POLK COUNTY FOREST COMPREHENSIVE LAND USE PLAN

TABLE OF CONTENTS

Rev. 05/26/2020

CHAPTER 800

INTEGRATED RESOURCE MANAGEMENT

List of Tables

800 CHAPTER OBJECTIVES

1. To introduce and communicate to the public, the County Board of Supervisors, and to the Wisconsin DNR, the integrated resource approach that forestry, wildlife and other natural resource staff will use on the Polk County Forest during this planning period.
2. To demonstrate literature and outside resources available to aid in the management of the Forest.

805 INTEGRATED RESOURCE MANAGEMENT APPROACH

Integrated Resource Management is defined as: "the simultaneous consideration of ecological, physical, economic, and social aspects of lands, waters and resources in developing and implementing multiple-use, sustained yield management" (Helms, 1998).

This balance of ecological, economic, and social factors is the framework within which the Polk County Forest is managed.

The working definition of Integrated Resource Management means, in large part, keeping natural communities of plants and animals and their environments healthy and productive so people can enjoy and benefit from them now and in the future.

The remainder of this chapter is written to help communicate how the Forest is managed on an integrated resource approach.

810 SUSTAINABLE FORESTRY

"the practice of managing dynamic forest ecosystems to provide ecological, economic, social and cultural benefits for present and future generations" NR 44.03(12) Wis. Adm. Code and s.28.04(1)(e), Wis. Stats.

For the purpose of this chapter, sustainable forestry will be interpreted as the management of the Forest to meet the needs of the present without knowingly compromising the ability of future generations to meet their own needs (economic,

social, and ecological) by practicing a land stewardship ethic which integrates the growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, and wildlife and fish habitat. This process is dynamic, and changes as we learn from past management.

810.1 TOOLS IN INTEGRATED RESOURCE MANAGEMENT

810.1.1 Compartment Recon

The County will support and utilize the compartment reconnaissance procedures as set forth by the DNR Public Forest Lands Handbook 2460.5. WisFIRS serves as the database for housing recon information.

810.1.2 Forest Habitat Classification System

The Forest Habitat Classification System (*A Guide to Forest Communities and Habitat Types of Northern Wisconsin Second Edition; Kotar, et al*.) is a natural classification system for forest communities and the sites on which they develop. It utilizes systematic interpretation of natural vegetation with emphasis on understory species. More information about the Forest Habitat Classification System can be found in the Wisconsin DNR Silviculture Handbook or by visiting:
https://dnr.wi.gov/topic/ForestManagement/documents/24315/12.pdf
Forest Habitat Classification Types are discussed in greater detail in the "Integrated Resource Management Units" (Section 880) section of this chapter.

810.1.3 Soil Surveys

Forestry staff's knowledge of forest ecology and their experience across the landscape can assist in associating forest habitat types and site indices with soil type information. These associations can be beneficial in determining management prescriptions for specific sites. WisFIRS contains soil survey data, and this information can also be found on the NRCS website-based soil survey. https://websoilsurvey.sc.egov.usda.gov.

810.1.4 Ecological Landscapes of Wisconsin

The Wisconsin DNR uses Ecological Landscapes of Wisconsin (WDNR Handbook 1805.1) which is an ecological land classification system based on the National Hierarchical Framework of Ecological Units (NHFEU). Ecological landscapes distinguish land areas different from one another in ecological characteristics. A combination of physical and biological factors including climate, geology, topography, soils, water, and vegetation are used. They provide a useful tool and insight into ecosystem management. Land areas identified and mapped in this manner are known as ecological units.

Generally accepted silvicultural systems are prescribed on a stand level scale, in recognition of the position within an ecological landscape. For more information please visit: https://dnr.wi.gov/topic/landscapes/

810.1.5 Integrated Pest Management

"The maintenance of destructive agents, including insects, at tolerable levels, by the planned use of a variety of preventive, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable"

The Committee has the authority to approve and direct the use of pesticides and other reasonable alternatives in an integrated pest management program on the Forest.
Refer to Chapter 600 (610.3) for more detailed discussion and integrated pest management strategies.

810.1.6 Best Management Practices for Water Quality

The most practical and cost-effective method to assure that forestry operations do not adversely affect water quality on the Polk County Forest is to utilize "best management practices" (BMP's) as described in *Wisconsin's Forestry Best Management Practices for Water Quality*. *Publication number FR-093*.

Consistent with the aforementioned manual, Polk County will use BMP's on the Forest with the understanding that the application of BMP's may be modified for specific site conditions with guidance from a forester or other natural resource professional. Modifications will provide equal or greater water quality protection or have no impact on water quality. Areas with highly erodible soil types, proximity to streams or lakes, or steep slopes may require mitigating measures in excess of those outlined in the manual. All Polk County employees practicing forestry will receive BMP training. Additionally, Polk County will encourage BMP training of all logging contractors that operate on County timber sales. For more information please visit:
https://dnr.wi.gov/topic/ForestManagement/bmp.html
and/or
https://dnr.wi.gov/topic/ForestManagement/guidelines.html

810.1.7 Fire Management
See Chapter 600 also.

810.1.7.1 Prescribed Fire

Prescribed burning on the County Forest may play an important role in management. Many of the plant communities present today are the result of wild fires.

As the needs are presented to regenerate or maintain timber types or other plant communities, the Committee will examine the costs and benefits of each opportunity. Increased regulations, the county's cost of completing the burn, and the risk of breakouts and uncontrolled fires will have to be considered with any benefits of vegetation management through prescribed burning.

All prescribed burning will be done in accordance with Wisconsin State Statutes 26.12, 26.14, and the DNR Prescribed Burn Handbook 4360.5 and in cooperation with the Department of Natural Resources per section 605.5 of this plan.

810.1.8 Outside Expertise, Studies and Survey

Additional data necessary to make management decisions on the County Forest will be sought from agencies or individuals, who have the best capability and technical expertise, including, but not limited to:

- Water Resources: WDNR
- Wildlife Resources: WDNR
- Soil Resources: NRCS
- Mineral Resources: WDNR
- Wetland Resources: WDNR, Army Corps of Engineers, County Zoning
- Navigable Streams: WDNR, Army Corps of Engineers, County Zoning
- Floodplains: County Zoning
- Cultural Resources: WDNR, State Historical Society
- Entomology / Pathology: WDNR
- Endangered Resources: WDNR
- Forestry: Cooperative Field Trials, see WDNR website
- Other subjects as needed

815 MANAGEMENT CONSIDERATIONS TO REDUCE LOSS

815.1 RISK FACTORS:

To reduce loss to natural or social factors such as wind, flooding, fire, climate change, timber markets, etc. Polk County will continue to maintain a healthy mix of species and habitats managed sustainably in order to mitigate the effects of these factors.

815.1.1 Climate Change

Climate change factors that will impact the Polk County Forest are; seasonal temperatures, timing and type of precipitation, soil moisture patterns, the severity and frequency of natural disturbances, and the abundance of pests and diseases. Ecosystems respond to these changes in a variety of ways. Using ecosystem-based adaptation strategies that use a range of opportunities for sustainable management, conservation, and

restoration of forests to maintain ecosystem integrity helps reduce or avoid loss of forest cover, declines in forest productivity and reduction in the environmental benefits that forest provide to people such as wildlife, recreation, and forest products. Forests that are well adapted to climate change and climate variability may be better poised to persist or even thrive under future conditions, as well as to meet the goals for forest management.

815.1.2 Timber Markets

Timber markets allow the flexibility to manage the forest on a sustainable basis. Without adequate markets for wood, revenue is lost and the ability to manage the forest diminishes. Forest Certification is one means to help support the timber industry within the state.

815.1.3 Wind

A healthy forest with a balance of age classes will help mitigate losses due to wind. Younger forest are typically capable of handling adverse weather occurrences.

815.1.4 Invasive species

Invasive species have gained a foothold in many forest in the southern part of Wisconsin. At the time this plan was written the Polk County Forest is relatively free of invasisve species. Treating invasive species have the capability of adding additional operation cost, influence the diversity of the forest and consume a considerable amount of staff time.

820 PLANT COMMUNITIES MANAGEMENT

Polk County recognizes the importance of maintaining the diversity of the forest under an ecosystem approach. The process involved in making management decisions to encourage or not encourage specific species or communities is complex. It includes an understanding of:

- Objectives of the County
- Integration of landforms, soils, climate, and vegetative factors
- Habitat classification

- Past, present and future desired condition
- Surrounding ownership patterns and general objectives
- Wildlife habitat and other values
- Social needs

820.1 SILVICULTURAL PRACTICES/TREATMENTS

Silviculture is the art and science of controlling forest composition, structure, and growth to maintain and enhance the forest's utility for any purpose. These practices are based on research and general silviculture knowledge of the species being managed. The goal is to encourage vigor within all developmental stages of forest stands, managed in an even aged or uneven aged system. The application of silviculture to a diverse forest needs a unified, systematic approach. The DNR Public Forest Lands Handbook (2460.5) and DNR Silvicultural Guidance will be used as guidelines for management practices used on the County Forest.

A compilation of silvicultural trials on State and County lands is available at: https://dnr.wi.gov/topic/forestmanagement/silviculturetrials.html

820.1.1 Natural Regeneration

Where feasible, natural regeneration will be encouraged through the use of silvicultural methods that promote regrowth and recruitment of the forest. In general, the particular silvicultural method chosen will depend on the biological functions of the target species or forest type.

820.1.1.1 Clearcutting/Coppice

Clearcutting is a silvicultural method used to regenerate shade intolerant species. Complete, or nearly complete removal of the forest canopy will stimulate the regeneration and growth of species such as aspen, jack pine and white birch. This method is also used as a final rotation removal in species such as red oak, red pine and others. Tree retention guidelines are followed when prescribing clearcut or coppice cuts.

820.1.1.2 Shelterwood / Seed Tree

Shelterwood harvest is a method used to regenerate mid-shade tolerant and shade tolerant species. Partial canopies stimulate regeneration, enhance growth and can provide seed source. Canopies are eventually removed. This method is used for white birch, white pine, red oak, and northern hardwood (when managing even aged).

820.1.1.3 All Aged Regeneration Harvests

All aged regeneration harvests are used in shade tolerant species. Gaps in the forest canopy allow regeneration to occur throughout the stand. Over time, multiple entries into the stand will create multiple age class structure with the intent of creating a fully regulated stand. All aged regeneration harvests may be prescribed in the form of single tree selection, group selection or patch selection. This method is used in northern hardwood and occasionally in swamp hardwoods (when managing for all aged)

820.1.1.4 Prescribed Burning

Prescribed burning may be utilized as a tool to promote regeneration. A number of forest types in Polk County are ecologically tied to fire. Burning may create seeding conditions or release regeneration from competing vegetation. Prescribed fire may be used for regeneration of red oak, jack pine or white pine.

820.1.1.5 Soil Scarification

Scarification is a technique used to prepare a seedbed beneath forest stands scheduled for harvest and regeneration. This mechanical disturbance that exposes bare mineral seedbeds and creates conditions necessary for regeneration of pine species. Disturbance that mixes seed into duff and soil layers creates optimal conditions for regeneration of oak, white birch, fir and others. Polk County utilizes salmon blades, root rakes, straight blade, and anchor chain for soil scarification.

820.1.1.6 Other

Other natural regeneration techniques may be considered where necessary and appropriate. New methods for natural regeneration are continually tested for effectiveness.

820.1.2 Artificial Regeneration

When natural regeneration fails, or when tree species present do not coincide with management objectives for the site, artificial means will be employed to establish a desirable stand of trees. Artificial regeneration on a site usually requires some form of site preparation followed by seeding or planting.

820.1.2.1 Mechanical Site Preparation

Mechanical site preparation includes the use of soil disturbance equipment such as a disc, roller chopper, patch scarifier, disk trencher or V-plow prior to tree planting or seeding. These types of equipment are used to reduce logging debris to a smaller size, incorporate debris into the soil, clear brush and debris from the site, and to reduce competition from other vegetation.

820.1.2.2 Chemical Site Preparation

Herbicide application can be an effective means of controlling unwanted vegetation in order to establish seedlings or plantations. It should be used sparingly and in situations where mechanical treatment is not expected to provide the level of vegetative control needed. Chemical will be applied in strict accordance with label recommendations, requirements, and under the oversight of a certified applicator. Herbicides will normally be applied with motorized, ground based equipment, hand applications, or aerially. A written prescription and application record for each herbicide application will be prepared and kept on file.

820.1.2.3 Prescribed Burning

Prescribed burning for site preparation can be used to reduce logging debris, clear the site, reduce competing vegetation, and to release nutrients into the soil.

820.1.2.4 Tree Planting / Seeding

Both machine and/or hand planting/seeding will be utilized to insure adequate regeneration. The selection of species will be determined according to the specific management objectives and capabilities of each site. Planting or seeding will primarily occur in areas where natural regeneration is inadequate or conflicts with the management goals of the site. Polk County Forestry will make all reasonable efforts to source seeds/seedlings from local genetics.

820.1.3 Intermediate Treatments

Intermediate treatments are those practices used to enhance the health and vigor of a forest stand. In general, intermediate treatments are applied to forest stands managed as even aged.

820.1.3.1 Mechanical Release

Mechanical release is the removal of competing vegetation by means other than herbicide or fire. Mechanical may include releasing young pine plantations from competing vegetation using chain saws or other hand-held equipment; or mowing to release regeneration.

820.1.3.2 Chemical Release

Chemical Release is the removal of competing vegetation from desirable trees through the use of herbicides. It should be used sparingly and in situations where mechanical treatment is not expected to provide the level of vegetative control needed. Chemical will be applied in strict accordance with label recommendations, requirements and under the oversight of a certified applicator. A written prescription for each herbicide application will be prepared and kept on file.

820.1.3.3 Non-Commercial Thinning (TSI)

In general, most thinning needs are accomplished through commercial harvest operations. Non-commercial thinning may be considered if the individual site requirements, funding and/or available labor make it desirable.

820.1.3.4 Thinning / Intermediate Cuts

Management of some even aged forest types necessitates the use of commercial thinning, also known as intermediate harvests, to maintain forest health and vigor. Thinning is generally prescribed in forest types such as red pine, red oak, and in cases of even aged hardwood management. Thinning may be prescribed on other even aged types as appropriate and where feasible. Intermediate harvests include prescriptions for residual densities, marking priorities, spacing, crown closure, diameter distribution, or other measurements.

820.1.3.5 Pruning

Pruning is the removal of limbs from lower sections of trees to increase log quality. Major pruning efforts were conducted in the past but it is not generally recognized as economically viable on the forest.

820.2 SILVICULTURAL PRESCRIPTIONS

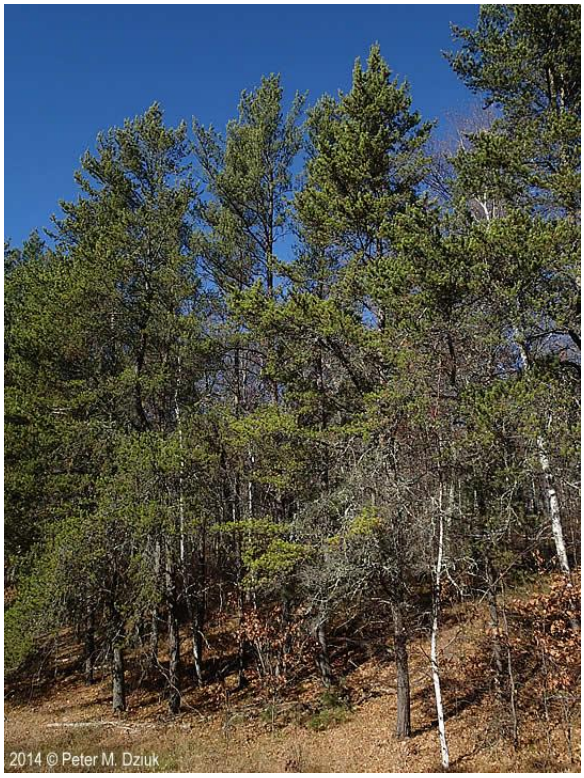
820.2.1 Even-Aged Management

A forest stand composed of trees having relatively small differences in age. Typical cutting practices include: clear cutting, shelterwood cutting and seed-tree cutting. Even aged management is generally required to manage shade intolerant, early successional forest types.

820.2.1.1 Aspen

These are types where aspen trees comprise of more than 50% of the stems. On the forest, aspen types may be dominated by quaking or big tooth aspen or a combination of both. Aspen stands contain a wide variety of associated hardwood and conifer species.

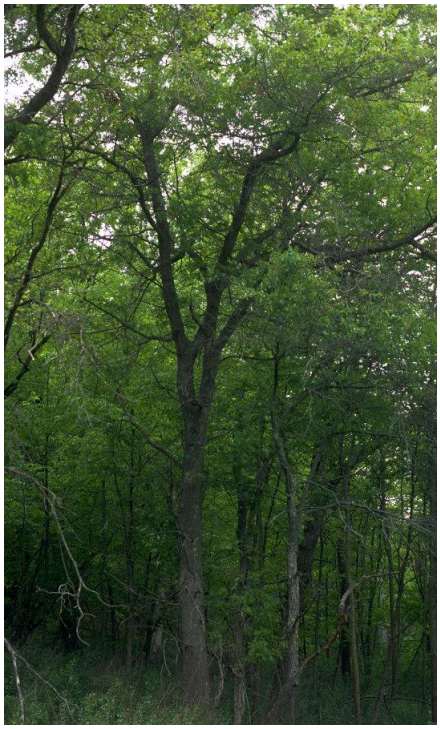
Shade tolerance:	Intolerant
Habitats:	AA, AVDe, Qap
Intermediate treatments:	None
Median rotation age:	60
Primary regeneration method:	Natural
Harvest method:	Clearcutting with coppice
Habitat value:	Early successional related species
Economic value:	Fiber production / bolts
Insect disease considerations:	Hypoxylon and other cankers
Trends:	General declines on statewide acreage
Landscape considerations:	Retain/increase acreages where possible



820.2.1.2 Jack Pine

These are types where jack pine makes up more than 50% of the stems. Common associates in Polk County are northern pin oak, bur oak, aspen, and white birch.

Shade tolerance:	Intolerant
Habitats:	Qap
Intermediate treatments:	None
Median rotation age:	60
Primary regeneration method:	Natural and Artificial
Harvest method:	Clearcutting/shelterwood
Habitat value:	Early successional related species
Economic value:	Fiber production/ bolts
Insect disease considerations:	Jack pine budworm
Trends:	General declines
Landscape considerations:	Retain/increase acreage where possible



820.2.1.3 Northern Pin Oak (Scrub Oak)

These are types where northern pin oak makes up more than 50% of the stems. Common associates in Polk County are bur oak, white oak, black oak, aspen, and white birch. "Scrub Oak" generally refers to oak grown on excessively dry, sandy soil.

Shade tolerance:	Intolerant
Habitats:	Qap
Intermediate treatments:	None
Median rotation age:	60
Primary regeneration method:	Natural
Harvest method:	Clearcutting with coppice and seed origin
Habitat value:	Early successional related species
Economic value:	Fiber production/ bolts
Insect disease considerations:	Oak wilt
Trends:	Stable
Landscape considerations:	Maintain or convert to pine.

820.2.1.4 Red Pine

These are types where red pine makes up more than 50% of the stems. Red pine stands are fairly pure with few associates. The most common associate would be white pine. Others may be jack pine or oak.

Shade tolerance:	Intolerant
Habitats:	Qap
Intermediate treatments:	Periodic Thinnings
Median rotation age:	100
Primary regeneration method:	Artificial
Harvest method:	Clearcutting
Habitat value:	Shelter
Economic value:	Fiber production/ bolts/logs
Insect disease considerations:	diplodia/root collar weevil/annosum
Trends:	Stable
Landscape considerations:	Retain/increase acreage where possible

820.2.1.5 Northern Red Oak

These are types where red oak on better soils makes up more than 50% of the stems. The most common associates would be white oak, bur oak, red maple, sugar maple, ash, basswood and aspen.

Shade tolerance:	Moderately Intolerant
Habitats:	AvDe, AA, ACaCi
Intermediate treatments:	Improvement thinnings
Median rotation age:	140
Primary regeneration method:	Natural
Harvest method:	Clearcutting/shelterwood
Habitat value:	Young forest to mature closed canopy
Economic value:	Fiber production/ bolts/logs
Insect disease considerations:	oak wilt, TLCB, Armillaria
Trends:	Generally declining
Landscape considerations:	Retain acreage where possible

820.2.2 Uneven-Aged Management

A forest stand composed of trees in various age and size classes. The typical cutting practice is selection cutting, where individual trees are removed from the stand. Regeneration is continually occurring after the stand is cut. Uneven-aged management is generally used to manage shade tolerant forest types.

820.2.2.1 Northern Hardwood

These are stands dominated by shade tolerant and mid-shade tolerant species. In Polk County, northern hardwood stands are typically dominated by sugar maple, red maple, ash, basswood, red oak, and white oak.

Shade tolerance:	tolerant to mid-tolerant
Habitats:	AA, AvDe, ACaCi
Intermediate treatments:	none
Median rotation age:	n/a
Primary regeneration method:	natural – all aged regeneration
Harvest method:	single tree, gaps,
Habitat value:	Young forest to mature closed canopy
Economic value:	high
Insect disease considerations:	emerald ash borer, others
Trends:	Stable or increasing
Landscape considerations:	Maintain or increase as appropriate

820.3 LOCALLY UNCOMMON TREES / FOREST TYPES

The presence or lack of a particular tree species is dependent on land capability, climate, natural range, natural or human disturbance and many other factors. The following trees and types are considered uncommon on the Polk County Forest and likely across the general region. These trees may be left as reserves in even aged management prescriptions, or in thinnings and all aged regeneration harvests.

820.3.1 American Elm (Ulmus americana.) is scarce primarily due to Dutch elm disease. Healthy looking elm may be left uncut in hope that they may continue on the landscape as potential resistant seed sources.

820.3.2 Butternut (Juglans cinerea) is declining due to butternut canker. Healthy individuals that appear to be canker free will be reserved in the forest as potential resistant seed sources.

820.3.3 White pine (Pinus strobes) Although not a rare species, it is no longer as big a component in Polk County as it was before the extensive logging period of the late 1800s and early 1900s. When time and resources allow, white pine should be promoted.

820.4 FOREST TYPES REQUIRING INTENSIVE EFFORT TO REGENERATE

There are certain forest types within the County Forest that are difficult to regenerate. In many cases, this difficulty may be related to the exclusion of fire from the landscape, deer herbivory or other factors. The following list itemizes forest types with difficult regeneration and County management goals:

820.4.1 White birch

White birch (also referred to as paper birch) is a shade intolerant species and is generally found in stands of timber of similar age. A mineral seedbed appears to be necessary to regenerate white birch and it is assumed that most white birch present on the forest is of

fire origin. Drought conditions of 1989 and 1990, coupled with unseasonably warm temperatures and secondary pathogens, resulted in mortality to nearly 50% of the white birch on the Forest.

Existing stands of white birch should be considered for scarification coupled with shelterwood harvests. Initial trials using this method have proven successful.

820.4.2 Northern red oak

Northern red oak is a shade intolerant to mid tolerant species found in primarily even aged stands. Northern red oak appears to require disturbance to regenerate and herbivory appears to be a limiting factor on regeneration success. Regeneration efforts will focus on timing soil scarification with good acorn crops and shelterwood harvests. Regeneration may require prescribed burning to release seedlings from competing vegetation.

820.4.3 Jack Pine

Jack pine is a shade intolerant species found mainly on nutrient poor sandy soils. It has proven to be difficult to naturally regenerate consistently. It has a high wildlife and commercial value and Polk County is committed to regenerating this valuable species where possible using both natural and artificial means. Most of Polk County's Jack pine is non-serotinous, therefore traditional regeneration techniques are ineffective. Pre-sale scarification, shelterwoods, and planting are all options that may be used.

820.5 INVASIVE PLANT SPECIES OF CONCERN

Invasive plants can cause significant damage to the forest. Invasive species can displace native plants and hinder the forest regeneration efforts. Preventing them from dominating forest understories is critical to the long-term health of the forest. Currently, Polk County Forest has few significant infestations of invasive plants. With training, vigilance, and control efforts, new infestations can be managed or eliminated. There are many highly invasive plants that are threatening to invade much of the northern forests in Wisconsin. Species currently of concern to the Polk County Forest are: common and glossy buckthorn, Leafy spurge, spotted knapweed, Garlic mustard, Purple loosestrife and Wild Parsnip. When any of these plants and other invasive species are detected on the Forest aggressive measures will be used to eliminate or contain the threat.

For more information please visit: https://dnr.wi.gov/topic/Invasives/bmp.html and/or *https://www.co.polk.wi.us/index.asp?SEC=F107D885-5DF6-4251-ACBA-41920F4FB988&Type=B_LIST*

820.6 LEGALLY PROTECTED AND SPECIAL CONCERN PLANT SPECIES

There are plants in Wisconsin that are protected under the Federal Endangered Species Act, the State Endangered Species Law, or both. On County Forest, no one may cut, root up, sever, injure, destroy, remove, transport or carry away a listed plant without a valid endangered or threatened species permit. There is an exemption on public lands for forestry, agriculture and utility activities under state law. The County will, however, make reasonable efforts to minimize impacts to endangered or threatened plants during the course of forestry/silviculture activities (typically identified in the timber sale narrative).

The Wisconsin Department Natural Resources Bureau of Natural Heritage Conservation tracks information on legally protected plants with the Natural Heritage Inventory (NHI) program. The NHI program also tracks Special Concern Species, which are those for

which some problem of abundance or distribution is suspected, but not yet proven. The main purpose of this category is to focus attention on certain species before they become threatened or endangered.

The County has access to this data under a license agreement and is committed to reviewing this database for endangered resources that may occur within proposed land disturbing project areas. Forest projects such as timber sales, site preparation, chemical applications and other major disturbance activities involve a search of a NHI database for endangered and special concern species. For more information please visit: https://dnr.wi.gov/topic/NHI/calypso/Portal.html

820.7 TREE RETENTION GUIDELINES

Reserve trees are living trees greater than or equal to 5 inches dbh, retained after the regeneration period under even-aged or two aged silvicultural systems.

Polk County Forest will generally follow the tree retention guidance for reserve trees, mast trees, cavity trees and snags as outlined in the Wisconsin DNR silvicultural handbook (2431.5). The most sensitive areas included areas along public highways, recreational lakes, rivers, trails or other areas that provide a high level of scenic quality. One noted deviation is that Polk county will strive for a minimum of at least 3% retention at the stand level where applied. Any other deviations will be noted and justified in the timber sale file. For more information please visit: https://dnr.wi.gov/topic/ForestManagement/guidelines.html

820.8 BIOMASS HARVESTING GUIDELINES

Biomass harvesting is where the entire aboveground portion of the tree may be removed, including trunk, branches, bark, and leaves or needles.

Polk County will generally follow the current version of Wisconsin's Forestland Woody Biomass Harvesting Guidelines as periodically reviewed and published by the Wisconsin

Department of Natural Resources. Any deviations will be noted and justified in the timber sale file. For more information please visit: https://dnr.wi.gov/topic/GreenTier/documents/WoodyBiomassHarvestGuidelines.pdf

825 ANIMAL SPECIES MANAGEMENT

Polk County Forest provides a wide range of wildlife habitats from small barrens to mature forests, from bogs to forested wetlands, from spring ponds to lake shorelines. A primary goal of wildlife management on the Polk County Forest is to provide a diversity of healthy ecosystems necessary to sustain and enhance native wildlife populations. This forest will be managed primarily to provide habitats for a suite of species rather than focusing on a specific species, with exceptions made for Federal or State Listed Endangered or Threatened Species.

825.1 TECHNICAL PLANNING

Management of wildlife populations on the Polk County Forest falls under the jurisdiction of the DNR. Planning may be a cooperative effort of the County Forest staff, DNR liaison forester and wildlife manager in formulating management plans and utilizing forest and wildlife management techniques to accomplish desired forest and wildlife management goals.

825.2 GUIDELINES

DNR operational handbooks including the Public Forest Lands Handbook (2460.5), manual codes and guidance documents are important references and guidelines to utilize in fish and wildlife planning efforts. In addition, the Wisconsin Department of Natural Resources has developed guidelines for forest management activities. For more information please visit: https://dnr.wi.gov/topic/ForestManagement/guidelines.html

825.3 INVENTORY

Habitat needs will be determined by analysis of forest reconnaissance information. Population estimates will be conducted periodically by DNR wildlife, endangered resources personnel, and other trained cooperators.

825.4 RESOURCE MANAGEMENT CONSIDERATIONS FOR WILDLIFE

The following areas of focus are identified for achieving plan objects and for benefit of wildlife.

825.4.1 General Management Policies

Forest management practices may be modified to benefit wildlife and diversity. The following will be considered when planning for management activities:

- Even-aged regeneration harvests (clearcuts) should vary in size and shape and include retention considerations.
- A diversity of stand age, size and species.
- Mast-bearing trees and shrubs, cavity trees, and an adequate number and variety of snags.
- Cull trees (future snag or den trees) not interfering with specific high value trees.
- Timber types, habitat conditions and impacts on affected wildlife.
- Access management.
- Best management practices for water quality (BMP's).

825.5 IMPORTANCE OF HABITATS

Important habitat types are those cover types known to be of importance to certain native wildlife and whose absence would make that wildlife significantly less abundant. These shortages may be on a local or broader scale. The following habitat types can be considered important:

825.5.1 Non-forested wetlands

The Polk County Forest contains 564 acres of non-forested wetland types providing a variety of habitats for common, rare and endangered species. Emergent wetland, sedge meadow, muskeg bog and deep marsh provide habitat for species such as wood turtle, black tern, American bittern, and numerous other species.

825.5.2 Aquatic habitats

The Polk County Forest includes 74 acres of lakes, rivers, streams, ponds and other aquatic habitats. Open water provides habitat for species such as wood duck, boreal chorus frog, water shrew and many other species reliant on water related resources.

825.5.3 Riparian and other non-managed areas

Undisturbed shoreline and riparian areas present on the forest and provide habitat for species such as red shouldered hawk, green frog, and woodland jumping mouse.

825.5.4 Early successional forests

Management of aspen, white birch, jack pine and other shade intolerant species creates habitat for a large suite of wildlife species that benefit from early successional forests. On the Polk County Forest there are currently 6138 acres of these forest types present. This is a key habitat used for recreational hunting activities providing conditions favorable for American woodcock, ruffed grouse, white-tailed deer and non-game species such as golden-winged warbler, Kirtland's warbler and black-billed cuckoo.

825.5.5 Conifers

Conifers, whether jack pine, white pine, spruce, fir or other types appear to be an important habitat for a number of wildlife species. The Polk County Forest currently has 4023 acres of coniferous habitat. Connecticut warbler, red crossbill, northern flying squirrel, and many others utilize conifer types. Jack pine areas can be managed to provide temporary barrens habitat providing habitat for Kirtland's warbler and other barren related species.

825.5.6 Oak management

Oak is an important mast producing food source on the forest, providing acorns for a wide variety of game and non-game species. The Polk County Forest has 7601 acres of oak habitat. It is considered a critical resource to retain on the landscape for both its timber and wildlife value, providing habitat for species such as scarlet tanager, wood thrush, red-headed woodpecker, and black bear.

825.5.7 Uneven/all aged management

Management of uneven aged stands provides for multi-storied canopies, diverse age structure and potentially older forest characters. The Polk County Forest has 2135 acres being managed under an all aged management system. Species such as Canada warbler, little brown bat, black throated blue warbler and many others benefit from these forest type, In addition, numerous amphibian and reptiles utilize these forest types.

825.5.8 Large forest blocks

Large blocks of County Forest provide habitat for numerous interior species. Gray wolf, black-throated blue warbler, Canada warbler and least flycatcher are a few examples of animals that rely on these large blocks.

825.5.9 Grasslands, openings, upland brush

Wildlife openings, grass rights-of-way, natural openings, upland brush and other upland open habitats provide for diversity and unique habitats benefitting pollinators, numerous species including upland plover and eastern whip-poor-will. Polk County Forest currently has 91 acres identified as open grassland or upland brush habitat.

825.6 INTENSIVE WILDLIFE MANAGEMENT PROJECTS

825.6.1 Wisconsin Wildlife Action Plan / Species of Greatest Conservation Need (SGCN). In addition to species listed as endangered, threatened or special concern within the NHI database, the Department also maintains a statewide list of species of greatest conservation need.

This list includes species that have low or declining populations and may be in need of conservation action. The list includes birds, fish, mammals, reptiles, amphibians and insects that are:

- Already listed as threatened or endangered
- At risk due to threats
- Rare due to small or declining populations
- Showing declining trends in habitat or populations

The WWAP working list can provide information on how management activities may impact, or in many cases benefit species of greatest conservation need. More information is available on the WWAP website: *https://dnr.wi.gov/topic/wildlifehabitat/actionplan.html* .

Table 800-1. Terrestrial Species of Concern/Endangered Polk County

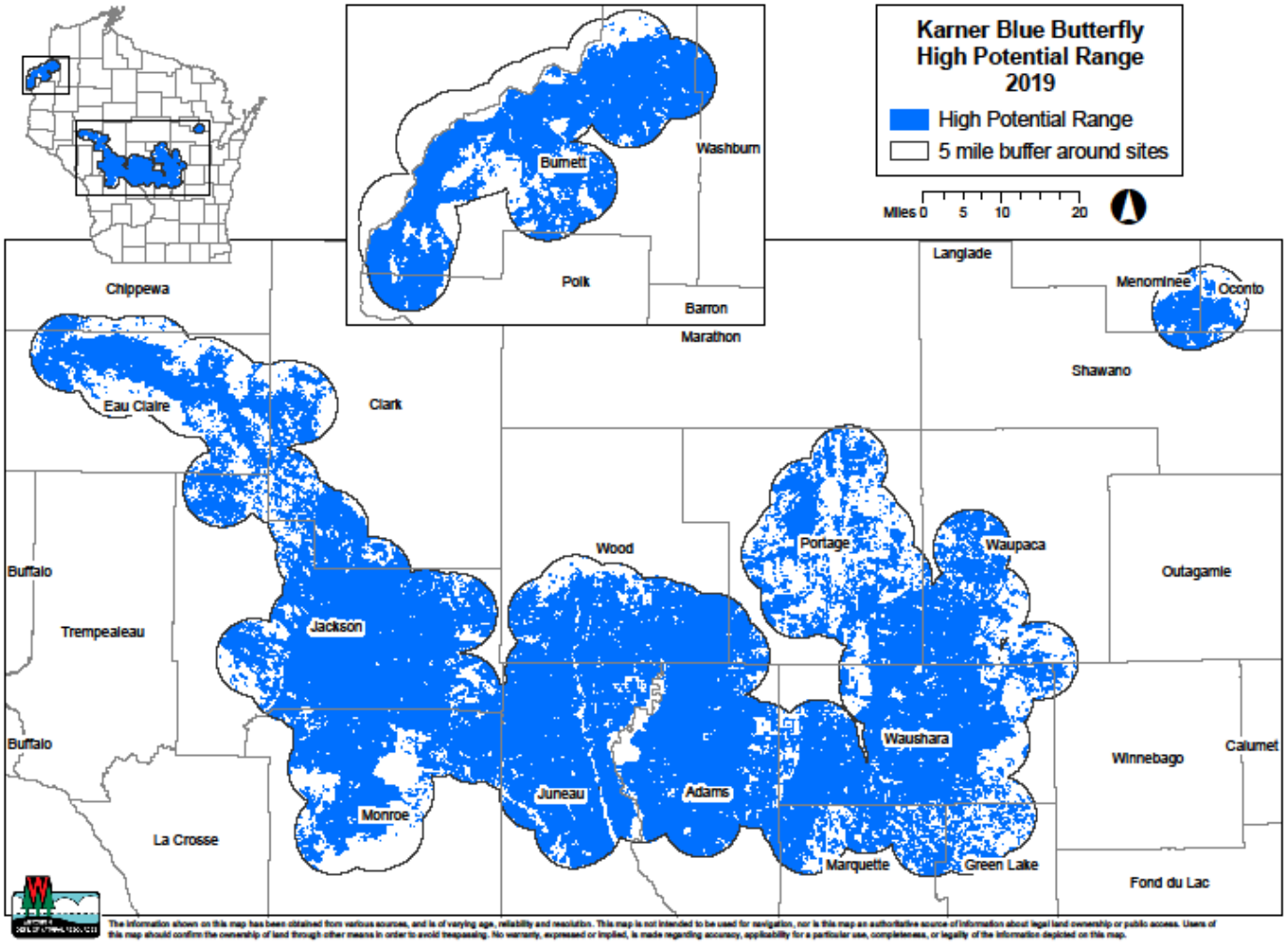
Scientific Name	Common Name	WI Status	Federal Status	Group
Agalinis gattingeri	Roundstem Foxglove	THR		Rare Plants
Ammospiza leconteii	LeConte's Sparrow	SC/M		Rare Birds
Anticlea elegans ssp. glaucus	White Camas	SC		Rare Plants
Aplectrum hyemale	Putty Root	SC		Rare Plants
Artemisia dracunculus	Dragon Wormwood	SC		Rare Plants
Asclepias lanuginosa	Woolly Milkweed	THR		Rare Plants
Asclepias ovalifolia	Dwarf Milkweed	THR		Rare Plants
Bat Hibernaculum	Bat Hibernaculum	SC		Miscellaneous Elements
Besseya bullii	Kitten Tails	THR		Rare Plants
Boechera dentata	Short's Rock-cress	SC		Rare Plants
Botaurus lentiginosus	American Bittern	SC/M		Rare Birds
Buteo lineatus	Red-shouldered Hawk	THR		Rare Birds
Carex backii	Rocky Mountain Sedge	SC		Rare Plants
Carex sychnocephala	Many-headed Sedge	SC		Rare Plants
Centronyx henslowii	Henslow's Sparrow	THR	SOC	Rare Birds
Chlidonias niger	Black Tern	END	SOC	Rare Birds
Crotalaria sagittalis	Arrow-headed Rattle-box	SC		Rare Plants
Cystopteris laurentiana	Laurentian Bladder Fern	SC		Rare Plants
Dalea villosa var. villosa	Silky Prairie-clover	SC		Rare Plants
Dolichonyx oryzivorus	Bobolink	SC/M		Rare Birds
Drosera linearis	Linear-leaved Sundew	THR		Rare Plants
Elatine triandra	Longstem Water-wort	SC		Rare Plants
Eleocharis robbinsii	Robbins' Spike-rush	SC		Rare Plants
Emydoidea blandingii	Blanding's Turtle	SC/P	SOC	Rare Reptiles
Ephemeral pond	Ephemeral Pond	NA		Lakes and Ponds
Eptesicus fuscus	Big Brown Bat	THR		Rare Mammals
Glyptemys insculpta	Wood Turtle	THR	SOC	Rare Reptiles
Hemidactylium scutatum	Four-toed Salamander	SC/H		Rare Amphibians
Karner Blue Federal High Potential Range	Karner Blue Federal High Potential Range	NA	HPR	Miscellaneous Elements
Lanius ludovicianus	Loggerhead Shrike	END	SOC	Rare Birds
Leucophysalis grandiflora	Large-flowered Ground-cherry	SC		Rare Plants
Liatris punctata var. nebraskana	Dotted Blazing Star	END		Rare Plants
Lithobates septentrionalis	Mink Frog	SC/H		Rare Amphibians
Lycaena dione	Gray Copper	SC/N		Rare Butterflies and Moths
Minuartia dawsonensis	Rock Stitchwort	SC		Rare Plants
Moxostoma carinatum	River Redhorse	THR		Rare Fishes
Myotis lucifugus	Little Brown Bat	THR		Rare Mammals
Myotis septentrionalis	Northern Long-eared Bat	THR	LT	Rare Mammals
Opuntia fragilis	Brittle Prickly-pear	THR		Rare Plants
Pediomelum argophyllum	Silvery Scurf Pea	SC		Rare Plants
Perimyotis subflavus	Eastern Pipistrelle	THR		Rare Mammals
Phemeranthus rugospermus	Prairie Fame-flower	SC		Rare Plants
Pituophis catenifer	Gophersnake	SC/P		Rare Reptiles
Plestiodon septentrionalis	Prairie Skink	SC/H		Rare Reptiles
Podiceps grisegena	Red-necked Grebe	END		Rare Birds
Potamogeton bicupulatus	Snail-seed Pondweed	SC		Rare Plants
Potamogeton diversifolius	Water-thread Pondweed	SC		Rare Plants
Potamogeton pulcher	Spotted Pondweed	END		Rare Plants
Potamogeton vaseyi	Vasey's Pondweed	SC		Rare Plants
Protonotaria citrea	Prothonotary Warbler	SC/M		Rare Birds
Schoenoplectus heterochaetus	Slender Bulrush	SC		Rare Plants
Schoenoplectus torreyi	Torrey's Bulrush	SC		Rare Plants
Setophaga cerulea	Cerulean Warbler	THR	SOC	Rare Birds
Sturnella magna	Eastern Meadowlark	SC/M		Rare Birds
Sturnella neglecta	Western Meadowlark	SC/M		Rare Birds
Tephroseris palustris	Marsh Ragwort	SC		Rare Plants
Thalictrum venulosum	Veined Meadowrue	SC		Rare Plants
Utricularia resupinata	Northeastern Bladderwort	SC		Rare Plants
Vaccinium vitis-idaea	Mountain Cranberry	END		Rare Plants
Vermivora chrysoptera	Golden-winged Warbler	SC/M	SOC	Rare Birds
Woodsia oregana ssp. cathcartiana	Oregon Woodsia	SC		Rare Plants
Xanthocephalus xanthocephalus	Yellow-headed Blackbird	SC/M		Rare Birds

Table 800-2. Aquatic Species of Concern/Endangered Polk County.

Scientific Name	Common Name	WI Status	Federal Status	Group
Acipenser fulvescens	Lake Sturgeon	SC/H		Rare Fishes
Agabetes acuductus	A Predaceous Diving Beetle	SC/N		Rare Beetles
Alasmidonta marginata	Elktoe	SC/P		Rare Mussels and Clams
Anguilla rostrata	American Eel	SC/N		Rare Fishes
Arcidens confragosus	Rock Pocketbook	THR		Rare Mussels and Clams
Attaneuria ruralis	A Common Stonefly	SC/N		Rare Stoneflies
Cicindela patruela patruela	Northern Barrens Tiger Beetle	SC/N		Rare Beetles
Coccocarpia palmicola	Salted Shell Lichen	SC		Rare Lichens
Crystallaria asprella	Crystal Darter	END	SOC	Rare Fishes
Cumberlandia monodonta	Spectaclecase	END	LE	Rare Mussels and Clams
Cycleptus elongatus	Blue Sucker	THR		Rare Fishes
Cyclonaias tuberculata	Purple Wartyback	END		Rare Mussels and Clams
Ellipsaria lineolata	Butterfly	END		Rare Mussels and Clams
Elliptio crassidens	Elephant Ear	END		Rare Mussels and Clams
Emergent marsh	Emergent Marsh	NA		Herbaceous Communities - Marshes
Epioblasma triquetra	Snuffbox	END	LE	Rare Mussels and Clams
Etheostoma asprigene	Mud Darter	SC/N		Rare Fishes
Etheostoma microperca	Least Darter	SC/N		Rare Fishes
Fusconaia ebena	Ebonyshell	END		Rare Mussels and Clams
Lampsilis higginsii	Higgins Eye	END	LE	Rare Mussels and Clams
Lithobates septentrionalis	Mink Frog	SC/H		Rare Amphibians
Macrhybopsis hyostoma	Shoal Chub	THR		Rare Fishes
Moxostoma carinatum	River Redhorse	THR		Rare Fishes
Ophiogomphus smithi	Sioux (Sand) Snaketail	SC/N		Rare Dragonflies and Damselflies
Ophiogomphus susbehcha	St. Croix Snaketail	END		Rare Dragonflies and Damselflies
Quadrula fragosa	Winged Mapleleaf	END	LE	Rare Mussels and Clams
Quadrula nodulata	Wartyback	THR		Rare Mussels and Clams
Simpsonaias ambigua	Salamander Mussel	THR	SOC	Rare Mussels and Clams
Theliderma metanevra	Monkeyface	THR		Rare Mussels and Clams
Tritogonia verrucosa	Buckhorn	THR		Rare Mussels and Clams
Truncilla donaciformis	Fawnsfoot	THR		Rare Mussels and Clams

THR=Threatened, SC/M= protected federally/state migratory, SC= Special Concern, END=Endangered, SC/H=Take regulated by seasons, SC/N=No laws regulated use, SC/P= Protected wild animal, HPR=High Potential Range, SOC= Species of Concern, LT=Listed, LE=Listed endangered

825.6.2 Karner Blue Butterfly High Potential Range



The Town of Sterling within the Polk County Forest is considered within the High Potential Range of the Karner Blue Butterfly. Management activities such as Timber harvest, site preparation and mowing and brushing may need a Lupine Presence/ Absence survey prior to activities occurring. If Lupine is present, the survey form must be filled out. The survey form can be found in Chapter 1000.

825.7 FISH AND WATERS MANAGEMENT

Public waters shall be managed to provide for optimum natural fish production, an opportunity for quality recreation, and a healthy balanced aquatic ecosystem. Emphasis will also be placed on land-use practices that benefit the aquatic community. Management of County Forest lands will attempt to preserve and/or improve fish habitat and water quality. For more information please refer to: https://dnr.wi.gov/topic/fishing/publications/ManagementReports.html

825.7.1 Technical Planning and Surveys

Management of all waters within the County Forest is the responsibility of the DNR. Technical assistance will be provided by the local fisheries biologist. Studies and management will be conducted in the manner described in DNR Fish Management Handbook 3605.9. Water and Population Surveys fall under the jurisdiction of the Department and will be conducted as needed by fisheries biologists.

825.7.2 Shoreland Zoning

The Polk County Shoreland Zoning Ordinance can be found here; https://www.co.polk.wi.us/landinfoordinances

The Polk County Forest will follow applicable guidance as outlined in the Polk County Shoreland Protection Ordinance. Any legal deviations will be noted in the project file. The pertinent sections related to forest management can be found in Chapter 1000.

825.7.3 Access and development

Access and development of County Forest waters will be limited to those activities consistent with the above water management policies. See Chapter 740 also for further information on water access.

825.7.4 Important Water Resources

Management activities adjacent to these water resources, or in areas with sensitive soils or severe slopes, should consider measures above and beyond the customary BMP practices. County staff may work with their liaison forester in cooperation with the local

DNR water resources staff to develop site-specific measures where appropriate. An inventory of water resources can be obtained from DNR Water staff for the County. Important water resources on the Polk County Forest include:

Mackie Lake

Clam River

Other important water resources within Polk County can be found at: https://dnr.wi.gov/topic/SurfaceWater/orwerw.html

830 EXCEPTIONAL RESOURCES, UNIQUE AREAS

830.1 Exceptional Resources

Exceptional Resources may include such things as wild rivers and lakes, natural areas, ruffed grouse management areas, Karner blue butterfly recovery areas, areas of unique geological features, or historical, and archeological sites. It is the policy of Polk County to manage these type resources to enhance and protect their individual exceptional features. Specific information will be gathered during the implementation of individual projects.

830.2 DESIGNATION OF FORESTS WITH EXCEPTIONAL CONSERVATION VALUE:

Polk County does not have any officially designated areas of Exceptional Conservation Value. The Polk County Forest is made up of previously private land parcels that were historically pastured or farmed and destructively cut over the last 150 years and are in various stages of recovery and management or non-management. Polk County will work with partners such as the Wisconsin DNR to identify any forest areas that demonstrate these unique characteristics.

Through consultation with WI DNR, Polk County Forest has identified areas within the Sterling Block that feature a structure and composition which provide habitat for several uncommon wildlife species. Specifically, some early and late seral stage jack pine stands contain a good diversity and abundance of pine barrens ground layer plants, providing habitat for uncommon invertebrates such as butterflies. Some stands also have a structure that provides habitat for uncommon vertebrates such as reptiles and birds. Although these stands gradually close in with tree canopy over time, forest gaps and areas of lower stocking allow these barrens plants to persist, continuing to provide uncommon invertebrate habitat and a structure that is favorable for uncommon vertebrates. Also of value is that these stands are often found adjacent to roadsides which contain pine barrens vegetation, creating an ecological corridor and connection between stands that are otherwise disjunct.

Although not all stands in the Sterling Block exhibit the wildlife habitat features described above, existing management techniques used to promote jack pine is favorable for creating and maintaining this habitat. Timber harvest, followed by site prep for either natural or artificial regeneration favors the persistence of gaps and disturbance-dependent pine barrens groundlayer species. Also beneficial to this wildlife habitat is that broadcast herbicide treatments are generally not used, although they may be necessary if woody species competition is overabundant and compromising silvicultural goals. Patchy distribution of trees and forest gaps are tolerated in areas of these stands, providing habitat throughout the life of the stand in some cases.

835 AESTHETICS

835.1 AESTHETIC MANAGEMENT

Aesthetic management techniques may be applied in areas of high visibility or high public use. Altered management, visual screens, slash disposal, conversion to other species, no cut zones or other methods may be employed, depending on the circumstances of the specific site. Every timber sale takes visual management into consideration and is addressed within the timber sale write up.

835.2 AESTHETIC MANAGEMENT ZONES

Aesthetic Management Zones include areas where there may be high levels of public presence because of scenic attraction, or some use of the area that would be enhanced by special timber management practices.

835.2.1 Aesthetic Management Most Sensitive Examples

- Park and recreation areas
- Lakes and rivers with significant recreational use
- Roads with heavy traffic or scenic drive.

835.2.2 Aesthetic Management Prescriptions/Options

- Adjustment timing of timber harvesting
- Slash restrictions/requirements
- Staggered Harvests / Visual Screens
- Forced conversion to longer lived species
- Irregular harvest lines, interrupted sight distances
- Average size of clearcuts not exceed 120 acres
- Trees in clearcut are at least 3 years old or are 5 feet tall prior to cutting adjacent stands.

840 LANDSCAPE MANAGEMENT

Landscape or Ecosystem management is a system to assess, conserve, protect, and restore the composition, structure, and function of ecosystems, to ensure their sustainability across a range of temporal and spatial scales, and to provide desired ecological condition, economic products, and social benefits. Polk County will make efforts to evaluate surrounding landscapes while managing the County Forest. The County will strive to provide management that compliments the landscapes, but also try to provide for

resources or forest types that are lacking or declining within surrounding landscapes. The Polk County Forest is in two ecological landscapes in Wisconsin; Northwest Sands and Forest Transition.

840.1 NORTHWEST SANDS

General Description: The Northwest Sands Ecological Landscape is a large glacial outwash ecosystem consisting primarily of two major landforms: flat plains or terraces along glacial meltwater channels and ***pitted ("collapsed") outwash*** plains containing ***kettle lakes***. Soils are predominantly deep sands, low in organic material and nutrients. Some of the state's best places to manage for dry forests of jack pine, northern pin oak and red pine are found here.

840.1.1 Management Opportunities: Management for Aspen-Birch, Conifer Plantation, Northern Dry Forest and Northern Dry Mesic Forest are noted as major management opportunities in this landscape/ecosystem. Polk County Forest largest contribution to this landscape is maintaining the Jack pine Cover type.

840.2 FOREST TRANSITION

General Description: The Forest Transition Ecological Landscape lies along the northern border of Wisconsin's ***Tension Zone***, through the central and western part of the state, and supports both northern forests and agricultural areas. The central portion of the Forest Transition lies primarily on a glacial till plain deposited by glaciation between 25,000 and 790,000 years ago. The eastern and western portions are on moraines of the Wisconsin glaciation from 14,000 to 18,000 years ago. The growing season in this part of the state is long enough that agriculture is viable, although climatic conditions are not as favorable for crops as they are in southern Wisconsin. Soils are diverse, ranging from sandy loams to loams or shallow silt loams and from poorly drained to well drained.

840.2.1 Management Opportunities: Management for Northern Mesic Forest, Northern

wet-mesic Forest, Aspen-Birch, and Northern Dry Mesic Forests are all noted as Major or Important management opportunities. Polk County Forest serve to provide forested habitat between agricultural areas. In addition, maintaining oak on the landscape is very important.

840.3 CONSERVATION OF BIOLOGICAL DIVERSITY OR ECOLOGICAL INTEGRETY

For the purposes of this plan, biological diversity will be interpreted to reference the variety and abundance of species, their genetic composition, and the communities, ecosystems, and landscapes in which they occur. Forest management activities on the Polk County Forest enhance biological diversity by managing for a wide variety of habitat types, age structures and by attempting to perpetuate and protect declining forest types such as noted above.

840.4 HABITAT FRAGMENTATION

For the purposes of this plan, habitat fragmentation is interpreted as conversion of forests to land uses other than forestry. Lands enrolled in the County Forest Law help protect against habitat fragmentation. A continued program of encouraging land acquisition within the forest blocking boundary is intended to decrease the conversion of forest land to other uses.