

PENN'S WOODS

SUSTAINING OUR FORESTS



Letter from the State Forester

Dear Pennsylvanian:

Today, more than 17 million acres, almost 60 percent of the Commonwealth, is covered by a quality hardwood forest, perhaps unequaled in the world. Never before have so many demands been placed on our forest resources. These forests support a \$5 billion forest-products industry that employs more than 100,000 people. They're home to dozens of rare plants and endangered species. And they provide protection for more than 25,000 miles of streams used for drinking water and recreation. Our forests provide all this, while facing a dramatic increase in recreational activities that have become vital to the state's tourism industry.

With so many demands, it became clear we needed a plan to ensure our forests would continue to provide these benefits for future generations. In 1992, the Bureau of Forestry initiated a strategic planning effort to address the issue of long-term sustainability of our forest resources.

The result is Penn's Woods, Sustaining Our Forests. This report reflects the input of hundreds of people over a three-year period. It provides an in-depth examination of the Bureau of Forestry's programs and the critical issues it faces. We think you'll find Penn's Woods, Sustaining Our Forests to be a balanced, ecologically sound and commonsense report that will serve as a blueprint for the management of our forest resources into the next century.

Sincerely,

James R. Grace

State Forester / Director
Bureau of Forestry

OVERVIEW

The condition of Pennsylvania's forests is the best it has been in over 100 years. They are an asset to our citizens and essential to our economy and quality of life. Despite this promising assessment, there are many issues facing our forests.

As we move toward a new century, it is time to take stock of our resources and face the issues that will be affecting the long-term health and productivity of our forests. These issues have been addressed in this plan in a manner that should sustain Penn's Woods for generations yet to come.

Key management strategies addressed in this plan include:

SUSTAINING PENN'S WOODS LONG-TERM HEALTH AND PRODUCTIVITY

- ▶ Shifting our management philosophy to ecosystem management.
- ▶ Developing an ecological classification system and map for Pennsylvania.
- ▶ Developing a plant community classification for the state.
- ▶ Implementing a State Forest resource planning system based on ecological units.
- ▶ Developing a geographic information system to facilitate resource evaluation.
- ▶ Supporting the creation of a Biodiversity Council to coordinate inter-agency efforts.
- ▶ Establishing a system of public and private wild plant sanctuaries.
- ▶ Strengthening the state's role in the Pennsylvania Natural Diversity Inventory.
- ▶ Developing a strategy to promote old-growth forest systems on State Forest lands.

- ▶ Ensuring forest renewal on State Forest lands.
- ▶ Working with others to maintain a deer herd commensurate with a healthy forest ecosystem
- ▶ Informing the public of the importance of securing natural forest renewal

CONSERVING PRIVATE FOREST RESOURCES

- ▶ Providing leadership and broad oversight in the stewardship of non-industrial private forests through the Pennsylvania Forest Stewardship Program.
- ▶ Promoting partnerships to share resources and accomplish common goals.
- ▶ Providing training and assistance to the forest industry to promote efficient use of forest resources.
- ▶ Providing assistance to communities to better manage rural and urban-forest resources.
- ▶ Using integrated forest pest management to mitigate the effects of destructive forest agents.
- ▶ Promoting fire safety especially in the wildland/urban interface
- ▶ Suppressing destructive forest agents and dangerous wildfire.
- ▶ Instilling a stewardship ethic regarding our Commonwealth's forest and wild plant resources.
- ▶ Taking a more active role in public information and education.

MANAGING OUR STATE FORESTS

- ▶ Retaining the wild character and ecological integrity of State Forest lands.
- ▶ Making public participation an integral management process.

- ▶ Holding annual public forums in each of the 20 forest districts and in Harrisburg.
- ▶ Expanding expertise and resources devoted to recreation on State Forest lands.
- ▶ Establishing recreation guidelines to protect forest values and provide a quality experience.
- ▶ Increasing a field presence on State Forest lands on weekends, evenings and holidays.
- ▶ Reviewing the effects of timber management on landscape ecology.
- ▶ Re-evaluating current timber rotation and harvest strategies
- ▶ Increasing the annual timber harvest while new goals are being established.
- ▶ Maintaining and protecting the quality of water and soils on State Forest lands
- ▶ Maintaining a diversity of plant communities and designating public plant sanctuaries.
- ▶ Reserving coal and managing minerals in a manner consistent with ecosystem management

INTRODUCTION

Early European settlers were awed by the vastness of Pennsylvania's forests, which seemed endless. As the frontier was pushed back, wholesale exploitation of the forest and its resources took place. By the beginning of this century, the unbroken forest of mixed conifers and hardwoods was gone except for small, isolated pockets of trees. Repeated forest fires and soil erosion inhibited the forests from recovering. Due to the resilience of nature, and in part to the farsighted efforts of early conservationists and a generation of resource professionals, Pennsylvania's forests rebounded.

Today, more than 17 million acres, almost 60 percent of the Commonwealth, is covered by a quality hardwood forest, perhaps unequaled in the world. Five hundred thousand private forest landowners control nearly 70 percent of these forests. Our 2.1 million acre State Forest system is one of the largest public forest ownerships in the eastern United States. Combined with other state, federal and municipal holdings, public ownership accounts for 26 percent of the Commonwealth's forests.

Forests protect more than 25,000 miles of streams in Pennsylvania, which provide clean water for domestic and recreational use. A wide variety of wildlife and plant habitats can be found in the forests, including those for more than 90 species of trees and about two-thirds of our native wild plants. Pennsylvania forests contain more hardwood growing stock than those of any other state. They also provide the raw material for a forest-products industry which earns \$5 billion per year, while employing nearly 100,000 people. In addition, forests support a wide range of recreational activities and are vital to our tourism economy.

However, our forests are not without problems. The lack of forest regeneration following harvest or other forms of disturbance, due in part to high populations of white-tailed deer, is a significant concern. Outbreaks of exotic pests, such as the gypsy moth, and a host of native defoliators, continue to stress the forests. Wildfire remains a serious threat in the wildland/urban interface. Private forest landowners, who control most of the woodland resource, rarely seek the services of resource management professionals despite increased interest in timber harvesting and pressures to open lands for public recreation. On our public forests, the demand for timber and other wood products is greater than ever before, and at the same time the

public, in ever-greater numbers, is looking to these lands to supply their recreational needs. Usership is at an all-time high.

Nevertheless, we are at a point of great opportunity. In spite of a host of concerns, Pennsylvania's forests are generally healthy and growing, and in their best condition of the last 150 years. In addition, markets for wood products are at an all-time high. To capitalize on this juncture, the department undertook a strategic planning effort to address the issue of long-term sustainability of our forest resources. This planning process relied heavily on extensive public input. This input included the Citizen's Advisory Council report, *These Woods Are Ours*, a meeting with special interest groups in Harrisburg, two meetings with resource professionals, 25 public meetings throughout the state and hundreds of individual letters and discussions.

This strategic plan briefly describes the historical changes in the Commonwealth's forests and the evolution of management philosophies to conserve them. The plan provides the critical policies and directions for achieving the long-term health and sustainability of Penn's Woods.



SUSTAINING PENN'S WOODS

LONG-TERM HEALTH AND PRODUCTIVITY

Pennsylvania was a leader in the early conservation movement in this country. By the 1890s, the forerunners of our current state natural resource agencies, including the Bureau of Forestry (1895), were established. Early efforts focused on the protection of forest resources and were characterized by restoration, reforestation and land acquisition. As Pennsylvania's forests recovered in the early and mid-1900s, management philosophies changed. During World War II and in the post-war era, raw material extraction became a management objective with research and management efforts focused on single commodities or species. Intensive development of recreational facilities and timber management highlighted this shift in resource management philosophy.

By the 1960s, increasing demands by the various forest users, as well as a renewed environmental awareness, spurred the management concept of multiple use or multiple resource management. Although certain resources were considered dominant, there was an effort to include a wider array of considerations in management strategies.

Today, a new shift in management philosophy is emerging, namely ecosystem management. One of the basic tenets of this philosophy is that forests, rather than being viewed as containing a set of resources, in fact, are more than the sum of their parts. Forests are comprised of quantifiable components such as trees, but forests are also systems performing various functions and processes. Forests provide human goods as well as human experiences, ranging from recreation to peace and solitude. These tangible and intangible aspects of a forest, these products and processes, have been labeled "values" and none is assumed more or less valuable than the others. Thus, a major step toward maintaining Pennsylvania's environmental heritage and values is to adopt a management strategy geared toward sustaining the long-term health and productivity of forested ecosystems.

Ecosystem management can simply be defined as an ecological approach to resource management. All aspects of an ecosystem are considered important, and the interdependency of biological and non-biological systems and cycles is recognized as central to this holistic approach. Humans are part of the ecosystem and must be taken into consideration in the development of management strategies.

Ecosystem management does not preclude resource use, including timber harvesting, hunting or other recreational activities.

The primary goal of ecosystem management is to keep the complex interdependencies of ecosystems intact and functioning well over long periods of time. The essence of maintaining ecosystem integrity is to retain the health and resilience of systems so they can accommodate short-term stresses and adapt to long-term changes. The key elements include the maintenance of a diversity of plants and animals and the proper functioning of nutrient, water and energy cycles.

Coordinated management at a landscape level, which often considers various ownerships, is essential for implementing ecosystem management. Landscapes can be thought of as mosaics of interacting communities or ecosystems. Landscape patterns change in time and space, reflecting both the impact of human activity upon the system, as well as natural changes such as climate. Understanding the changes that occur and properly managing for these changes is a challenging effort that will require partnerships between resource agencies and the public. Ecosystem management, focusing on landscapes, is the strategy that best ensures that the viability of forest systems can be maintained while, concurrently, providing benefits to society.

A key element in maintaining ecosystem integrity and viability is the maintenance of biological diversity. Biological diversity, or biodiversity, is defined as the variety and abundance of species, their genetic composition, and the communities, landscapes and ecosystems in which they occur. Biodiversity is a foundation of life, serving as building blocks for ecosystems and as a barometer for ecosystem health. Biodiversity is important to our economy and way of life, providing raw materials, medicines and food to meet our everyday needs.

Pennsylvania has lost as many as 156 species of native vascular plants and vertebrates in the past 300 years. An additional 351 species have become endangered or threatened. Moreover, 56 percent of Pennsylvania's wetlands have been lost since 1780. Currently, habitat destruction and fragmentation, along with degradation from pollution, are the greatest threats to biodiversity.

Managing forest lands for biodiversity will require the cooperation of a broad and diverse group of resource management agencies, political subdivisions, public and private landowners, and the support of the public. In Pennsylvania, management of the various species is divided among the Game Commission, the Fish and Boat Commission and the

Department of Environmental Resources. Because of the diverse authority for species management and ownership of ecosystems, cooperation and coordination will be critical to success.

Perhaps the most critical issue facing our forests is how to ensure the renewal of healthy and productive forested ecosystems. Our forests are dependent on natural regeneration for their existence. In many areas of Pennsylvania, the forest floor is nearly devoid of small tree seedlings which may be critical if a forest is to renew itself. Many factors may inhibit natural forest regeneration including poor seed production, competing vegetation, insects and diseases. The white-tailed deer has been recognized as a key factor in the diminishment of forest regeneration. As a result, forests have not adequately regenerated to acceptable biological communities in many parts of the Commonwealth following natural and human-caused disturbances.

We live in an interconnected world. Our actions have reverberating impacts far wider than we realize. Until we have a better understanding of what impacts our actions have on the complex interrelationships of the elements of ecosystems, we must proceed cautiously to ensure their integrity and sustainability.



SUSTAINING PENN'S WOODS GOAL

To ensure the long-term viability, health and productivity of our forests while providing benefits to all Pennsylvanians.

DIRECTIONS

Central to an ecosystem management approach is the conservation of biological diversity and the ability of ecosystems to renew themselves. Formal policies are needed to address this paradigm shift in resource management. Following are policies for ecosystem management, biodiversity conservation and forest renewal.

ECOSYSTEM MANAGEMEN POLICY:

Ecosystem management concepts and principles should serve as the fundamental basis for the management of public and private forest lands in the Commonwealth.

Ecosystem management will be utilized in the management of forest resources on State Forest lands and guide assistance programs that deal with private forest resources.

The first step will be to identify, classify and map ecosystems in Pennsylvania. The department will collaborate with the U.S. Forest Service, The Pennsylvania State University, and others in the development of an ecological classification and mapping system in Pennsylvania. This effort will be consistent with the national "Ecomap" project. An attempt will be made to crosswalk all available ecological classification systems in Pennsylvania to ensure consistency and facilitate interaction between agencies. The department will collaborate with The Nature Conservancy, the Western Pennsylvania Conservancy and others to develop a biological community classification system for Pennsylvania. Management strategies will be realigned to coincide with recognized and accepted ecological units.

Landscapes will be a major focus of our ecosystem management approach. Management strategies, for both State Forest lands and private sector assistance, will evaluate present landscape conditions, identify needs and specify desired actions. Management strategies below the landscape level should focus on communities, which are the

assemblages of different species inhabiting a particular area or habitat at a point in time.

State Forest planning units will be reorganized based upon ecological subregions as opposed to traditional forest district boundaries. These planning units will require more coordination among forest districts and across other land ownerships. Ecosystem management principles will be incorporated in State Forest Resource Plans. The plans will maintain flexibility to accommodate changing ecosystem conditions. A strategy to promote old-growth forest systems on State Forest lands will be incorporated in State Forest Resource Plans.

The use of high-technology equipment should improve the management of ecosystems. A Geographic Information System (GIS) will be used by forest managers to visualize the relationships between various components of ecosystems, including soils, geology, topography, hydrology, vegetation and animals, and the potential effects of changes to these systems.

Resource inventory and monitoring efforts will use ecological units, whenever possible. Opportunities will be sought to form collaborative efforts or coalitions with others to address various components of ecosystem management, including the conservation of biological diversity.

BIODIVERSITY CONSERVATION POLICY:

The maintenance and restoration of biological diversity should be a key consideration in resource management efforts throughout the Commonwealth.

Appropriate efforts will be made to implement the recommendations in the inter-agency report entitled *A Heritage for the 21st Century: Conserving Pennsylvania's Native Biological Diversity*. This report is the result of a major effort by a consortium of agencies and organizations to define the importance, status and issues concerning biodiversity conservation in Pennsylvania. The department supports the creation of a Pennsylvania Biodiversity Council that would recommend statewide biodiversity conservation programs and policy.

The department will work with other organizations and individuals to conserve native wild flora. The department's Wild Plant Management Plan and the regulations entitled *Conservation of Pennsylvania Native Wild Plants*, will continuously be evaluated and updated as new information becomes available on species and their habitats. The

private sector role in conserving native wild plants will be strengthened by initiating landowner contacts through the Forest Stewardship Program. The concept of conserving our biodiversity will be incorporated in agency educational efforts.

Public and private wild plant sanctuary guidelines will be developed and implemented to conserve native wild plants. The department will designate suitable sites on State Forest lands and will encourage the participation of other public agencies and voluntary private landowners. The state's role in the Pennsylvania Natural Diversity Inventory should be strengthened by consolidating efforts with The Nature Conservancy and the Western Pennsylvania Conservancy and providing greater visibility and additional resources to the program.

The conservation of biological diversity will be a primary consideration in land acquisitions, and designation of natural areas, special management areas and public plant sanctuaries on State Forest lands. The department will inventory and monitor flora resources on State Forest lands to identify and protect sites with species and plant communities of special concern.

FOREST RENEWAL POLICY:

The successful and timely natural regeneration of diverse forest communities will be promoted on the Commonwealth's forest lands.

Naturally reproducing forest communities should be maintained on the Commonwealth's forest lands. Research to identify factors inhibiting regeneration and to document the extent of deer impacts on native wild plants will be encouraged. We will discuss forest renewal with organizations such as sportsmen clubs, the Society of American Foresters' Deer Committee and the Pennsylvania Biological Survey. The department will work with the Pennsylvania Game Commission, which has the legislative authority for managing Pennsylvania's deer populations, to maintain a deer herd that is commensurate with a healthy forest ecosystem.

Private sector assistance programs and education efforts will stress the importance of forest renewal. The department will use the media, the Forest Stewardship Program, information brochures and public speaking engagements to accomplish this task.

A system for quantifying regeneration on State Forest lands will be implemented. Silvicultural treatments, which manipulate forest vegetation, on State Forest lands will promote the successful and

timely natural regeneration of diverse forest communities. The department will encourage private forest landowners to harvest timber using silvicultural techniques that will ensure adequate natural reproduction.

The department will continue to investigate and seek new sources of funds to ensure forest renewal such as tree shelters, direct seeding, herbicide application and deer fencing on State Forest lands. Cost-sharing assistance for fencing and tree shelters for private landowners is provided through the Stewardship Incentive Program.

CONSERVING PRIVATE FOREST RESOURCES

Seventy-four percent of the Commonwealth's forests are in private ownership. Private forest lands contribute substantially to the economic, environmental and spiritual well-being of all Pennsylvanians, as well as individual landowners. In order to sustain the long-term health and productivity of private forest lands, it will be necessary to promote partnerships and provide education and assistance to those who have a major role in the conservation of these resources. The successful maintenance and renewal of forested ecosystems, which is essential to the conservation of biological diversity, will depend on the cooperative efforts of private forest landowners, the forest products industry, urban and rural communities and an informed public.

Education of and assistance to private forest landowners are difficult due to the complexity of ownership in the private sector. The number of private owners (500,000 by recent estimate), the high rate of ownership turnover (about 10 percent per year), the diversity of reasons for ownership and the wide variation in the size of holdings are but a few of the problems that we face. However, for ecosystem management to be successful, the private forest landowner must have an understanding of the concept, adopt it as a land ethic philosophy and implement it as a stewardship strategy.

Most private forest landowners own their land as a place of residence, for their enjoyment or as an estate for their heirs. These landowners consider clean air, pure water, soil protection, wildlife habitat, scenic beauty, peace of mind and recreational opportunities far more important benefits of the forest than timber or fuelwood. Despite this perception, an increasing number of private forest landowners have expressed an interest in harvesting timber from their land. In fact, 55 percent of private forest landowners have harvested timber in the past and 39 percent indicate they will harvest trees in the future. In a recent study, only 4 percent of those who had harvested timber had a forester select the trees to be removed, and less than ten percent had a written management plan prepared by a forestry professional. Private landowners should seek and obtain guidance and assistance when harvesting timber to ensure that their objectives are met and their forests sustained.

Protection of forest lands from fires, insects, disease and other threats is critically important in order to ensure the future health of woodlands. Concerns are increasing about fires in the wildland/urban interface, where the potential for loss of life and dwellings is high. In addition, Pennsylvania's forests have suffered large losses from a variety of insects and diseases in recent years. The total losses in Pennsylvania due to forest pests is estimated to exceed \$30 million per year; one-third of that figure is attributed to public nuisance impacts.

The gypsy moth has created one of the most severe impacts on the health of Pennsylvania's forests. Since its discovery in Pennsylvania in 1920, the accumulated area of gypsy moth defoliation is more than 22 million acres. There has been a significant commitment by the bureau (about 10 percent of our work force) and local municipal employees in gypsy moth suppression programs. In addition to the gypsy moth, native defoliators have been on the increase in recent years causing added stress to the health of Pennsylvania's forests. A host of species is involved, including the elm spanworm, fall cankerworm, forest tent caterpillar, cherry scallop moth and orange-striped oakworm.

Although fire plays a role in some forested ecosystems, in eastern deciduous forests that role is not well documented. Over the last 100 years, there has been a 97 percent reduction in the average annual acreage burned by wildfire in Pennsylvania. The current average number of acres burned each year is less than 10,000. Uncontrolled fires can weaken forest health and endanger people, homes and other structures especially where wildlands interface with urban development.

Even though most of Pennsylvania is rural, nearly 70 percent of the population lives in urban areas. Many Pennsylvania communities have placed little value on their urban forested ecosystems even though shade trees and urban parks can make a community more attractive and, thus, more livable. Even where communities do value their trees, expertise in the management of urban forests is generally lacking. This is particularly true in smaller Pennsylvania communities where funds are very limited.

The forest products industry plays a major role in the health and productivity of the Commonwealth's private forest lands. The industry depends on the flow of wood from private lands; 78 percent of the material harvested from Pennsylvania forests comes from these woodlands. A well-planned timber harvest can be compatible with landowner objectives; however, it is essential that forest products be

extracted in an environmentally sensitive manner that ensures forest renewal.

The forest products industry also provides an economic incentive for retaining lands in forest cover. Forest products companies include those producing lumber and wood products, furniture and fixtures and paper and allied products; together they comprise the third largest manufacturing industry in the state. There are more than 2,200 forest products manufacturing operations employing nearly 100,000 people. Sustaining the raw material to feed this industry is essential to the economy and well-being of the state.

Ownership patterns, forest protection concerns, economic development and social considerations are important forestry issues that require partnerships with other agencies and the private sector if our forests are to retain their long-term health and sustainability. By working with private landowners, who dominate forest ownership, the forest products industry, which uses this renewable resource, communities and other agencies, we can sustain healthy, productive and diverse forests.

CONSERVING PRIVATE FOREST RESOURCES GOAL

To provide leadership and assistance to private forest landowners and communities and to provide technical support to the forest products industry to encourage the long-term sustainability of forest resources

DIRECTIONS

Private forest resources are vital to our economy and our quality of life. A concerted effort must be made to sustain their long-term health and productivity. To sustain these resources, it will be necessary to provide assistance to private landowners in the stewardship of their forests; to ensure the efficient utilization of forest products; to assist communities in the management of urban forests and trees; to protect forests from destructive forest agents; and to instill a forest stewardship ethic among our citizenry through education.

PRIVATE FOREST LANDS STEWARDSHIP POLICY:

The stewardship and sustainability of forest resources on private lands should be encouraged through leadership and assistance to private forest landowners.

Leadership and broad oversight will be provided to private forest landowners through the Pennsylvania Forest Stewardship Program. Due to the sheer numbers of private forest landowners, it would be impossible for the department to provide one-on-one assistance. The department will facilitate the stewardship of private forest lands by linking willing landowners with private resource professionals capable of developing management plans to fulfill their objectives.

Target groups will be identified from among those who control the private forest resource in order to refine the delivery of technical assistance. The department will conduct programs, tours and workshops aimed at target groups that address the principles and practices of sustaining forest ecosystems. Demonstration sites will be established throughout the state to show the application of various ecological principles and practices of forest management .

FOREST PRODUCTS UTILIZATION POLICY: **Stewardship of our timber resources should be fostered through rural-development assistance and technical assistance to the forest products industry including logging, sawmilling and secondary wood-processing operations.**

The department will cooperate with forest industry organizations, universities and other agencies, to provide training for loggers in harvesting techniques that result in more efficient use of the timber resource and less damage to forested ecosystems.

Technical assistance will be provided to sawmill owners and operators in the installation and use of modern technology to improve efficiency and product quality and reduce waste of the resource. Information on technology will be provided to the secondary processing industry regarding new equipment and tools for increased efficiency and new uses for low-grade material. Assistance will be provided to the Department of Commerce and the Hardwoods Development Council in siting and establishing new forest products manufacturing operations. Assistance will also be provided to rural areas in diversifying and improving local economies and in stimulating jobs through the use of renewable forest resources.

COMMUNITY ASSISTANCE POLICY: **Communities should be assisted in the development of management strategies for their shade trees and other urban-forest resources.**

The department will work closely with universities and utility companies to assist communities requesting technical help. The department will continue its support of the Pennsylvania Urban Community Forestry Council, which provides urban forestry grants to communities, and will continue monitoring the use of grant monies.

The formation of regional community tree associations, which disseminate urban forestry information among local communities, will be encouraged. The department will work with various organizations and industries to develop demonstrations, tours and workshops that address urban forest ecosystem issues.

FOREST LANDS PROTECTION POLICY:

Protection of forest lands should be provided through monitoring, prevention education and suppression of destructive forest agents and wildfire.

The department will utilize integrated forest pest management, an ecological approach to maintaining a biologically diverse and healthy forest, to mitigate the effects of destructive forest agents. We will provide education and technical assistance, conduct detection programs and, when necessary, suppress major forest pest outbreaks.

The workload of insect suppression programs will be reduced through a management system that includes computer-integrated maps, photos and a database. This system will maintain program safety, fiscal responsibility and environmental sensitivity.

A report on the history and role of fire in eastern deciduous forests, focusing on the influence of fire on Pennsylvania's forested ecosystems should be commissioned. Public information, education and technical assistance efforts will be expanded to promote fire safety, especially where wildlands interface with urban settings. Leadership in the recruiting, organizing and training of fire companies and local forest fire wardens and crews will be provided. These organizations and individuals will be diligently used to prevent and suppress wildfire.

Evaluations will be undertaken to assure that the gypsy moth program and the forest fire warden system are effective and being conducted in the most efficient manner. Cooperative working relationships will be maintained with other state and federal agencies in protecting forest resources.

PUBLIC EDUCATION POLICY:

A public stewardship ethic regarding the Commonwealth's forest and wild plant resources will be actively pursued through educational efforts.

The department will provide educational leadership in forest and native wild plant conservation while striving to instill a stewardship ethic in the general public. Educational efforts will focus on making the public aware of issues and factors affecting Pennsylvania's forests. Every opportunity will be taken to convey a stewardship message to school children, educators, organizations, loggers, the wood industry, consulting foresters, local governments, private landowners and individuals. Project Learning Tree, an important forest

resource and conservation teaching tool, will be used to help educate teachers and youth leaders.

Efforts will be coordinated with The Pennsylvania State University to provide educational publications and workshops for landowners. We will also cooperate with the Timber Harvesting Council, the Pennsylvania Association of Conservation Districts and The Pennsylvania State University to provide forest resource conservation workshops for loggers. The department will work with the Society of American Foresters in an effort to educate community leaders on the development of well designed timber harvesting and zoning ordinances.

Educational efforts dealing with forest pests will be promoted through the Forest Stewardship Program, training sessions for professional forest managers, on-site evaluations and an annual forest health report. Each year, a report will be prepared on the "State of the Forests." This report will inform the public about the status of Pennsylvania's public and private forests and native wild plants. A news conference should accompany the report to reach a wider audience. This effort should increase public awareness and stimulate public discussion on forest issues.

Staff will be encouraged to participate in interactive engagements with groups and to write articles for newspapers, magazines and professional publications. Improved outreach will be pursued by working closely with the Office of Public Liaison and the regional community relations coordinators. Building media relationships will be a management objective. To gain a better understanding of what the public wants from their forests, periodic public attitude surveys will be commissioned.



MANAGING OUR STATE FORESTS

The State Forest system of Pennsylvania -- two million acres of woodland in 48 of the Commonwealth's 67 counties -- comprises 12 percent of the forested area of the Commonwealth. Pennsylvania's State Forests represent one of the largest expanses of wildland in the eastern United States making them a truly priceless public asset.

Pennsylvania's State Forests provide an abundance of high quality forest products, an important source of revenue and a materials base for an industry that generates much needed jobs. When viewed from another perspective, our State Forests represent a two million acre water treatment plant and air purification system, so effectively do their soils and vegetation cleanse the water and air. These forests provide recreation and mineral development, as well as an aesthetic setting that is vital for the tourism industry. And, when taken as a whole, they are the largest publicly owned habitat for plants and animals in the Commonwealth. Our State Forest system is all these things -- simultaneously -- and more.

Pennsylvania's State Forests have been under formal management since 1955 with the development of State Forest Management Plans which focused on timber and water resources. State Forest Resource Plans are currently in their third generation evolving from the initial plans, to multiple-use plans, to detailed multiple-resource management plans including water, soils, minerals, fauna, flora, timber and recreation. Future planning efforts will need to further evolve to an ecosystem management approach with a focus on the conservation of biological diversity while providing public benefits including recreational opportunities and forest products.

Potential timber yields for each State Forest are specified in State Forest Resource Plans. During the last decade, however, the actual harvest of timber from State Forest lands has been less than half of the maximum allowed in the plans. The department's inability to meet proposed harvest levels has been primarily due to staffing limitations and the difficulty ensuring natural regeneration. The forest products industry has recommended a substantial increase in the harvest, contending that this would help stabilize stumpage prices and relieve harvesting pressures on private forest lands. In contrast, recreational

users have generally opposed increased harvests because of potential conflicts with their activities. A number of environmental groups have argued for decreased cutting and an increase in the proportion of old growth communities within the State Forest system.

The State Forests of Pennsylvania provide a unique opportunity for low-density, or dispersed, outdoor recreation. More people visit State Forest lands for recreation than for any other purpose, and use is increasing dramatically in almost all forms. Restrictions on the types and numbers of recreational activities may be necessary to protect forest values and to ensure a quality recreational experience for those who visit our State Forests.

The public has indicated a desire for a greater presence of field personnel, including increased law enforcement and educational opportunities, on State Forest lands during periods of high recreational use that include evenings, weekends and holidays. Intensified use of State Forest lands has led to a growing number of user conflicts, as well as to the spread of vandalism and other illegal activities, all of which diminishes public enjoyment and expands infrastructure maintenance costs.

An extensive infrastructure exists on our State Forests to accommodate public use and resource management activities. The condition of this infrastructure directly impacts the public's safety and enjoyment of State Forest lands; some of this infrastructure needs to be repaired or upgraded. As examples, restroom facilities at most recreation sites are old pit latrines, and many district radio systems, which provide a vital link between district offices and field staff, are inadequate. To comply with the Americans with Disabilities Act, many State Forest facilities will need additional improvements.

Recent public meetings indicate support for the acquisition of additional State Forest land, especially to provide increased recreational opportunities. Other benefits of acquiring additional State Forest lands include countering forest fragmentation by eliminating interior holdings, protecting unusual habitats or species and the wild character of existing State Forests, and decreasing administrative and maintenance costs by reducing exterior boundaries.

Formal public involvement in the management of State Forests has traditionally been limited to public meetings held during the development of the State Forest Resource Plans. As needs and issues arose, the bureau has held meetings with concerned user groups. However, given the complexity of issues facing our State Forests and the shift to ecosystem management, increased public

participation will be essential to foster support for sustaining the long-term health and productivity of our State Forests.

STATE FOREST MANAGEMENT GOAL

To manage State Forests under sound ecosystem management, to retain their wild character and maintain biological diversity while providing pure water, opportunities for low-density recreation, habitats for forest plants and animals, sustained yields of quality timber, and environmentally sound utilization of mineral resources.

DIRECTIONS

Over the last two decades, the demands on State Forest lands and resources have increased dramatically and all indications point to increased and additional demands in the future. It will take an unprecedented degree of planning and coordination to accommodate and manage the demands for State Forest resources and recreational pursuits, and to maintain the infrastructure to support these needs. The shift to ecosystem management will necessitate the evaluation of resource management and recreation policies and include the participation of the public. The following policies address public participation, recreation, various State Forest resources, and infrastructure.

PUBLIC PARTICIPATION POLICY:

Public participation will be an integral part of the management of State Forest lands.

Interactive opportunities for public involvement will be created. The department will conduct a series of annual public forums in each of the 20 forest districts and in Harrisburg. These forums will include a public meeting, a focus group or roundtable meeting and a meeting with local government officials. Other meetings, particularly with focus groups, will be scheduled as needed.

The State Forest planning process, to update and develop State Forest Resource Plans, will incorporate more public involvement in this important program. A series of public meetings will continue to be conducted prior to and during the development of State Forest Resource Plans.

STATE FOREST RECREATION POLICY:

State Forest lands should provide the citizens of the Commonwealth with the opportunity for the types of healthful, dispersed outdoor recreation that can only be obtained from large forested areas. State Forest visitors should be assured of a high-quality outdoor experience.

Dispersed, low-density recreational activities will continue to be an objective on State Forest lands. Expertise and resources devoted to recreation on State Forest lands will be expanded. State Forest Resource Plans will give increased emphasis to recreation.

The department will increase public involvement in the planning process and its public outreach programs to help minimize user conflicts. Future restrictions on types and quantities of recreational uses may be necessary to protect forest values and provide a quality recreational experience. New recreational guidelines will be developed. Proposed recreational activities will be evaluated to ensure their compatibility with other forest users and the forest environment.

An evaluation of the levels at which our State Forests are being used for all types of recreational activities will be undertaken. In addition, the bureaus of Forestry and State Parks will explore ways to better coordinate their recreation functions, particularly in those areas where we have adjoining facilities experiencing high levels of visitation.

Staff presence on State Forest lands will increase to provide the public with information and assistance, as well as to ensure compliance with State Forest rules and regulations and improve public safety and resource protection. New field positions classified for public contact and law enforcement (forest rangers) will be requested. These employees will have training in law enforcement, first aid, search-and-rescue and environmental interpretation. Their work schedules will include late afternoons, evenings, weekends and holidays, when most recreational activity takes place.

To facilitate an additional presence on State Forest land, communication and coordination with other agencies such as the Game Commission, the Fish and Boat Commission and the Bureau of State Parks will be improved. Changes in the existing legislation will be proposed to allow the Bureau of State Parks and the Bureau of Forestry staff to enforce rules and regulations mutually on state park and State Forest lands. This would simplify administrative conditions and expand the enforcement powers of the personnel of both bureaus.

Contact stations for new field personnel will be established at appropriate locations. In addition, volunteers will be recruited to serve as State Forest hosts. The effectiveness of signs, posters and other visual media on State Forest lands will be improved to provide better information.

STATE FOREST TIMBER POLICY:

State Forest lands should provide a sustained yield of high quality timber consistent with the principles of ecosystem management.

The effects of timber management on landscape ecology will be evaluated. Forest stands, which are based on similar vegetative type, size, and density that reflect certain site conditions, will serve as basic units for prescribing silvicultural treatments to a particular area. Silvicultural treatments will be used to enhance landscape conditions. This will necessitate looking beyond traditional management units and State Forest boundaries.

The current timber rotation regime will be more ecologically based and will be refined to include a greater variety of rotation ages. Rotation ages will be more sensitive to plant communities and will include both long-rotation and short-rotation management strategies. Both even-aged and uneven-aged silvicultural systems will be used. The current timber harvesting practices, including reservation guidelines, will be evaluated to determine if they are achieving desired results.

When possible, timber management strategies will attempt to mimic natural disturbance patterns in forested ecosystems. Since little quantitative information is available concerning natural disturbance regimes of eastern deciduous forests, this information will be sought. Timber sale activities will be conducted with the ultimate goal of renewing a mature forested ecosystem. No final harvests will be considered unless natural regeneration is likely to follow. All silvicultural activities will be guided by best management practices.

A re-evaluation of current harvest levels on State Forest lands will be undertaken to establish more meaningful and realistic goals. The re-evaluation will consider regeneration potential, biodiversity needs, changing philosophies on rotation lengths, appropriate levels of intermediate treatments, recreational conflicts and economic conditions. The development of new harvest levels will include input

from a variety of sources including the public, forest industry and environmental groups.

The department will attempt to increase the annual timber harvest over the short run while new harvest levels are being established. The recommendation of the Citizens Advisory Council to increase the harvest by 10 percent per year over the next five years is reasonable and well within the sustainable limits of the resource. We will actively pursue obtaining additional personnel and resources needed to accomplish this task.

STATE FOREST WATER AND SOIL POLICY: **Surface and subsurface water quality and soil fertility should be maintained at the highest possible quality.**

Maintaining and protecting the quality of water on State Forest lands will continue to be one of our highest priorities. All management practices will be evaluated as to their effect on water quality. Close working relationships will be maintained with water-resource bureaus in the department and with the Fish and Boat Commission.

The present water quality designations of streams on State Forest lands will be examined to ensure proper classification and new designations will be recommended where needed. Surface-water and groundwater resources should be provided for public water supplies only when water flows can be assured to maintain existing aquatic ecosystems. Groundwater will be addressed in future State Forest Resource Plans. The plans will include an analysis of groundwater resources and guidelines to ensure their protection.

The department will continue to evaluate the potential effects of management actions on forest soils. The most current "best management practices" will be employed to minimize soil-related problems. Erosion and sedimentation control measures will be used where soil disturbance occurs. Whole-tree harvesting and utilization on State Forest timber sales will be discouraged to foster nutrient cycling.

STATE FOREST FAUNA AND FLORA POLICY: **State Forest lands should provide habitats that support a diversity of animal and plant communities and should serve as examples in promoting the conservation of native wild flora.**

State Forest lands will be managed to provide habitats for a diversity of animal and native wild plant communities. Current habitat guidelines will be reviewed to ensure consistency with ecosystem management. Special concern fauna and flora will continue to receive attention and necessary actions to promote their survival.

Relationships with other agencies that have legislative management authority for biological resources should be strengthened and new ways to coordinate efforts explored. These agencies include the Pennsylvania Game Commission, the Pennsylvania Fish and Boat Commission and the U.S. Fish and Wildlife Service. We will continue to work cooperatively with fauna-related programs or organizations such as "Partners in Flight," the "Special Areas Project" of the Pennsylvania Ornithological Society and "Superfund Projects" of the Pennsylvania Chapter of the National Wild Turkey Federation.

The Bureau of Forestry will complete an inventory of State Forest lands to determine candidate areas for designation as public plant sanctuaries. Other government agencies will be encouraged to participate in the public plant sanctuary program. Bureau personnel will be trained in the identification and ecology of native wild plants.

STATE FOREST MINERALS POLICY:

The department should hold virgin, surface-minable coal as reserves and should explore and develop other minerals on State Forest lands to provide long-term good to the citizens of the Commonwealth only when these activities are consistent with ecosystem management.

The effect of mineral exploration and removal on landscape-based ecosystem management will be evaluated. Strict leasing provisions and supervision of the exploration and extraction of all minerals, or the development of other resources, such as gas storage, will ensure consistency with ecosystem management.

The department will encourage the extraction of coal and other hard minerals on State Forest lands that were disturbed by past mining practices and improperly reclaimed by present-day standards. A condition of additional mining will be the proper reclamation of all affected lands.

STATE FOREST INFRASTRUCTURE POLICY:

The infrastructure of the State Forests should be maintained at standards that would ensure the safety and quality experience of visitors. Additional State Forest lands should be acquired to expand public recreational opportunities, protect the wild

character of existing State Forest lands and conserve biodiversity.

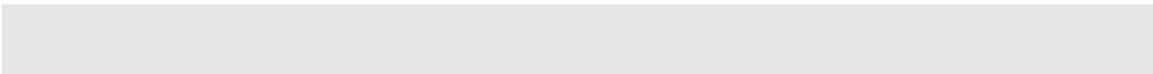
Bringing existing facilities up to standards will be a major priority. Funding the maintenance of current infrastructure will be given priority over construction of new facilities. A list of infrastructure needs will be updated and placed in priority order.

"Key 93" funds will be primarily used to upgrade the State Forest road system and to rehabilitate existing recreational facilities. The 350 bridges on State Forest lands will be replaced or upgraded as part of the "Forest Bridge Program" using funds derived from liquid fuels tax.

The department will continue remediation efforts at several environmental problem sites. In addition, a definitive list of these sites will be developed and prioritized and clean-up activities will be coordinated with other department bureaus, when appropriate.

The department will continue to acquire additional State Forest lands. Priority areas for acquisition will include interior holdings, deeply indented tracts, areas that simplify boundaries and lands that contain unique plant species, communities or habitats. Priority will also be given to protecting areas that are vulnerable to fragmentation and development and to areas where the wild character of existing State Forests may be compromised.

Close cooperation will be maintained with conservancies and other private organizations with respect to land acquisition. A committee will be established to coordinate the acquisition programs of the bureaus of Forestry and State Parks.



IMPLEMENTING THE PLAN

Penn's Woods -- Sustaining Our Forests is the culmination of an extensive effort to develop a plan to address the challenges facing our forest resources now and in the future. This strategic plan provides the framework and directions for sustaining our forest and wild plant resources. However, the real measure of success for any plan is in its implementation.

The implementation of ecosystem management is already underway. A comprehensive mapping project, which delineates the various ecological units of Pennsylvania, is nearly completed. State Forest Resource Plans are currently being framed using these ecological units. A model plan should be ready within the next several years, well before the end of our current management period.

If we truly intend to sustain the long-term health and productivity of our Commonwealth's forests, we need the cooperation of the people who own and control most of the forests of the Commonwealth -- the private-forest landowner. We will need to continue to improve the Forest Stewardship Program and our educational efforts, focusing on the objectives of individual landowners and the future sustainability of their forest.

The conservation of the Commonwealth's biological diversity will be a challenging task requiring the cooperation of a host of partners. A statewide biodiversity conservation committee should be formed to guide the efforts of various agencies, organizations and individuals within the framework of existing institutions. The department stands ready to cooperate in this effort. Native wild plants are an important component of our biological diversity. In recognition of their importance and in an effort to conserve biological diversity, efforts are underway to develop both a public and private wild plant sanctuary system. Strengthening the Pennsylvania Natural Diversity Inventory will help this cause.

Forest renewal needs to be addressed if we are going to perpetuate our forested ecosystems. In the short-term, stop-gap measures will be employed to ameliorate some of the factors contributing to poor forest renewal. But in the long run, it will take a cooperative effort in both research and education to successfully reduce or eliminate this problem.

In the future, Pennsylvania's State Forests will be expected to provide even greater benefits to the citizens of the Commonwealth. It will take an unprecedented degree of planning and coordination to accommodate and manage these demands while ensuring the long-term health and productivity of these forests. We will constantly need to develop adaptive and innovative approaches to the management of State Forest lands and resources.

The demand for recreational opportunities continues to increase on State Forest lands. The bureau will devote more staff to the management of forest recreation to provide a quality outdoor experience. The issue of recreational use also highlights the need for forest rangers on State Forests. These personnel could provide much-needed services and help protect people and resources by enforcing State Forest rules and regulations.

State Forest timber resources are in high demand and continue to provide monetary returns to local, regional and state economies. A short-term attempt is underway to increase timber harvests on State Forest lands to address the discrepancy between potential yields and actual harvests. In the long run, a re-evaluation of timber management goals is necessary to establish reasonable and stable harvest levels.

And finally, the bureau will increase interactive opportunities for public participation. A well-informed and involved public is a catalyst for pro-active management of our forest resources. The mechanisms to implement public participation will be institutionalized within our management process.

What we have outlined in this report amounts to a fundamental change in forest management philosophy predicated on the concept of a sustained forest rather than a sustained yield. The old forest management philosophy of use, conserve and preserve is being supplanted by a new paradigm, ecosystem management encompassing all forest values. As we have discussed throughout this report, ecological principles will guide management decisions on State Forest lands and recommendations on private forest lands. However, since ecosystems are rarely delineated by ownership boundaries, the effectiveness of ecosystem management, in the broadest sense, is dependent upon the cooperative efforts of government and well-informed and forward-thinking landowners and citizens.



Bureau of Forestry

Mission

Contained in Article 1, Section 27 of the Pennsylvania Constitution are these words: "Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people."

The mission of the Bureau of Forestry is to ensure the long-term health, viability and productivity of the Commonwealth's forests and to conserve native wild plants.

The Bureau of Forestry will accomplish this mission by:

- ▶ Managing State Forests under sound ecosystem management, to retain their wild character and maintain biological diversity while providing pure water, opportunities for low-density recreation, habitats for forest plants and animals, sustained yields of quality timber, and environmentally sound utilization of mineral resources.
- ▶ Protecting forestlands, public and private, from damage and/or destruction by fires, insects, diseases and other agents.
- ▶ Promoting forestry and the knowledge of forestry by advising and assisting other government agencies, communities, landowners, forest industry, and the general public in the wise stewardship and utilization of forest resources.
- ▶ Protecting and managing native wild flora resources by determining status, classifying, and conserving native wild plants