



## *A Landowner's Guide to* **Sustainable Forestry**

*in Indiana*



### **Part 1. Sustainable Forestry —** *What Does It Mean for Indiana?*

*Ron Rathfon, Department of Forestry and Natural Resources, Purdue University*

- *Sustainable Forestry*
- *Historical Perspective*
- *Indiana's Forests Today*
- *How This Series Is Organized*

The dictionary defines the word “sustain” as “to keep something going,” or “to keep it in effect.” No time limit is specified and, therefore, one might conclude that it (whatever “it” might be) could be kept going as long as necessary or possibly indefinitely. Forestry is the art and science of caring for a forest to meet the needs of the owners and those of society. Sustainable forestry, therefore, refers to caring for or managing forests in such a way that they continue to play the desired role and produce desired benefits as long as necessary or possibly indefinitely. Simply stated, sustainable forestry is managing forests to meet the needs of today while providing the needs of future generations.

### **Value of Indiana's Forests**

No one can deny the value of our forests. We live in homes constructed largely of wood and often trimmed and decorated with wood. We use a host of paper products from newspapers, books, and magazines to bags, boxes, and toilet paper.



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*Forest products is the fifth largest industry in Indiana, employing close to 50,000 people.*

Wood products manufacturing has historically been important to Indiana's economy and remains so today. It is the fifth largest industry in the state, employing close to 50,000 people. The economies of many Indiana communities are heavily dependent on wood manufacturing, and thus the forests supplying those industries.

Outdoor recreation and nature-based tourism are growing industries in Indiana. These emerging industries

### ***How Valuable Are Our Forests?***

- One acre of young trees supplies enough oxygen to keep 18 people alive.
- One healthy tree provides enough oxygen (450 lbs.) in one growing season to keep one person breathing for one year.
- Leaf surfaces filter dust, ash, and pollen from the air, as much as 13 tons per acre per growing season.
- For every pound of wood grown by a healthy forest, 1½ pounds of carbon dioxide are removed from the atmosphere and a little over 1 pound of oxygen is released.
- On average, it takes one 100-foot tree per year to keep each American supplied with wood products.
- Forest products is the fifth largest industry in Indiana, employing close to 50,000 people.
- Poor in arable land but rich in scenic forest land, Brown County has capitalized on the natural beauty of their forests to create a tourist mecca.
- Over 120 species of mammals, birds, reptiles, and amphibians depend on our forests for cover, nesting, and feeding.
- Forests provide the primary hunting grounds in Indiana.
- Forty percent of the 97 million breeding birds in Indiana nest in the forest, which, remember, only accounts for 20 percent of the total land base.



*The clearing of Indiana's forests was nearly complete by 1890. Remnant forests not cleared were often grazed, burned, and heavily logged.*

most often depend on the scenic beauty and the wildlife that forests provide.

Numerous species of wild mammals, birds, reptiles, and amphibians depend on our forests for cover, nesting, and feeding. Forests provide the primary hunting grounds for Indiana hunters. Bird watching is an increasingly popular Hoosier pastime.

Less tangible in terms of economic importance but nonetheless vital to human and societal good health are the environmental benefits of forests. Forests help combat global warming.

Leaf surfaces filter dust, ash, and pollen from the air, as much as 13 tons per acre each growing season, helping us all breathe a little easier. Forests protect soil and filter storm water runoff, protecting municipal water supplies and important fisheries and recreational lakes.

Forests dazzle our senses, spiritually invigorating us. They are a refuge of tranquility in our frenzied, high-tech world. How can we put a price tag on these benefits?

## Historical Perspective

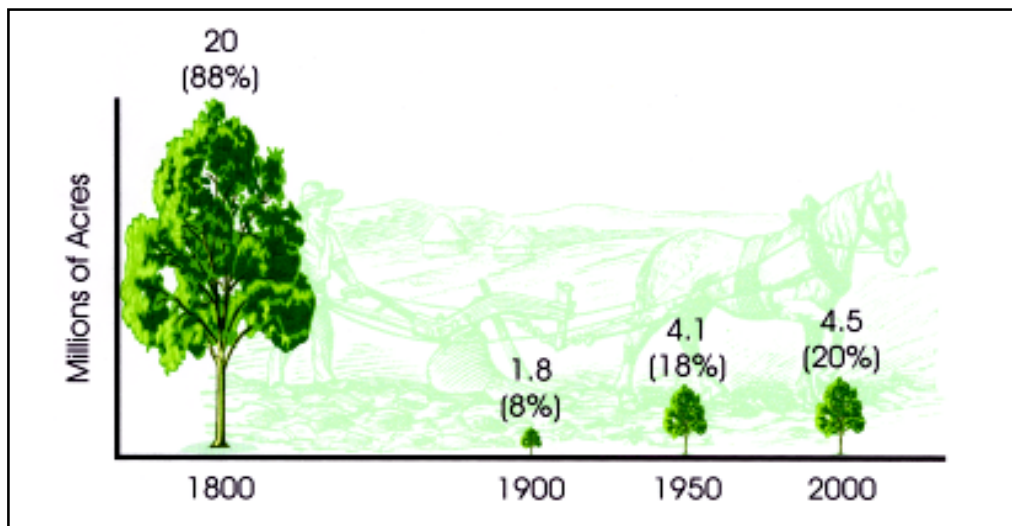
Today many of our forests are managed sustainably. Historically, most of Indiana's forests were cleared,



*Following a century of deforestation, the amount of forest land in Indiana gradually increased during the 20th century as eroded crop land and pasture were abandoned and left to grow back into forest.*

burned, heavily grazed, and over-logged. With the commencement of frontier settlement at the dawn of the 19<sup>th</sup> century, Indiana had over 20 million acres of forest covering about 87 percent of the land. The forest proved invaluable to providing for the pioneers' need for home and barn building materials, fences, fuel for cooking and heating, barrels, tools, and machinery. Nonetheless, forests were also viewed as a threat, harboring Indians and dangerous wild beasts, and as a hindrance to progress. Forests needed to be cleared for crop fields and pastures, roads, businesses, and towns.

Deforestation accelerated through the 19<sup>th</sup> century and into the early 20<sup>th</sup> century, clearing forests at an average rate of over 178,000 acres/year over a 100 year span. By 1900 only 8 percent, or 1.8 million acres, of Indiana remained covered by remnant forests. Those remnant forests were growing on land that was too steep or too



*Figure 1. Total forest acres in Indiana from 1800 to 2000. Figures in parentheses represent the percentage of the total land base covered by forest.*

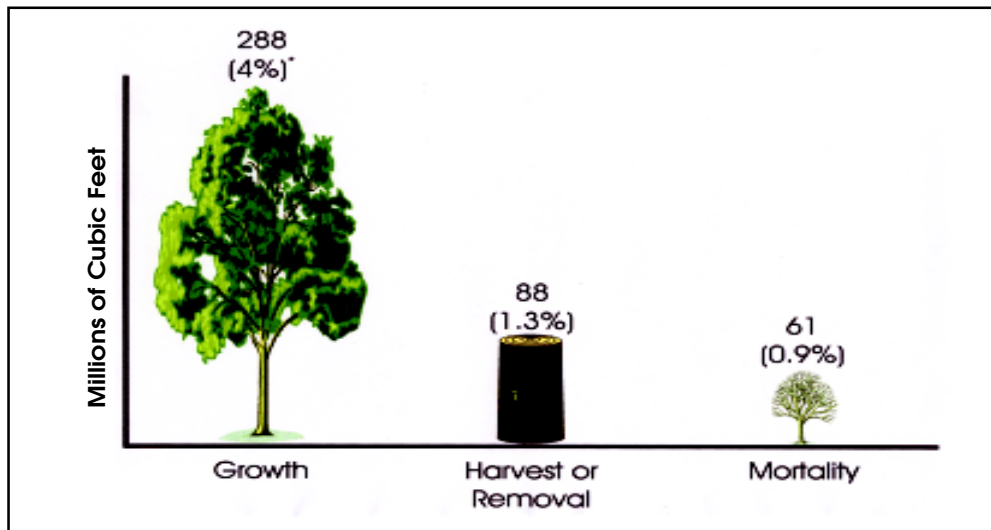


Figure 2. Average annual timber growth, harvest, and mortality in Indiana between 1986 and 1997. \* Figures in parentheses represent the percentage of growth, harvest, and mortality compared to the total volume of living timber.

wet to farm. Though not cleared, they were often grazed, burned, and almost certainly heavily logged.

Our forests recovered throughout the latter half of the 20<sup>th</sup> century. Eroded crop fields and pastures were abandoned and left to grow back into forest. Many acres of worn-out farm land in southern Indiana were planted to white, Virginia, shortleaf, and red pine. As the forests grew back, the land healed, soil productivity was partially restored, and wildlife returned. Although a small amount of forest is still cleared for agriculture in Indiana, it is offset by tree planting and reverting marginal crop and pasture land.

## Indiana's Forests Today

Today 4.5 million acres of forest shade 20 percent of Indiana. Well over 150,000 private individuals own 74 percent of the state's forest land. Approximately 17 percent is under federal, state, and municipal management. The remaining 9 percent of Indiana's forests are owned by corporations. The amount of forest under professional forest management continues to grow. Currently timber in Indiana grows at 2.5 times the rate it is cut. The logging profession continues to improve safety and timber harvesting practices through state-sponsored training programs. Foresters in the Indiana Division of Forestry inspect over 400,000 acres of forest every five years under the Classified Forest Program. Thousands more acres of privately owned forest are managed with the assistance of private consulting and timber company foresters.

There are new challenges to the health of Indiana's forests. Suburban sprawl, new roads and utilities, and the parcelling of larger forested tracts into house lots are all eroding recent gains in forest land. This modern form of



Ron Rathfon

Sprawl development poses new challenges, eroding recent gains in forest land and fragmenting it into smaller parcels.

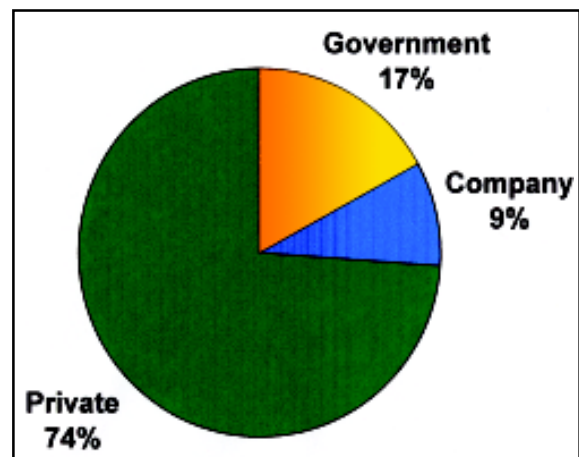


Figure 3. The proportion of Indiana's forests owned by private individuals, companies, and various government agencies.



forest land conversion is, for all practical purposes, irreversible. It is the greatest threat to Indiana's forests today.

A growing population and a more highly sensitized public continue to demand more wood and more outdoor recreation opportunities while at the same time insisting that forests be managed with greater "environmental sensitivity." Providing suitable habitat for threatened and endangered species may have an enormous impact on how both public and private forest land is managed. Global warming and the predicted changes in our climate may have a detrimental impact on forest health.

Sustainable forestry recognizes the many benefits we derive from our forests and incorporates them into management practices. It provides for greater financial returns over a long period for landowners while still protecting soil and water, providing wildlife habitat and recreation opportunities, and conserving our natural and cultural heritage. It helps provide for the economic and social stability of forest-dependent communities. Sustainable forestry helps ensure healthy, productive forests will be passed on to future generations.

## Sustainable Forestry Objectives

You, the forest landowner, play a vital role in sustaining Indiana's forests. Table 1 contains a list of objectives you should consider as you strive to manage your forest sustainably.

## How This *Sustainable Forestry* Series is Organized

The remaining seven parts of this eight-part series of Purdue Cooperative Extension publications, entitled *A Landowner's Guide to Sustainable Forestry in Indiana*, correspond to the seven major objectives of sustainable forest management identified in Table 1. Each publication in the series is sub-divided into sections that describe specific management activities that contribute to the major sustainable forest management objective being addressed. For quick, easy reference, checklists are provided to summarize those specific management activities. Text describing these activities is brief. However, sources of additional information are provided at the end of each publication in this series. Terms that may be new to many landowners are printed in **bold** typeface the first time they are used and then defined or described within the same paragraph. Inside the back cover of Part 8, *Help!*, separate, removable inserts provide up-to-date contact information for the many agencies and organizations ready to serve your sustainable forest management needs. A list of useful WEB sites is also provided.

**Table 1. Objectives for Owners of Sustainable Forests in Indiana**

1. Become acquainted with your forest resources, become involved in the long-range planning and management of those resources, and obtain professional help where you need it.
2. Maintain the health and productivity of your forest while providing a continuous supply of quality hardwood timber.
3. Conserve nature.
4. Provide clean water.
5. Maintain the beauty of your forest, enhance its recreational value, and protect historical and cultural sites on your forest.
6. Recognize and develop alternative, sustainable, forest-based, income-producing enterprises that reward you financially and add value to the local economy.
7. Take advantage of educational opportunities, financial incentives, and technical assistance available to you to help you achieve your sustainable forestry goals.

## A Word of Caution

Many attempts have been made to define sustainable forestry. In fact, what management practices constitute sustainable forestry is the subject of considerable debate among foresters, environmental advocates, the timber industry, landowner organizations, and other conservation-minded people.

This *Guide to Sustainable Forestry* series does not attempt to resolve these differences of opinion. In fact, we do not claim that this series provides the final definition of sustainable forestry for Indiana. To do so would be to claim that we have the proverbial "shoe to fit all sizes." The guidelines presented here are not stern regulations to be strictly adhered to. Rather, they are suggestions to aid you as you make important forest management decisions. You, and the natural resource professionals you work with, must tailor management prescriptions to fit your unique circumstances. The guide provides you with an initial overview of sustainable forestry in Indiana and serves as a reference for your future information needs.

Whether you have been actively involved in managing your forest for many years or you have just acquired forest property for the first time, we hope you find this guide useful.

## *A Landowner's Guide to Sustainable Forestry in Indiana*

### **Part 1.** *Sustainable Forestry - What Does It Mean for Indiana?—FNR-180*

- Sustainable Forestry Described
- Historical Perspective
- Indiana's Forests Today
- How This Series Is Organized

### **Part 2.** *Planning for the Future—FNR-181*

- The First Step - Who Can Help You?
- Your Objectives
- Gathering Information
- Planning Your Management Activities
- Using Legal Contracts

### **Part 3.** *Keeping Your Forest Healthy and Productive—FNR-182*

- Maintaining and Enhancing Site Productivity
- Improving Tree Growth and Protecting Timber Quality
- Regenerating the Forest

### **Part 4.** *Conserving Nature—FNR-183*

- Providing Wildlife Habitat
- Unusual Habitats
- Endangered Species
- Invaders! Harmful Exotic Species
- Forest Fire - Not Always as Bad as It Sounds
- Fragments of Forests

### **Part 5.** *Forests and Water—FNR-184*

- Livestock
- Reforestation Benefits Water Resources
- Avoid Clearing Forest
- Forest Roads and Trails
- Best Management Practices (BMPs) for Timber Harvesting
- Pesticides
- Protecting Sensitive Water Resources

### **Part 6.** *Maintaining the Beauty and Enhancing the Recreational and Cultural Values of Your Forest—FNR-185*

- Maintain Visual Buffers Next to Public Places
- Maintain Important Scenic Views
- Tips for a Better-Looking Logging Job
- Developing the Recreation Potential of Your Forest
- Protecting and Enhancing Cultural and Historic Values

### **Part 7.** *Managing for a Diversity of Value-Added Forest Products—FNR-186*

- Forest Herbs
- Mushrooms
- Value-added Wood
- Do Your Homework!

### **Part 8.** *Help!—FNR-187*

- Cost Share Grants
- Classified Forest and Wildlife Habitat Programs
- Leaving a *Forest Legacy* - Permanent Forest Protection Through Conservation Easements
- Tax Incentives
- Education and Technical Assistance
- Carbon Sequestration
- Forest Bank
- Forest Cooperatives
- Forest Certification

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## **Additional Information**

- Fix, W.L. 1993. *The Forests of Indiana*. Purdue University Cooperative Extension Service, FNR-34. 3 p.
- Schmidt, T.L., M.H. Hansen, and J.A. Solomakos. 2000. *Indiana's Forests in 1998*. USDA Forest Service, North Central Research Station, Resource Bulletin NC-196. 139 p.
- Tormoehlen, B., J. Gallion, and T.L. Schmidt. 2000. *Forests of Indiana: A 1998 Overview*. USDA Forest Service, Northeast Area State & Private Forestry, NA-TP-03-00. 18 p.

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