

A close-up photograph of a person's hand holding a measuring tape against the bark of a tree trunk. The hand is on the left, and the tape extends horizontally across the middle of the frame. The tree bark is rough and textured. The background is a blurred green field with yellow flowers.

CHAPTER 10

Forest Management Planning

CHAPTER 10 FOREST MANAGEMENT PLANNING

FOREST MANAGEMENT PLANNING.....	10-2
Incorporating Sustainability Into Forest Management Plans	10-2
BMPs: Invasive Species	10-5
Types of Forest Management Plans	10-7



FOREST MANAGEMENT PLANNING

A forest management plan is a written document that helps guide a landowner's management decisions and identifies actions to meet and achieve their goals and objectives. A professional forester can help a landowner prepare their management plan and implement practices included in their plan. At a minimum, forest management plans should address and include the following:

- Property ownership – who owns the property?
- Property description – where is the property located?
- A statement about the landowner's management goals and objectives and what they plan to achieve
- A description of resource conditions and concerns
- Recommended management activities and schedule
- Map(s) – property maps, soil maps, etc.
- Resources and information – publications, permits, professional assistance contact information

Incorporating Sustainability Into Forest Management Plans¹

In many cases, developing a forest management plan requires an understanding of how the forest interacts with other surrounding vegetative communities on the landscape, and responds to disturbances including management activities. The concept of sustainable forestry practices was introduced in Chapter 2: Generally Accepted Silvicultural Principles, and will be further explained in the following steps.

STEP ONE: IDENTIFYING LANDOWNER GOALS

Landowners may not have well-defined goals and objectives for managing their forestland, or may not be aware of the management opportunities on their land. Foresters must be able to help the landowner identify and understand their long-term goals, and clearly articulate to the landowner how they can achieve them.



Figure 10-1: Frequent communication between the forester, landowner and other resource professionals helps insure management objectives are fully achieved.

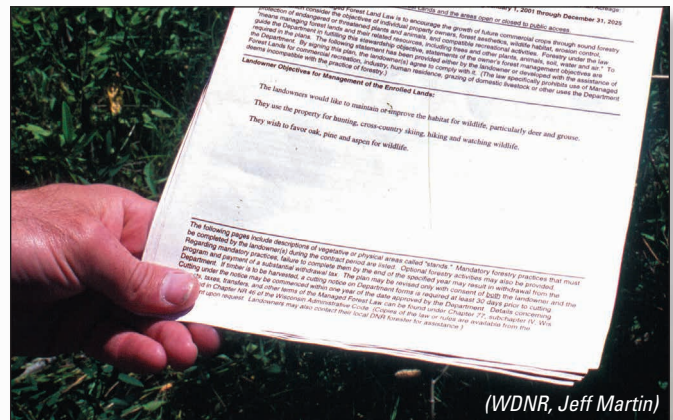


Figure 10-2: An important first step in developing a management plan is to identify the landowner's specific objectives, and list them in the written plan.

By involving the landowner in the development of their plan, the forester can help the landowner better understand the recommendations included in their plan, and ensure that they are in line with the landowner's goals. Foresters should carefully consider the objective statement provided by the landowner, and help refine it, if necessary, with the landowner's involvement.

Some example goals may include: 1) create habitat for a wide range of wildlife species; 2) maximize income from wood production; or 3) provide the best possible deer habitat.

¹ This section is adopted from Kotar, J. 1997. *Approaches to Ecologically Based Forest Management on Private Lands*. University of Minnesota Extension Service, publication NR-604.

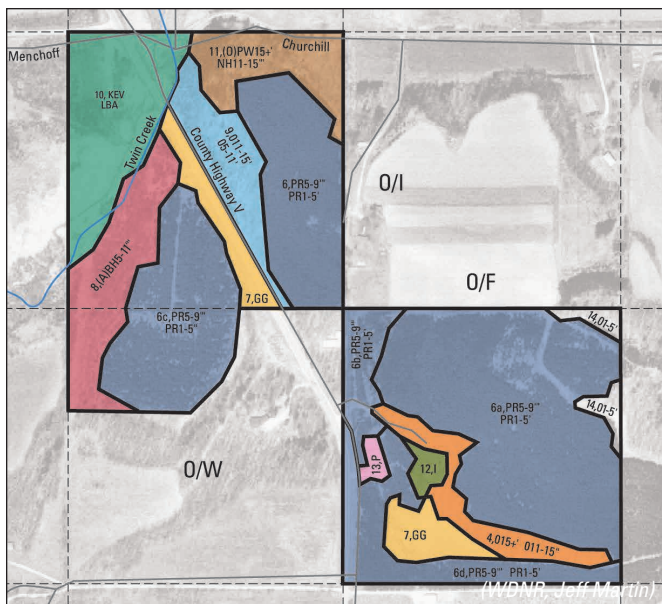


Figure 10-3: An important step in planning is to identify site types, delineate individual stands, and prepare a map of the property.

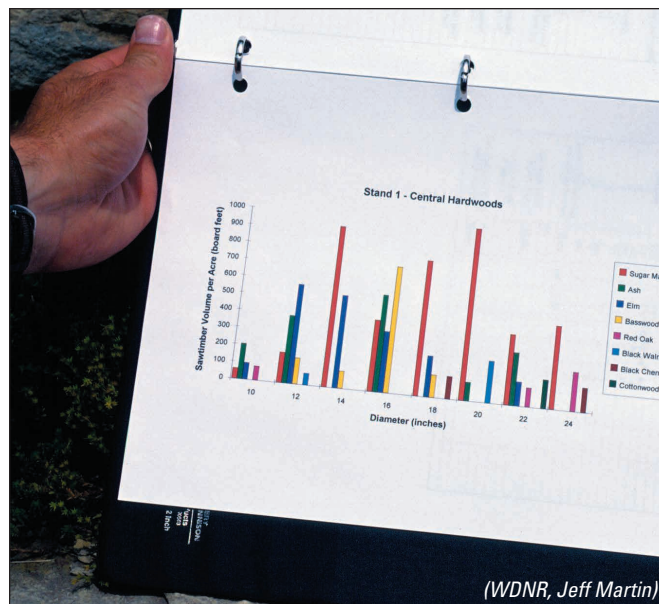


Figure 10-4: An inventory of each stand will provide basic information to guide management decisions. The chart in this photo indicates the board-foot volume per acre by species and diameter for a specific stand.

STEP TWO: ASSESS RESOURCE CONDITIONS AND CONCERNS

Secure aerial photographs, topographic maps, soil surveys, Natural Heritage Inventory (NHI), cultural heritage, and other available resources to gather background information about the property and help prepare for the visit. Much of this information is available from federal, state and local county offices: Soil and Water Conservation District (SWCD), USDA-Natural Resource Conservation Services (NRCS), Department of Natural Resources (DNR), and county land departments.

Conduct an on-the-ground evaluation of the land. It is important to understand existing resources, conditions and concerns on the land before recommending any type of management activity. Evaluate soil conditions to determine tree species, preferred seasons of operation, site preparation and regeneration requirements. Identify important resources, features and site conditions that may require special attention (e.g., water resources, steep slopes, rock outcrops, invasive species, and wildlife impacts). Assess the presence of cultural and historic resources, threatened and endangered species, or species of special concern.

Other important factors to consider when planning forest management activities include maintaining aesthetic quality and the location and design of roads.

Delineate site types (see Chapter 2: Generally Accepted Silvicultural Principles). A site is a portion of land characterized by factors that affect ecosystem properties (e.g., tree species composition). These factors can influence a tree species' ability to grow, reproduce, and compete include soil depth, texture and chemical properties, and position on the landscape (such as north or south slope aspect, ridge or valley, etc.). An ownership may have more than one site type.

STEP THREE: IDENTIFY STANDS

A stand (see Chapter 2: Generally Accepted Silvicultural Principles) is a group of trees in the same area with similar species composition, age, condition and stage of development. A forester may elect to divide a site type into more than one stand in order to apply a range of management treatments (or passive management) to meet a variety of landowner objectives.

STEP FOUR: IDENTIFICATION OF SILVICULTURAL AND ECOLOGICAL ALTERNATIVES FOR EACH STAND

The way in which a stand develops over time, in terms of compositional and structural changes, is relatively predictable. The current development trend of the stand, however, are not necessarily the only ecologically acceptable pathways, and may not meet the landowner's goals. Before deciding on the most viable management option, a forester should identify other ecological alternatives.

Properly delineated, each stand can be expected to respond uniformly to a given natural disturbance or management action. Although there are limitations due to site, stand composition and availability of seed sources, there is almost always more than one ecologically sound silvicultural alternative available. All too often, regenerating the existing tree cover type is the only option considered. Such a choice may not always be ecologically desirable, nor meet the landowner's goals.

By identifying viable ecological and silvicultural alternatives, more management options can be offered to the landowner. Considering the following factors when developing management alternatives:

- **Age structure of the stand.** Species and age structure are two fundamental properties of any forest stand. They must be taken into account in any management consideration.
- **Successional role of each species comprising the current stand (overstory and understory).** This information is essential for planning changes in stand composition and regeneration techniques.
- **Relative growth potential of each species on the identified site type.** This may be the most important information for any management decision because growth potential relates not only to economic outputs, but also strongly affects forest dynamics.
- **Presence of advance regeneration.** Presence of advance reproduction to a large extent dictates the type of regeneration techniques that will be applied. Also, advance reproduction may or may not be of the desired species.
- **Anticipated response of advance regeneration to different types of stand manipulation.** If advance regeneration is of mixed species, different growth rates can be expected with different degrees of canopy removal. Seedlings of most species benefit from complete canopy removal, but some shade-tolerant species respond best to gradual canopy removal.
- **Anticipated response of competing vegetation after opening of the canopy.** Understory plant species respond differentially to removal of the forest canopy, and present different degrees of competition to tree seedlings. Response of competing vegetation also varies among site types. Generally, the more mesic the site, the stronger the understory competition. However, potential competing species are not necessarily present in every stand. Some nonnative invasive plants are very competitive and can limit regeneration and growth (see [3.1](#), [3.3](#) and [4.3](#)).
- **Potential for inducing advance reproduction of each canopy species.** Regeneration requirements vary greatly with species. Some conditions are more difficult to meet artificially than others.
- **Existing and potentially-damaging agents.** Some species are more susceptible to specific damaging agents (e.g., deer herbivory, insects, pathogens, frost, windthrow) in certain regions or on specific site types.



Figure 10-5: Having a trained forester collect inventory data for each stand on the property is necessary before prescriptions can be developed.

STEP FIVE: EVALUATE LANDOWNER GOALS AND OBJECTIVES TO IDENTIFY MANAGEMENT OPTIONS

- **Landowner’s Resource Constraints:** Some silvicultural and ecological opportunities identified previously may not meet an owner’s financial expectations, or may exceed their commitment of time.
- **Regional and Landscape Ecological Issues and Concerns:** Management practices that are ecologically sound on a site or local ecosystem level may not address landscape and regional concerns. However, resource professionals working with private owners should be aware of such issues, and bring them to the owner’s attention when preparing management plans. Such issues vary greatly from region to region, and cannot be addressed comprehensively.

The following are examples of regional ecological considerations:

- Lack of large contiguous blocks of specific habitats to accommodate wide-ranging animal species, or those that do not thrive in edge habitats.
- Need for special wooded corridors to accommodate movement of some animal species between suitable habitat patches.
- Loss of certain vegetation types (and accompanying fauna) due to changes in natural disturbance regimes (e.g., loss of oak savannas or pine forests due to suppression of wild fires).
- Shortage of mature stages of forest development.
- Reduced compositional and structural diversity of forest communities.
- Lack of tree regeneration and reduction of shrub/herb density and diversity due to high deer populations.
- Management of invasive insects or diseases such as the emerald ash borer or beech bark disease.

Additional information for ecological considerations can be found in landscape-level documents like the *Ecological Landscape Handbook* and the *Wildlife Action Plan* (see the Resource Directory for more information).

- **External Socioeconomic Constraints:** Certain activities may be constrained by zoning laws, local and regional land use plans or forest practice regulations, while others may simply conflict with the attitudes of neighbors or the general public. While the latter doesn’t bind an owner, a conscientious resource professional will keep landowners informed in order to minimize potential future conflicts.
- **Socioeconomic Incentives:** Socioeconomic constraints often can be balanced by incentives. These may include lower property taxes on managed forestland, income tax deductions for forest management investments, government cost-sharing for management practices, and others. Some practices may also engender greater public acceptance than others without compromising a landowner’s goals.

BMPs: Invasive Species

The following are Forestry BMPs for Invasive Species (IS-BMPs) to consider when preparing a forest management plan.

- ☛ 3.1 Include a strategy for managing invasive species.
- ☛ 3.3 Consider the need for action based on: 1) the degree of invasiveness; 2) severity of the current infestation; 3) amount of additional habitat or hosts at risk for invasion; 4) potential impacts; and, 5) feasibility of control with available methods and resources.
- ☛ 4.3 Consider the likely response of invasive species or target species when prescribing activities that result in soil disturbance or increased sunlight.

STEP SIX: DEVELOP MANAGEMENT OBJECTIVES FOR EACH STAND

The previous steps identify ecologically sound management options for individual stands, and eliminate from consideration those that do not align with the landowner's goals or available resources. Based on these options, both the landowner and the forester must select the management (or silvicultural) objectives for each stand (i.e., what to grow and how to grow it, as explained on page 2-35).

STEP SEVEN: PREPARING THE MANAGEMENT PLAN

Only when management objectives have been defined through this type of process should the management plan (i.e., the "action plan") be developed. The management plan is a written document that

summarizes all of the previous information, and then clearly prescribes management activities and a timeline for accomplishing them.

Detailed silvicultural prescriptions are not part of the initial management plan – these are developed immediately prior to a scheduled management practice in order to take into account unique stand conditions. For example, a timber harvest or tree planting project should have a detailed project plan with specific instructions or performance criteria.

A suggested process to develop management options is depicted in Figure 10-7. It should be emphasized that this is a process (i.e., a sequence of steps to consider) and not an outline of items to be specifically included in actual management plans.

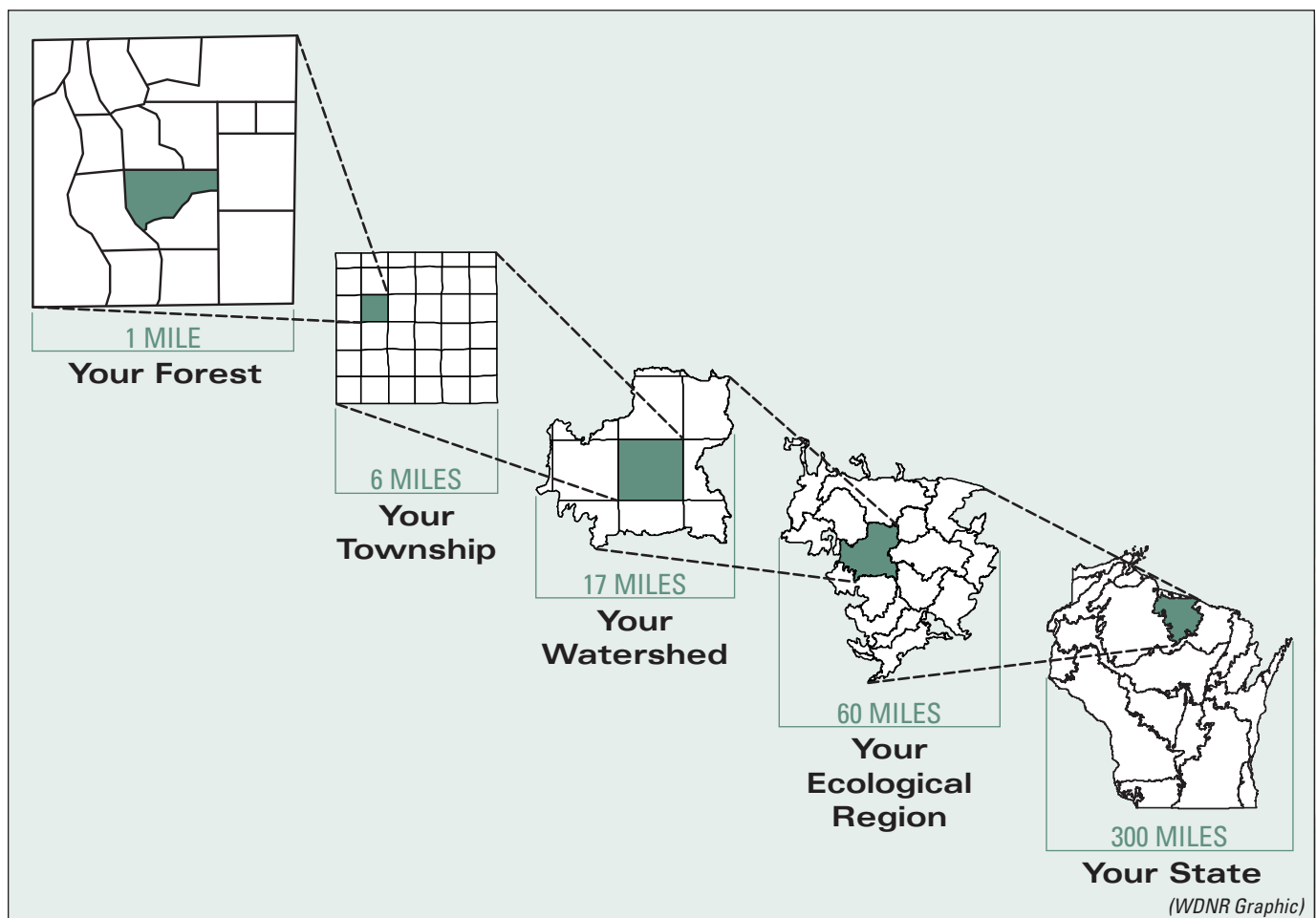


Figure 10-6: Understanding how your property is connected can help to understand how management locally impacts the resources in the township, watershed, state and beyond. Some landscape level tools are identified in the Resource Directory.

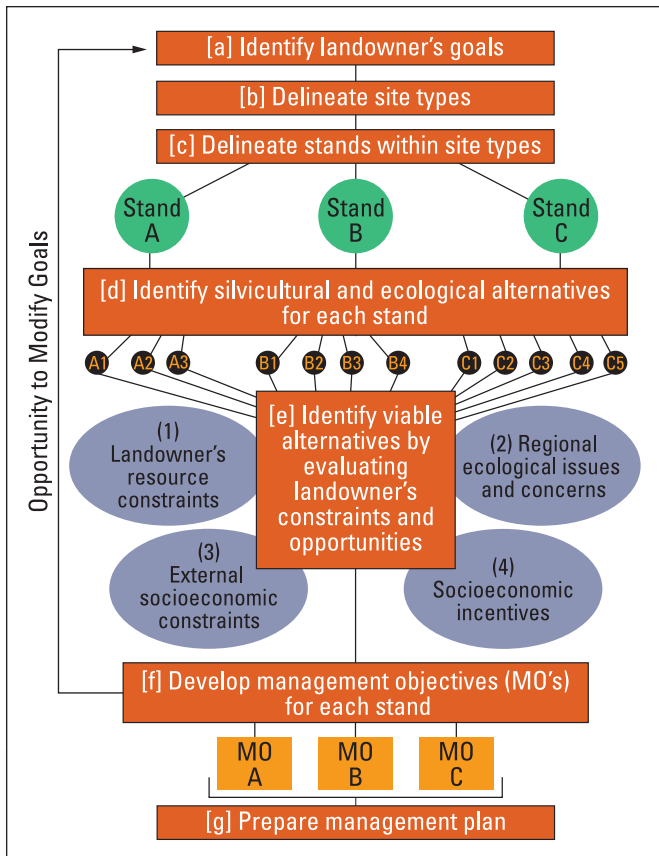


Figure 10-7: Model of an approach to the development of ecologically sound forest management plans.
(Figure adapted from Kotar, page 14)

Types of Forest Management Plans

While this chapter describes how to develop a more comprehensive management plan, there are other types of plans that a forester can write based on a landowner's interest and readiness to take action on their property. A forest management plan can range from being quite brief to detailed depending on its purpose. For state and federal programs in Wisconsin, forest management plans usually fall into these categories:

- **Practice Plans:** Practice plans provide detailed information about how to implement an individual practice. Practice plans may stand alone or may supplement a more comprehensive plan.
- **Basic Plans:** Basic Plans outline (a) general management practice(s) for a property and may be in the form of a letter or summary of management prescriptions. They are used most often as a follow-up to initial contact with a new landowner to support verbal recommendations, and lay the groundwork for further action in the future. A Basic Plan might not meet the plan standard requirements for cost-sharing or forest tax programs, but should still incorporate the sustainable forestry principles described in the first section of this chapter.
- **Comprehensive Plans:** Comprehensive Plans such as Forest Stewardship Plans (FSPs) are more complete than Basic Plans, and can qualify landowners for different financial incentives, such as cost-sharing and tax law programs. They incorporate sustainable forestry principles and may go into some detail to identify and describe activities to enhance or protect soil, water, aesthetic quality, recreation, timber, water, and fish and wildlife resources based on the landowner's objectives for the land.



WISCONSIN DEPARTMENT OF NATURAL RESOURCES NOTICE OF FINAL GUIDANCE & CERTIFICATION

Pursuant to ch. 227, Wis. Stats., the Wisconsin Department of Natural Resources has finalized and hereby certifies the following guidance document.

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Wisconsin Forest Management Guidelines

PROGRAM/BUREAU

Forest Economics and Ecology, Applied Forestry Bureau

STATUTORY AUTHORITY OR LEGAL CITATION

S. 823.075, Wis. Stats. & NR 1.25, Wis. Admin. Code

DATE SENT TO LEGISLATIVE REFERENCE BUREAU (FOR PUBLIC COMMENTS)

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4/6/2020

DNR CERTIFICATION

I have reviewed this guidance document or proposed guidance document and I certify that it complies with sections 227.10 and 227.11 of the Wisconsin Statutes. I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is not explicitly required or explicitly permitted by a statute or a rule that has been lawfully promulgated. I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is more restrictive than a standard, requirement, or threshold contained in the Wisconsin Statutes.

March 27, 2020

Signature

Date