efficiently from relatively small areas of land under regimes of variable intensity makes them vital in reducing human pressure on the natural environment. Currently, planted forests occupy only 5% of global forest cover yet they contribute 35% of global roundwood supply.

Depending on particular circumstances and management regimes, planted forests provide a range of economic, social and environmental benefits, including:

- An array of renewable products derived from high quality industrial wood, fuel wood, non wood products and other residual materials;
- Regional clusters of forest industries that generate jobs, income, skills transfer and social development on a sustainable basis, often in rural communities;
- Prevention of soil degradation and erosion, protection against wind, recuperation of degraded areas by restoring soil fertility, sequestering carbon and enhancing water and air quality; and
- Additional income opportunities derived from agroforestry practices, recreational activities and multiple uses.

There are approximately 63 million acres of planted forests, 8 percent of all U.S. forestland, predominately comprised of conifer species. These numbers are based on a broad definition of planted forest, allowing for the inclusion of large areas of forest where augmented stocking of natural regeneration takes place. Traditional plantations of intensively managed trees where other vegetation is actively suppressed, occur predominately in the East, and planting to augment stocking of naturally regenerating forests occurs predominantly in the West.

In contrast to many other countries, virtually all tree planting in the United States utilizes native species. Non-native species comprise less than one percent of all planted forest. Although conifers overwhelmingly dominate, broadleaves such as high value species like black walnut and oaks are planted as well. In 2006 planted forest comprised approximately 43 million acres or 20 percent of all forestland in the South, most of which consisted of native longleaf, slash, loblolly or shortleaf pine. In the West, planted forests account for an estimated 12.2 million acres -- about 95 percent of these occur in the Pacific Coast Region (predominately Douglas Fir). In the Northeast, planted forest totals 5 million acres, predominately white, red, and jack pine species.

Planted forests are considered to be one of the best methods for maintaining wood supplies in the face of shrinking areas of forest available for wood production. While not all from forest plantations, Southern forests within the U.S. yield 18 percent of the world's pulpwood for paper and 7 percent of its industrial roundwood while comprising just 2 percent of the world's forest area. Southern forests supplied 62 percent of all domestic timber removals in 2006. Approximately 87 percent of southern forest acreage is privately owned, about two-thirds of which is held by individuals and families.

Congressional consideration of renewable energy and climate legislation has intensified debates about the sustainable role of forests in providing biomass energy and mitigating greenhouse gases with a specific focus on forest plantation development. It is important to note that not all forest plantations are

created equal and should not be “painted with the same brush.” Short rotation non-native forest plantations developed specifically for biomass energy are much different than longer rotation native forest plantations. It is hard for many to even tell the difference between long rotation native forest plantations and natural forests with both providing many economic, social, and environmental values and benefits.

This does not discount the concerns voiced among stakeholders about the potential expanded role of planted forests for energy production, especially in regard to introduction and management of non-native species. Many of these concerns have been woven into proposed national energy and climate change regulatory and incentive programs with multiple definitions of sustainable forest biomass. New energy markets can create important opportunities to improve forest management on both public and private lands. Yet, short rotation energy forest plantations may not be appropriate for all locations, particularly if their impacts cannot be cost-effectively mitigated through management measures. Ultimately, the marketplace will significantly influence the establishment and harvest rates (rotation) and regeneration of renewable biomass produced by forests as well agricultural enterprises.

NASF has been and will continue to be actively involved in these discussions with a focus on our key priority, keeping forests as forests. The majority of the nation’s forestlands are privately owned and the challenges faced by those owners to maintain their forests in the light of other competing interests have been well documented. Both planted and naturally regenerated forests are a vital component of our nation’s sustainable forest landscape, and their long-term viability needs to be supported by reasonable incentives, not unreasonable restrictions.

#### Forest Stewardship Management Plan Standards

One of the key components of NASF programs and policy in helping landowners address their natural resource issues and opportunities is the Forest Stewardship Management Plan. Forest Stewardship Plans (FSP) are one of the critical deliverables of the federal Forest Stewardship Program, authorized by the Cooperative Forestry Assistance Act (as amended) in 1990 and offered in partnership between the U.S. Forest Service and State Forestry agencies nationwide. FSPs address individual landowner objectives consistent with National and State Forest Stewardship Management Plan guidelines as well as guidance from respective State Forest Stewardship Committees. These Plans are comprehensive and highly integrated to include all resource elements and their interactions as a whole. FSPs are the appropriate vehicle for addressing all forest resource needs and conditions on non-industrial private forest ownerships including management objectives for renewable biomass produced from planted forests.

A general outline for plans, actions and progress can be found in the National Association of State Foresters (NASF) “*A Stewardship Handbook*.” State guidelines must consider the following principles as outlined in the NASF companion document, “*Principles and Guides for a Well-Managed Forest*.”

- Protect Soil and Water Resources
- Contribute to the Conservation of Biological Diversity of the Forest and the landscape in Which it resides
- Maintain or Improve Productive Capacity
- Maintain the Health and Vigor of the Forest and its Landscape/Watershed
- Consider Carbon Cycles
- Consider Socio-economic Benefits and Impacts
- Comply with Laws and Legally Adopted Rules and Implement Applicable Guidelines in States Not Using Regulatory Approach

While applicable to the management of all forests, certain principles and guidance are particularly instructive for planted forests that include objectives for the production of woody biomass that may be direct or indirect products of management. Given the intent of the 2008 Farm Bill definition for “renewable biomass,” such principles when combined with effective technical assistance delivery systems can promote the establishment and perpetuation of planted forests as an integral part of healthy and productive forest ecosystems that achieve national goals for renewable energy while potentially offsetting pressures on native forests.

Management recommendations and alternative strategies, consistent with landowner objectives, are provided to protect all resource elements that are present. Not all resource elements are necessarily addressed in every plan, as they are dependent on existing site conditions (e.g. wetlands, threatened and endangered species, etc.) and landowner objectives. Thus, prescriptions or treatments are necessarily forest or site specific. While potentially relevant to any forest regeneration system, the following resource elements are to be specifically considered in management decisions that recommend establishment of planted forests:

#### Soil and Water

- Relevant soils, terrain and water resources (streams, ponds, wetlands) maps and data are used in determining appropriate recommendations.
- Practices are employed that minimize soil damage (erosion, nutrient depletion, compaction and rutting).
- State Forest Water Quality Best Management Practices are incorporated in plans.
- Planting of trees may be employed to stabilize and conserve erodible soils, such as surface mined land and highly eroded land.
- Riparian areas are protected in accordance with state Best Management Practices.
- Tree-planting may be used as part of flood management strategies and restoring the functionality of riparian lands.

#### Biological Diversity

- Presence of unique biological, ecological, and geologic sites or features are addressed in the forest management plan.
- Relevant data and information sources (e.g. Natural Heritage Program databases, etc.) are used to assess the biological diversity and uniqueness of forests. The forest’s diversity and uniqueness, as well as risks (pests, fire, weather, etc.) are identified and considered in the management plan.
- Sites at environmental risk and having ecological uniqueness are identified and incorporated into management planning. Tree planting may be used to restore native forest species and/or re-establish unique forest ecosystems where appropriate.
- Species recommendations should encourage the regeneration of native forests, whether of natural or planted origin, with native species. Planting of non-native (exotic) species or genetically modified organisms (GMOs) is discouraged unless proven not to threaten native forest ecosystems.
- Relationships of recommended harvesting with adjacent forests and landscapes are considered in order to promote a patchwork of forest types and ages.

#### Range

- Livestock grazing should be managed to avoid adverse impacts on the forest ecosystem.
- Agroforestry objectives should be considered when appropriate.

### Aesthetic Quality

- Aesthetics are considered in plans and operations.
- Appropriate economic and social values of the forest are considered.
- Impacts on neighbors and the community are considered during operations.

### Recreation

- Recreation and tourism are promoted consistent with the health of the forest and the nature of the ownership and owner objectives.

### Timber

- Timber management objectives are identified for the forest where appropriate.
- Long-term and short-term productive capacities and targets are established.
- Growth, mortality and harvest schedules for respective forest types have been determined.
- Regeneration methods and schedules after harvest are described in the management plan.
- Biomass utilization opportunities are considered as a means to augment and improve forest health and timber volume and quality for higher value products such as sawtimber.

### Fish and Wildlife

- Expertise is used regarding wildlife management recommendations including State Wildlife Action Plans.
- Unique habitats are considered in the forest management plan.
- Tree planting is utilized where appropriate as a means to enhance wildlife habitat.
- Retention or recruitment of desired habitat components are considered when planning harvesting operations.

### Threatened and Endangered Species

- Recommendations are designed to protect or enhance rare and endangered species and plant communities (e.g. consultation with State Wildlife Action Plans and State Natural Heritage Programs).

### Forest Health

- Tree species selection, stocking levels, age class distribution, integrated pest management and fuel loadings are addressed with the objective of reducing the risk of insect and disease outbreaks and wildfire and promoting long-term forest vigor.
- Chemicals are applied consistent with the manufacturer's label.
- Introduction and spread of invasive non-native flora and fauna are addressed.

### Archaeological, historic and cultural sites

- Archaeological, historic and other cultural sites that are at environmental risk are identified and addressed in the forest management plan.

### Wetlands

- Relevant mapped soils, terrain and water resources (streams, ponds, wetlands) data are used
- Best Management Practices that address wetlands are recommended.
- The implications and applicability of the "silvicultural exemption" pursuant to Section 404(f)(1)(E) of the Clean Water Act are clearly addressed and understood by the forest landowner.

Fire

- Fire use, management and wildfire response is appropriately planned.
- Tree species selection, stocking levels, age class distribution, integrated pest management and fuel loadings are addressed with the objective of reducing the risk of wildfire.

Carbon Cycle

- Forest biomass considerations by forest types, age classes and successional stages are addressed
- Management of forest ecosystems in a manner that enhances carbon budgets and cycles is promoted

It is the view of NASF that Forest Stewardship Program plans and comparable technical assistance services provide effective guidance for achieving sustainable management of forest resources for production of renewable biomass from planted as well as naturally regenerated forests. The guidance and principles are particularly attentive to ecological relationships and integrated management of planted forests and native forest landscapes. Such focus should provide constructive guidance on federal and state policies that seek to implement renewable woody biomass strategies consistent with expectations of the 2008 Farm Bill.