

## Developing a Forest Stewardship Plan: The Key to Forest Management

### The Elements of a Successful Forest Stewardship Plan

Forest stewardship is the management of forest resources in a way that meets the needs of the current owners, but does not adversely affect use by future generations. It requires that the owner have a sense of responsibility, know the opportunities, be aware of the consequences of actions, and be guided by objectives. A forest stewardship plan is a working guide that allows the landowner to maximize the wildlife, timber, recreation, aesthetic value, and other benefits of owning woodland. A good plan combines the natural and physiographic characteristics of the woodlot with the interests and objectives of the owner to produce a set of forest management recommendations. This plan, if followed, should transform the forest into one that is enjoyable and productive for the owner and for future generations.

A forest stewardship plan does not need to be a long, complicated document filled with statistics and confusing jargon; the best plans are brief and to the point. Although formats vary, a sound and useful plan contains these essential elements:

1. landowner objectives for the woodlot;
2. individual maps denoting the property's location, boundaries, forest stands, and soil types;
3. forest inventory data;

4. descriptions and recommendations for each forest stand; and

5. a chronology of recommendations.

Plans are typically written for a 10- to 15-year period but should be updated about every 5 years. We will follow a sample forest stewardship plan for the Becker farm to illustrate the steps in developing a plan.

### Landowner Objectives

There are many reasons for and many benefits to be derived from owning woodland. Most owners value the privacy and aesthetic beauty their forests provide. Many people enjoy bird-watching, hunting, fishing, cross-country skiing, and other forms of forest recreation. Some landowners want an annual supply of fuelwood for their own use or for some periodic income. The list of potential benefits is long.

No one can develop a forest stewardship plan that is right for you without knowing what benefits you value and what ones are unimportant to you. Management recommendations for a given stand of trees can vary dramatically depending upon the objectives. Priorities provide the framework for developing forest management recommendations. Without them, a forester can write a plan only by making assumptions about your priorities or by imposing his or her own. Bring up goals and objectives early in conversations with the foresters and other natural resources professionals you contact.

Take a holistic view of forest management, and develop plans that consider commodity and noncommodity benefits. Management for wildlife, rare and endangered plants and animals, recreational opportunities, scenic vistas, sites of archaeological significance, and areas of future development are all part of natural resource management. These factors should be considered in developing your landowner objectives for a forest stewardship plan.

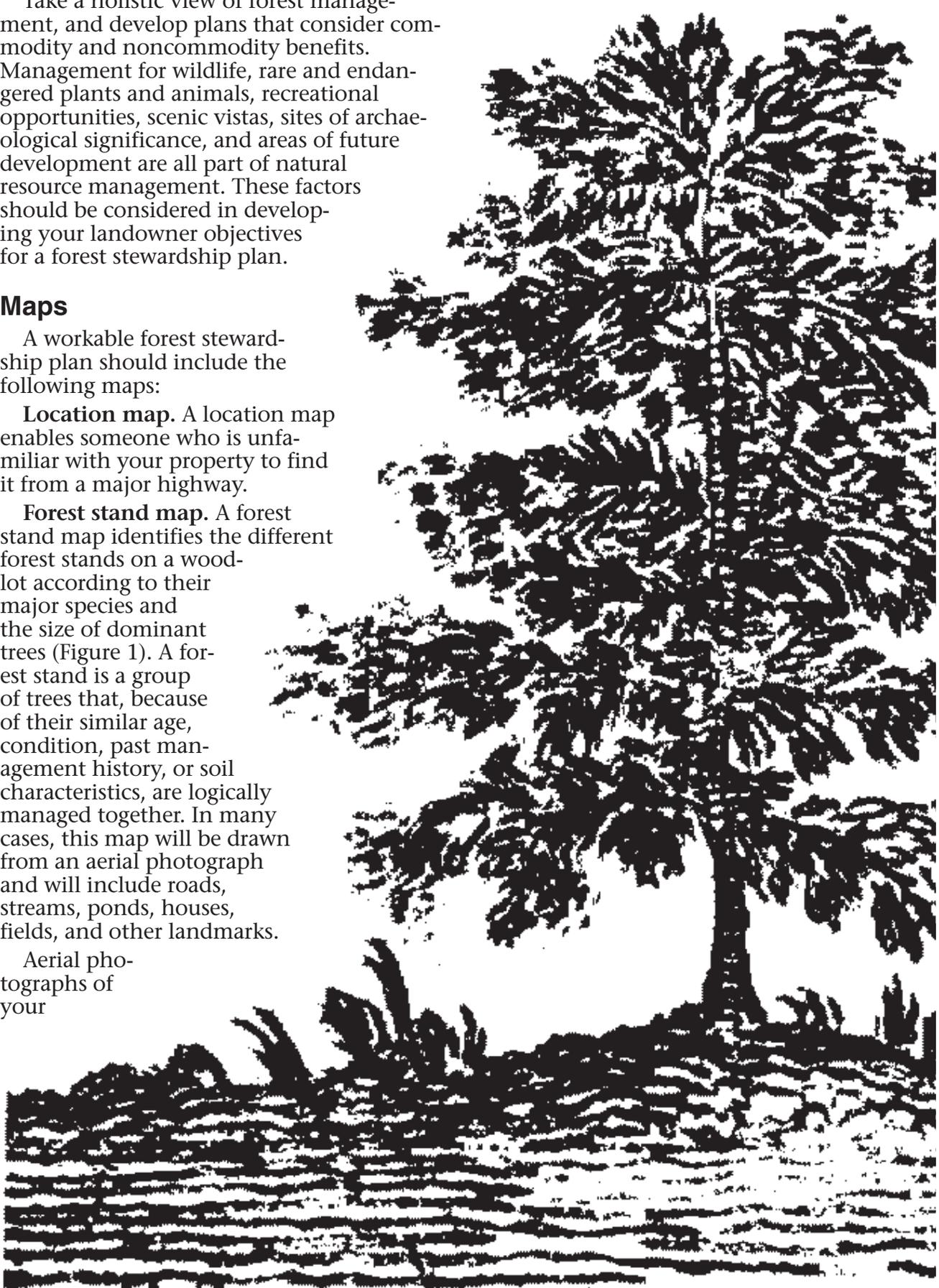
## Maps

A workable forest stewardship plan should include the following maps:

**Location map.** A location map enables someone who is unfamiliar with your property to find it from a major highway.

**Forest stand map.** A forest stand map identifies the different forest stands on a woodlot according to their major species and the size of dominant trees (Figure 1). A forest stand is a group of trees that, because of their similar age, condition, past management history, or soil characteristics, are logically managed together. In many cases, this map will be drawn from an aerial photograph and will include roads, streams, ponds, houses, fields, and other landmarks.

Aerial photographs of your

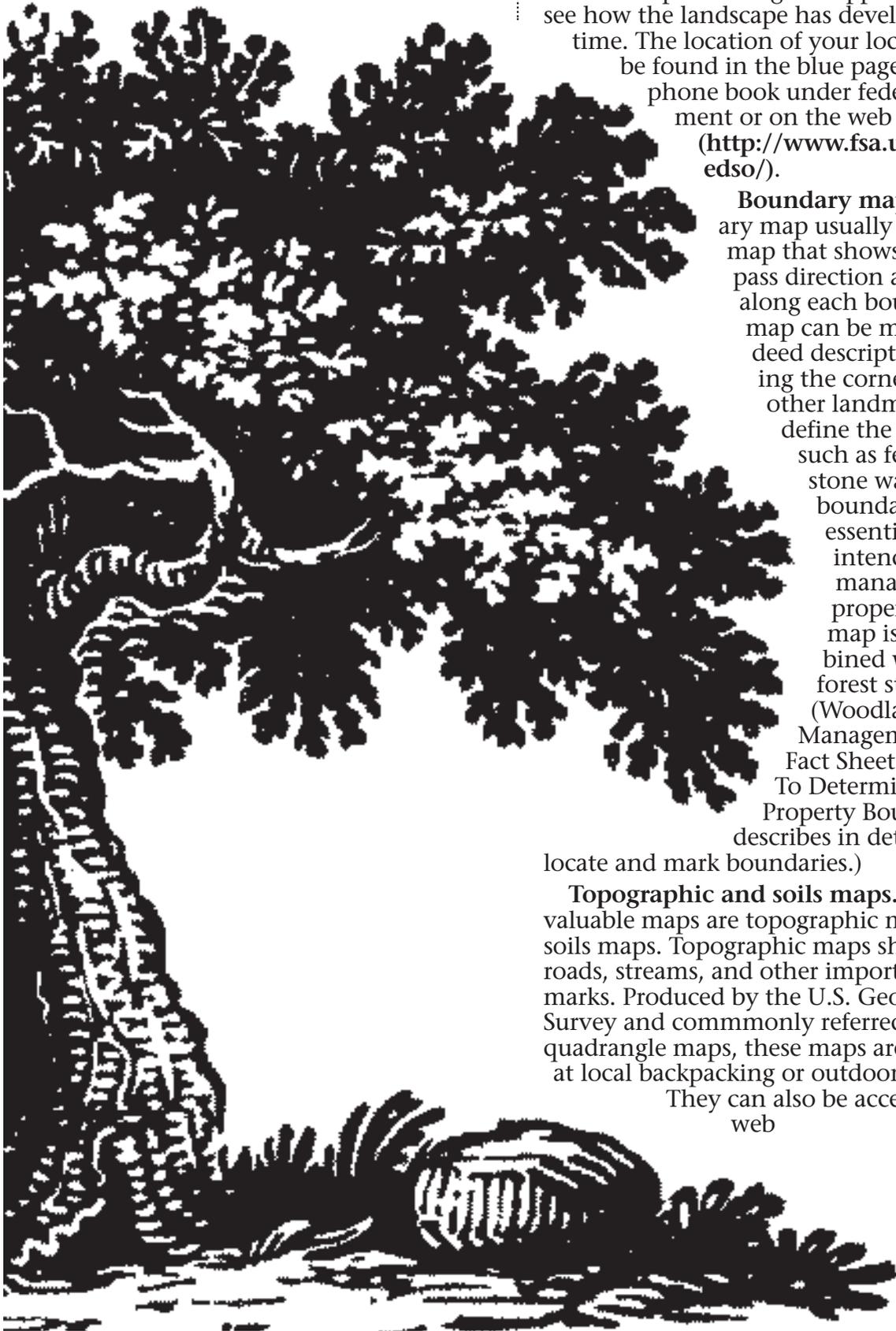


property are available for a nominal fee from your local USDA Farm Service Agency. Photographs can be purchased back to the 1950s and provide a good opportunity to see how the landscape has developed over time. The location of your local office can be found in the blue pages of the phone book under federal government or on the web (<http://www.fsa.usda.gov/edso/>).

**Boundary map.** A boundary map usually is a survey map that shows the compass direction and distance along each boundary. This map can be made from a deed description verifying the corners and other landmarks that define the boundary, such as fence lines or stone walls. A boundary map is essential if you intend to actively manage the property. This map is often combined with the forest stand map. (Woodland Management Series Fact Sheet 619, "How To Determine Your Property Boundaries," describes in detail how to locate and mark boundaries.)

**Topographic and soils maps.** Other valuable maps are topographic maps and soils maps. Topographic maps show slopes, roads, streams, and other important landmarks. Produced by the U.S. Geologic Survey and commonly referred to as quadrangle maps, these maps are available at local backpacking or outdoor stores.

They can also be accessed on the web



(<http://www.mapping.usgs.gov/partners/viewonline.html>). Soils maps help to delineate productive soils for tree growth. These are available from your local Natural Resource Conservation Service office.

Remember that any map you draw should have a scale (for example, 1 inch = 660 feet) and a North arrow.

## Forest Inventory Data

A forest manager must inventory his or her forest periodically to determine its age and condition, what has been removed by cutting or mortality, and what new growth has occurred. Forest inventories provide the data to make sound, scientific management decisions that yield the desired results.

The following are some important points about inventories:

- It is virtually never practical or cost effective to inventory the entire forest. Rather, a random sample of the forest should be inventoried and the results applied to the rest of the forest.
- The size of the sample necessary for good decisionmaking varies from stand to stand according to the quality of a given site and intensity of management. Rarely, for example, is it sensible to pay for a highly precise timber volume inventory in a dense, young red-maple swamp or on a thin-soiled, ridgetop oak stand with little economic value. On the other hand, serious and costly mistakes can be made without good inventory data on fertile sites containing high-quality oak, ash, and pine. Also, if the landowner's major objectives are recreation and aesthetics, the

intensity of sampling would be less than for timber and wildlife management objectives, which require more active management.

- Inventories tell you what the situation is right now; however, trees grow, trees become sick, trees die, and trees are harvested. The forest is a living, dynamic system that changes over time. Inventories, therefore, need to be repeated periodically (preferably every 5 years) and the management plan updated to reflect new conditions.

An inventory of timber volume and related forest stand characteristics should be part of any forest stewardship plan where harvesting of forest products may occur. This comes from inventory data that the forester will have to collect to develop the most basic plan. Table 1 provides an example of the types of information that may be included. For each stand, the number of acres is followed by a variety of measures. *Board foot volume* is the term used to estimate the amount of lumber that could be harvested from standing trees greater than 12 inches in diameter. A board foot is 12 inches square by 1 inch thick and timber is typically sold by the thousand board feet. *Cordwood* estimates the volume available for pulpwood and similar products. *Average stand diameter* gives you an idea of the average diameter of the trees. *Basal area* is a measure of the amount of area in the forest taken up by tree stems and is useful for determining if the forest needs to be thinned. Trees on better quality sites tend to grow faster and have greater value. *Stocking of desirable species* refers to species that are typically grown for forest products.

**Table 1. Timber inventory information for stands 1, 2, and 3 on the Becker farm.**

Stand number	Tree species	Age (Years)	Acres	Total board foot volume	Total cordwood volume	Average stand diameter (inches)	Basal area in square feet per acre	Quality of the site	Stocking of desirable species
1	yellow poplar, ash, oak	50	32	90,000	420	11.2	120	very good	overstocked
2	ash, cherry, Virginia pine	45	24	50,000	160	10.2	85	good	fully stocked
3	Virginia pine	35	10	26,000	75	9.5	150	poor	overstocked

Note: Data on this table are not detailed enough to be used for the sale of forest products.

**Table 2. Management objectives for the Becker farm and stand description and recommendations for the first stand.**

Objectives for Becker farm: To manage for a variety of game and nongame wildlife while providing periodic income from the sale of timber and a supply of firewood for personal use.

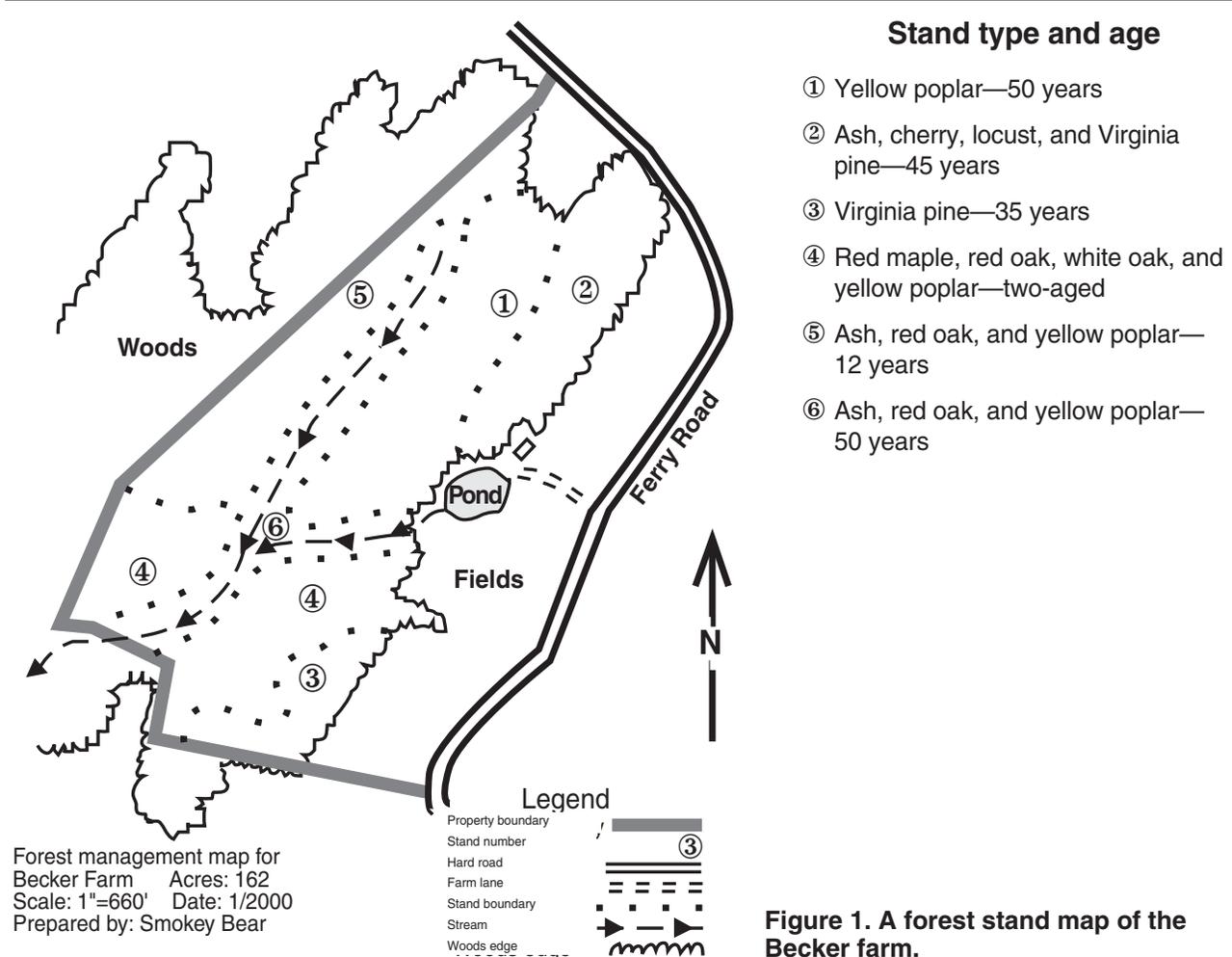
**Description of Stand #1**

Acres	32
Dominant species	Yellow poplar with scattered ash, oak, and red maple
Timber size	10 to 15 inches
Age in years	Even, 50 years
Stocking	High
Desirable species	70 percent
Undesirable species	30 percent
Site growth potential	Good

This maturing stand originated from an abandoned field about 50 years ago. The slopes are minimal, ranging from 5 to 10 percent, and access to the area is possible on old woods roads and trails. The stand is overstocked with trees and the growth rate is slowing. Deer are abundant in the area as evidenced by deer trails and browsing seen in the understory vegetation. Evidence of use by turkeys was noticed during the inventory. There is a lack of ground vegetation, which limits use by some forest birds and other wildlife species. Dead standing trees (snags) are scattered throughout and are being used by woodpeckers. The southern part of this stand has a few small areas that flood during the winter and spring months. They provide wetland habitat for frogs and other amphibians and should be protected during any forest harvesting. The high density (stocking) of trees limits the development of large, mast-producing trees that produce acorns and other food for wildlife. The potential to produce high-quality timber and enhance wildlife habitat is good.

**Recommendations for Stand #1**

A thinning of the forest should be done using a crown-touching release. This will allow sunlight to stimulate the growth of vegetation on the forest floor and provide more diverse wildlife habitat. The harvest will increase the growth of the remaining trees, which should be selected on their potential to produce mast and quality timber products. The wetland habitat areas at the southern part of this stand should be protected from harvesting or equipment traffic. Sawtimber-sized trees can be cut and sold using the services of a professional forester. Pole-sized trees can be sold for firewood or used for personal needs. Unused trees can be cut and left to lay or girdled to produce dead, standing snags that can be used by woodpeckers and cavity nesters.



**Figure 1. A forest stand map of the Becker farm.**

The volumes provided in this inventory are not detailed enough for the sale of forest products; that requires more intensive measurement for the specific area to be harvested. However, if done properly, it can provide the landowner with the **basis value** of the timber for tax purposes.

The basis is the value of the timber on the land, separate from buildings and improvements, at the time of the purchase or inheritance of the property. When you discuss the development of the plan for your property, ask the forester to calculate the basis. This may help you reduce your tax burden when and if forest products are ever sold, because you are only taxed on the amount of money you make above your basis. More information on timber basis and timber tax issues is available in the publication EB360, "Forest Management Account Book."

### **Wildlife Inventory Data**

Wildlife habitat improvement is an important objective for most forest landowners. Landowners can manage some wildlife populations through hunting, but,

in most cases, landowners are affecting the abundance of wildlife by attempting to improve availability of habitat, not by directly controlling population. There are many types of wildlife, each with different habitat requirements. Some require open field, others younger forest, and some, older forest. In many cases, a mix of habitat types is required. The management of wildlife habitats is very rewarding. Express your wildlife interests to the forester during the first meeting when objectives are being developed. The forester or wildlife biologist can then develop management recommendations in the forest stewardship plan to create or enhance a variety of habitats to meet your objectives.

The inventory of individual wildlife species is not practical, but most foresters or wildlife biologists can record visual observations and wildlife sign (droppings, marks, trails, dens, etc.) during the inventory process. We suggest you educate yourself through publications or seminars on how to identify different species and habitat. More information on wildlife species and habitat is available through the Wildlife



Management Series, a series of 17 wildlife management fact sheets sold as a package for a nominal fee. The series is available from your local Maryland Cooperative Extension office.

## Heritage Concerns

Many landowners are rightfully concerned about identifying endangered species, sensitive wildlife habitats, wetlands, unique forest areas, and other important areas during the inventory process. If these are important objectives, ask the forester to have a natural resource professional trained in heritage concerns to review your plan or visit the property. State foresters have access to resource professionals in the Heritage Division, and private foresters can also find individuals to meet this need. The results of findings can be incorporated into the stand descriptions and recommendations.

## Stand Descriptions and Recommendations

For each forest stand identified on the forest stand map, there should be a description and a set of management recommendations.

The stand description and recommendations can be in the form of a chart, a paragraph, or a combination of the two. The description should contain information on the age and condition of the stand and the quality of the growing site. Management recommendations that ignore these factors are not likely to be useful. Table 2 shows the Becker farm's overall management objectives as well as the stand description and associated management recommendations for the first stand.

## Chronology of Recommendations

A chronological listing of recommended management activities for the next 10 to 15 years is a valuable reference and should be included in any forest management plan. This can be updated and changed as needed, but it provides a long-term view. The list should include the following:

- the year the practice will be completed,
- the stand and number of acres for which the plan is recommended,

**Table 3. The first 6 years of the 15-year management practice schedule for the Becker farm.**

Completion Date	Stand Practice	Number of Acres
1994	1	34
	Thinning (crown-touching release)	
1995	4	62
	Grapevine control on crop trees	
1996	3	11
	Harvest Virginia pine/Replant	
1997	2	24
	Thinning (crown-touching release)	
1998	all	—
	Stabilize and clear roads and trails	
1999	5	28
	Select harvest	

- a brief description of each recommended activity, and
- an estimate of the anticipated yield associated with each practice.

Table 3 shows the first 6 years of the 15-year management practice schedule on the Becker farm.

## How To Get Started

The best way to start a forest stewardship plan is with a project forester from the Maryland Department of Natural Resources, Forest Service ([www.dnr.state.md.us/forests/phonelist.html](http://www.dnr.state.md.us/forests/phonelist.html)). To contact the forester in your county, look in the blue pages of the telephone directory under State Government, Department of Natural Resources, Forest Service, or contact the Maryland Department of Natural Resources, Forest Service, Tawes State Office Building, Room E-1, Annapolis, MD 21401. The forester will tour your woodlot and help you develop forest management objectives based on your interests and goals, as well as the ability of the land to meet them. The forester can conduct an inventory of your woodland and develop a written management plan in cooperation with wildlife and fishery biologists, ecologists, and other natural resources professionals. The forester also can help you implement the plan. This assistance may include recommending private consulting foresters who can provide timber sale and management services for a fee.

If you are considering harvesting forest products, use the services of a professional forester. For more information, see the Woodland Management Series Fact Sheet 628, "Marketing Forest Products."

Consultant foresters also can develop a written management plan. A list of registered consultant foresters is available from your county Extension office or on the DNR Forest Service website ([www.dnr.md.us/forests/oflists/caif.html](http://www.dnr.md.us/forests/oflists/caif.html)). For more information on services offered by state and private natural resources professionals, see the Woodland Management Series Fact Sheet 624, "Sources of Assistance for Forest Stewards."

Several other Extension publications related to forest management are available from your county Extension office ([www.agnr.umd.edu/ces/cooffices.html](http://www.agnr.umd.edu/ces/cooffices.html) or [www.agnr.umd.edu/ces/pubs/home.htm](http://www.agnr.umd.edu/ces/pubs/home.htm)). To contact your county Extension educator, look in the blue pages of the telephone directory. Listings vary, but usually can be found under "County Government, Extension" or "County Government, Cooperative Extension, University of Maryland." The Woodland Management Series of fact sheets addresses a variety of

forestry topics, in addition to where to get help, such as how to measure your forest, explanations of forest terminology, and resource lists of alternative income opportunities. The Wildlife Management Series of fact sheets provides information on individual wildlife species (game and nongame), basic wildlife management, recreational access, and other topics. Contact your county Extension office for more information on either of these fact sheet series.

Remember, a plan is worthless unless it is implemented. As a forest steward, it is your responsibility to take the necessary steps to care for your woodland. Be an example to others. To learn more about forest management, call your county Extension office for information on educational programs or ask your forester.

### **Adapted From**

M. Beattie, C. Thompson, and L. Levine. 1993. *Working with Your Woodland: A Landowner's Guide*. University Press of New England; Hanover, New Hampshire.

T.J. McEvoy. 1987. *Developing a Forest Management Plan*. Bulletin Br 1353. University of Vermont Cooperative Extension Service; Burlington.

**Forest Stewardship information available online at  
[www.naturalresources.umd.edu](http://www.naturalresources.umd.edu)**

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