

COUNTY FOREST COMPREHENSIVE LAND USE PLAN

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CHAPTER 800

INTEGRATED RESOURCE MANAGEMENT

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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 Juneau County Forest during this planning period.
- (2) To provide "Integrated Resource Management Units" (IRMU) that will identify and summarize the natural resources, social and physical management potential and opportunities for each unit. (These units are identified and are to be updated in the appendix #4000.)

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 Juneau County Forest is managed. This broad definition describes the content of everything within this comprehensive land use plan. Previous chapters have discussed in depth many of the social and economic issues.

For the purpose of this chapter, the scope of Integrated Resource Management includes:

- Forests, habitats, biological communities
- Wetlands and waters
- Wildlife and endangered resources
- Soils and minerals
- Cultural and historical resources

Management of one resource affects the management or use of other resources in an area. Managing each use or resource by itself is less effective than managing all of them in an integrated way. This is a field level approach to integrated

resource management. Management decisions are made while considering that each site is part of a larger ecosystem. Similarly, the development and implementation of this plan also considers other planning efforts in order to provide for broader scale management.

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 definition of sustainable forestry in the Wisconsin Administrative Code and the Wisconsin Statutes is as follows:

"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. The DNR forester will be responsible for the completion and maintenance of the recon system and will assist in interpretation of the data to be utilized in planning and scheduling resource management.

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.

The Forest Habitat Classification System is an ecological tool that promotes a common language for interpreting site capability based on potential natural vegetation. Its primary use is the assessment of biological potential of upland forest sites. Through the application of Forest Habitat Classification, land managers are better able to assess site potential of current stands, identify ecological and silvicultural alternatives, predict the effectiveness of possible silvicultural treatments, assess feasible management alternatives, and choose appropriate management objectives.

Data will be collected in order to classify the entire forest. This information should be collected along with, and made part of, the compartment reconnaissance system during regular field inspections. This data should also be compared to soil survey information in order to associate the relationships between forest habitat types and soil types.

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. Detailed soil surveys, when available, will be made a part of the compartment reconnaissance system and continue to be correlated to the Forest Habitat Classification system.

Soil survey information may be obtained from the Natural Resource Conservation Service office.

810.1.4 National Hierarchical Framework of Ecological Units/Ecological Landscapes of Wisconsin

Integrated resource management recognizes that an individual forest site is part of a larger landscape, and management activities can have an impact beyond a specific site. The National Hierarchical Framework of Ecological Units (NHFEU) is a useful tool in understanding natural landscapes.

The Wisconsin DNR uses Ecological Landscapes of Wisconsin (Page 800-8 of 38WDNR 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.

Landtype Associations (LTA's) are considered landscape-scale ecological units, and are identified by surficial geology, patterns of vegetation, soil parent materials, and water tables. Most LTA's are between 10,000 and 300,000 acres in size.

Each landtype association contains a general description of characters such as landform, historic vegetation, current vegetation, water resources, land area, socioeconomic data, agriculture, population, and ecological opportunities.

Goals can be developed for an LTA based in part on its capability, productivity, unique character, and the scarcity or abundance of similar LTA's in the state, region or beyond. Objectives for vegetation management, wildlife habitat, ecological restoration, and recreation use can be tailored to the characteristics and potentials of the ecosystem.

810.1.5 Integrated Pest Management

Integrated Pest Management for the purpose of this Plan, is defined as follows:

“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

Often the most practical and cost-effective method to assure that forestry operations do not adversely affect water quality on the County Forest is to utilize "best management practices" (BMP's) as described in *Wisconsin's Forestry Best Management Practices for Water Quality*. Publication number FR093.

Consistent with the aforementioned manual, Juneau 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, close proximity to streams or lakes, or steep slopes may require mitigating measures in excess of those outlined in the manual. All Juneau County employees practicing forestry will receive BMP training. Additionally, Juneau County will encourage BMP training of all logging contractors that operate on County timber sales.

810.1.7 Forest Fire Management

Refer to Chapter 600

810.1.7.1 Uncontrolled Fire

Refer to Chapter 600

810.1.7.2 Prescribed Fire

Refer to Chapter 600

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 for management. 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 in the Committee's opinion, are best equipped to provide that service. This data will be used as appropriate for management planning.

810.1.8.1 Water Resources

The DNR fisheries biologist and the water management specialist will provide surveys, studies, and technical advice as necessary to prepare and carry out recreational planning affecting waters on the County Forest. (Also see Chapter 840.6)

810.1.8.2 Wildlife Resources

DNR wildlife biologists will implement population and habitat surveys, provide technical advice, and direct assistance needed for wildlife management planning and implementation on County Forest lands. (Also see Chapter 840) Wildlife projects are identified and implemented in collaboration with the County Forest administrator, DNR liaison forester, and the Committee.

810.1.8.3 Soil Resources

Soil maps and surveys prepared by the Natural Resource Conservation Service (NRCS) will be used in various phases of planning.

810.1.8.4 Mineral Resources

The DNR may provide information valuable for management of gravel and other mineral resources. (Also see Chapter 515.2).

810.1.8.5 Wetland Resources

Maps prepared by the DNR's Bureau of Fisheries Management and Habitat Protection, may be utilized for identifying wetlands. Although not comprehensive, particularly in forested areas, these maps are a good initial tool

for identifying wetlands on County Forest lands. Assistance and technical advice will be requested from the DNR water management specialist when wetlands may be affected by management practices. The Army Corps of Engineers will also be consulted as appropriate. In addition, Wisconsin's Forestry Best Management Practices for protecting water quality will be used. (Also see 820.2.2 for further details).

810.1.8.6 Navigable Streams

The DNR's water regulations specialist will be consulted when navigable stream crossings or navigable stream management projects are being planned. (Also see Chapter 840.6.5). Best Management Practices for protecting water quality will be used.

810.1.8.7 Floodplains

Maps prepared by the Federal Emergency Management Agency (FEMA) will be used to identify floodplains. The County zoning staff may be consulted regarding management activities in the floodplain.

810.1.8.8 Cultural Resources

Management planning will take into consideration historical and archaeological sites. More information may be obtained from the State Historical Society or the DNR's archeologist.

810.1.8.9 Entomology / Pathology

Wisconsin DNR forest pest staff will provide information and consultation as requested by the County. (Also see Chapter 610 for more information on forest pest control.

810.1.8.10 Endangered Resources

DNR endangered resource staff will provide Natural Heritage Inventory (NHI) information and are available for consultation on endangered resources issues.

810.1.9 Local Silvicultural Field Trials

The Juneau County Forest has participated in field trials in the past. There are no currently active or planned activities for the County Forest.

A compilation of silvicultural trials on State and County lands is available at:
<http://dnr.wi.gov/org/land/forestry/sciences/silviculture/index.html>

810.1.10 Local Citizen Involvement

The Juneau County Forestry, Parks and Recreation Committee is an open forum to listen, evaluate and incorporate, where appropriate, the public's input into management of the County Forest.

820 BIOLOGICAL COMMUNITY TYPES

A community is an assemblage of different plant and animal species, living together in a particular area, at a particular time in specific habitats. Communities are complex and dynamic systems named for their dominant plant species.

Species/community information has been condensed to familiarize the reader with the make-up of the Forest.

Refer to Chapter 130.1.4 for more information

820.1 FORESTED COMMUNITIES

The forested cover types are made up of a variety of size classes (regeneration, sapling-pole, and saw timber) and structure (canopy, layers, ground vegetation, dead and downed material, and inclusions). Forested communities within the Juneau County Forest cover approximately 92.2% of the Forest.

Forest cover types associated with the County Forest are:

Aspen – 9.7%. Consisting of primarily aspen species often found in combination with paper birch and red maple

Oak – 11.1%. Dominated by red oak, white oak, black oak and associated with other hardwoods.

Swamp Hardwoods – 0.4%. More than 50% swamp hardwood species including black ash, red maple, and elm.

Red Maple – 0.3%. More than 50% red maple. Often associated with aspen and white birch.

White Pine – 4.4%. More than 50% white pine.

Red Pine – 22.8%. More than 50% red pine.

Jack Pine – 32.5%. More than 50% jack pine.

Fir-Spruce – 0.1%. Consisting of swamp border or upland types with mixed species, predominately balsam fir and spruce associated with white pine, cedar, red maple, aspen, and birch

Scrub oak – 10.1%. Consisting of a majority of poorer quality oak (often northern pin oak) capable of only fuelwood or cellulose fiber production.

Bottomland hardwoods – 0.8%. Typically floodplain species including silver maple, river birch, elm, cottonwood, and green ash.

820.2 NON-FORESTED COMMUNITIES

Non-forested communities within the Juneau County Forest cover approximately 7.8% of the forest. In broad categories, they are: upland (5.8%), wetland (1.9%) and water (0.1%).

Non-forested habitats are important components of management within the County Forest. Upland and wetland non-forest types provide important habitat for distinct groups of species.

The following provides a general description of the non-forested communities:

820.2.1 Upland Non-Forest (5.8%)

Upland Non-Forest areas of the County Forest include:

Grass openings – consists of upland grasses, such as brome, quack, bluegrass, timothy, big and little bluestem, and Indian grass.

Herbaceous vegetation - ground cover predominated by herbaceous species with bracken fern, sweet clover, giant ragweed, stinging nettle, upland aster, goldenrod, and prairie dock being common.

Shrub openings - primarily upland sites less than 10% stocked with tree species but having 50% or more of the area stocked with taller growing, persistent shrubs. This includes, but is not limited to, shrubs such as hazel, gray dogwood, junberry, sumac, ninebark and prickly ash.

Rock outcrops and sand banks - rock outcrops include rocky talus, and bedrock material.

820.2.2 Wetlands (1.9%)

Wisconsin State Statutes define a wetland as “an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation, and which has soils indicative of wet conditions.”

Wetland communities are recognized to be a complex association of plants and animals, soils and water levels having special natural values. They are fragile systems that undergo rapid degradation when affected by incompatible uses and unskilled management. Wetlands provide many functional values including shoreline and flood protection, water quality protection, groundwater recharge, and animal and plant habitat. Therefore, it is the policy of Juneau County to preserve, protect and manage the wetlands under its jurisdiction in a manner that recognizes the natural values of wetlands and their importance in the environment. To this end the County will:

- 1) Recognize wetland values in management plans, taking reasonable steps to minimize harmful effects.

- 2) Cooperate with the DNR in wetland inventories and in preparation of essential wetland information.
- 3) Maintain control of vital wetlands under its jurisdiction when to relinquish such control would risk substantial site alteration and subsequent degradation of wetland values vital to the area and the state.
- 4) Minimize adverse changes in the quality or quantity of the flow of waters that nourish wetlands.
- 5) Cooperate with local, state and national agencies and citizens to increase understanding of the importance of wetlands and the need for land and water stewardship in guiding development decisions.
- 6) Cooperate with the DNR in wetland management activities that would enhance the quality and diversity of wetlands in the county and the region.

Wetlands are the transitional habitats between upland and aquatic systems where the water table is usually at or near the surface, or where the land is covered by shallow water. They presently make up a total of 1.9% of the County Forest.

Wetlands are made up of 15 descriptive types (adapted from PUBL-WZ-029-94). They include:

Shallow, open water – wetlands characterized by submergent, floating and floating-leaved aquatic vegetation such as pondweed, water lilies, water milfoil, and duckweed. Water depths are generally less than 6.6 feet.

Shallow marshes - wetlands characterized by persistent emergent vegetation such as cattails and pickerelweed, etc., and water depths to 1.5 feet.

Sedge meadow - wetlands characterized by sedges and cattails. Surface water depths to 6 inches in winter and early spring, and exposed saturated soil surface in summer.

Fresh (wet) meadow – wetlands dominated by grasses, such as red-top grass and the invasive, non-native, reed canary grass, and by forbs such as giant golden rod growing on saturated soils.

Alder thicket – wetlands similar to shrub-carrs, but dominated by speckled alder. It can also include other shrub species like high bush cranberry and sweet gale.

Floodplain forest – wetlands dominated by mature, deciduous hardwood trees growing on alluvial soils associated with riverine systems. These wetlands often occur in the backwaters and depressions of rivers, which retain water for a long period into the growing season. Typically they include northern and southern wet-mesic hardwood forest associations. Floodplain forests support diverse plant and animal species because they serve as migration corridors.

Seasonally flooded basin – wetlands in poorly drained, shallow depressions that may have standing water for several weeks of each year, but are usually dry for much of the growing season. Typical species include smartweeds, beggarsticks, and wild millet. These basins often support an abundance of plant seeds and invertebrates, which make them ideal feeding and resting areas for migrating waterfowl and shorebirds.

820.2.3 Open Water Habitats (0.1%)

Open water habitats are permanently flooded lands below the deep-water boundary of wetlands. Water is generally too deep to support emergent vegetation. Presence of these aquatic habitats within a forest landscape greatly increases the number of wildlife species that can potentially occur. They include rivers, lakes, and streams and occur on 0.1% of the forest landscape. They are broken down into:

Streams - intermittent or permanent watercourses with slow water velocities and are usually defined as being less than 1/8 mile in width.

Rivers - wetlands and deep-water habitats contained in a channel through which the water flows and associated with forested riparian zones.

830 PLANT COMMUNITIES MANAGEMENT

Juneau 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 to encourage, specific species or communities is complex. It includes an understanding of:

- Objectives of the County Forest.
- Integration of the National Hierarchical Framework of Ecological Units (NHFEU - landforms, soils, climate, vegetation classification at multiple scales).
- Application of habitat type classification to identify ecological potentials and silvicultural alternatives.
- Past, present, and future desired condition.
- Surrounding ownership patterns and their generalized objectives.
- Socio-economic needs.

830.1 SILVICULTURE

Plant communities are normally managed within the guidelines found in the *Wisconsin Department of Natural Resources. Silviculture and Forest Aesthetics Handbook 2431.5.* Silviculture is the practice of controlling forest composition, structure, and growth to maintain and enhance the forest's utility for any purpose. Typically, silvicultural guidelines are written to encourage a stand to contain the greatest quality and/or quantity of timber under either an even-, or uneven-aged system.

A summary of management on the Juneau County Forest is described as follows:

830.1.1 Jack pine

Jack pine is a shade intolerant species that occurs throughout the sand regions of the Forest. This species is shade intolerant and is normally regenerated by wildfire. Full sunlight, prepared seedbed, and heat are the key conditions provided by fire. With the control of wildfire, other techniques have become necessary in order to perpetuate this type.

Juneau County has used several methods for jack pine regeneration. The first and easiest is a complete regeneration harvest of the entire area without any treatment. It is expected that the area will re-seed itself with the serotinous cones left on the slash. The second is similar but after the harvest the area is disked with a bull-disc to take the slash down to mineral soil. This has been tried only with moderate success. The last regeneration method is to harvest the entire area then use a seeder bomb pulled by a bulldozer over the area. The bulldozer has a FELCO blade on the front which creates a furrow that the seeder bomb rolls on and deposits seed. The seeder bomb is set to disperse about one-quarter pound of seed per acre. Planting has been equally successful however; it requires more expenditure and administration.

From a landscape perspective, the jack pine type is declining as it is converted either successional or through planting to another species. Juneau County Forest is attempting to minimize conversion of jack pine to other species on the Forest in order to stem long-range decline of this important forest type.

830.1.2 Aspen

Aspen is a shade intolerant species that is found throughout various areas of the forest and is managed on an even-aged basis. This means that aspen needs full sunlight to regenerate and the best method for creating optimum conditions for stand replacement is clearcutting.

The aspen type is recognized as providing habitat values to a wide variety of wildlife species as well as being an important species for economics and fiber production. Recent timber sales have provided a good portion of the County Forest revenue generated through the management of aspen.

The extent of this vital resource has been steadily declining since the 1960s. The chief reasons for the decline are: 1) lack of harvest as stands reach maturity (natural succession) and 2) selective harvest. In both instances, the end result is conversion to more shade tolerant timber types.

Juneau County is committed to maintaining its aspen acreage and will accomplish this by regenerating the mature aspen stands through the use of clearcuts.

Aesthetic concerns can be mitigated by retaining pine and/or hardwood tree species on the sites, limiting the size of harvests, and creating irregularly shaped sale boundaries.

830.1.3 Red Pine

The Central Sands of Wisconsin at one time maintained a significant pinery consisting of jack pine, white pine and red pine. As time passed after European settlement, the white pine and red pine were logged off and jack pine became the significant conifer in the Central Sands. European settlement also opened up a lot of forested areas so that cultivated crops could be planted. After a time farmers realized that the soil and climate would not permit them to produce enough to become economically successful. They eventually abandoned their farms and left the area. The open lands either naturally reverted back to jack pine or were planted to red pine.

Juneau County grows red pine on an even-aged rotation cycle. The sites are prepared for planting either mechanically or with chemicals to remove other vegetative competition. After planting there may be need for additional release from other plants. This can also be done chemically. The first thinnings occur at

about 25 years of age with subsequent thinnings every 10 to 15 years depending on growth. The final harvest can be scheduled for 80 to 100 years after initial establishment. The stand is then re-established through planting.

830.1.4 White Pine

White pine has also been a locally significant tree species in the Central Sands area since the first European settlements were established. The species grew to a great size and supported large harvesting operations in the later 1800s in the northwest portion of Juneau County. This large pinery was logged off by such eminent logging entrepreneurs such as Weyerhaeuser and others in just a few years.

Initially white pine re-established itself by the few trees that were “left behind” for various reasons. Later, in other areas, planting white pine also became popular. White pine was established in areas that were too moist for red pine. Juneau County manages white pine using even-aged management techniques with periodic thinnings when stocking levels indicate the need for thinning. There are places where white pine has established itself under the shade of a hardwood overstory. In these instances, the over-story will be removed to permit the white pine to stay healthy and continue to grow. In some circumstances a stand that has white pine may have uneven-aged characteristics and will be treated as such. Regeneration of white pine can be done by either natural means or through planting. White pine can produce high grade lumber if it is pruned early in its life cycle.

830.2 LOCALLY UNCOMMON TREES

The presence or lack of a particular plant species is dependent on the land’s capabilities, climate, and natural (e.g. fire, browsing) and/or man-caused (e.g. logging, farming) disturbances. The present scarcity of the listed species makes them a source of concern.

The following are considered uncommon on the Forest and perhaps to some extent across the regional landscape:

830.2.1 American Elm (*Ulmus americana*) is scarce primarily due to mortality caused by the introduction of Dutch elm disease. Existing elm will normally be left uncut in hopes that they may continue in the landscape as potential resistant seed source individuals. Where possible during silvicultural operations, efforts will be made to encourage regeneration of American elm.

830.2.2 Butternut (*Juglans cinerea*) occurs on the County Forest primarily in the Bass Hollow Unit. Because of butternut decline, fewer individuals are present than in previous years. Existing healthy butternut will normally be left in hopes that they may continue in the landscape as potential resistant seed source individuals. Where possible during silvicultural operations, efforts may be made to encourage regeneration of butternut. This may include cutting to encourage stump sprouts in certain situations.

830.2.3 Hemlock (*Tsuga Canadensis*) is only found in a small area in the Bass Hollow unit of the County Forest. It is a remnant stand that has hung on since the last glaciation occurred in the state. It is located on the south side of a valley on a north-facing slope. This small stand will be left untouched so that it will have an opportunity to maintain itself under natural conditions.

830.3 Trees Locally Difficult to Regenerate

There are certain tree species whose home ranges are within the County Forest that are difficult to regenerate. In many cases this difficulty is related to the exclusion of fire from the environment. In other cases this may be due to browsing by deer. The following species, normally found within the county, are found to be difficult to regenerate:

830.3.1 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.

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

830.3.2 Red oak

The red oak type is located on the Bass Hollow unit of the County Forest. Red oak tends to favor habitat types that are also suitable for northern hardwood species. On many sites, normal thinning practices tend to promote these other species. In many cases regeneration under nearly pure red oak stands tends towards red maple and poor quality sugar maple. Over time, this shade tolerant seral stage will replace the red oak. The difficulty in regenerating red oak on these sites appears to be related to lack of soil disturbance with the removal of fire from the landscape

Red oak has very high wildlife value due to its mast production and tendency to produce cavities that are suitable for wildlife dens. It also has very high timber value in sawlog-sized timber. Because of these factors, it is important to retain red oak on the Juneau County Forest.

830.4 EXOTIC PLANT SPECIES OF CONCERN

Exotic or non-indigenous invasive plant species can cause significant ecological and economic damage to the Forest. Some invasive species, such as common and glossy buckthorn, eliminate not only wildflowers but also limit the regeneration of tree species. Keeping them from dominating the understory is critical to the long-term health and economic viability of the forest. Currently, Juneau 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 central forests in Wisconsin. Vigilance now will protect the forest in the future.

830.5 LEGALLY PROTECTED PLANT SPECIES

There are some plants in Wisconsin that are afforded protection under the Federal Endangered Species Law, the State Endangered and Threatened Species Law (s. 29.604 Wis. Stats. and NR 27 Wis. Adm. Code), or both. Under Wisconsin State Law, no one may possess or sell any wild plant that is listed without a valid endangered or threatened (ET) species permit. On public lands or lands one does not own, lease or have permission of the landowner, one may not cut, root up, sever, injure, destroy, remove, transport, or carry away a listed plant without an ET species permit. There is an exemption on public lands for forestry, agriculture and utility activity under the state law.

In the Natural Heritage Inventory (NHI) program the DNR tracks information on these species in the State. Because the species on the list is constantly changing, the list for the Juneau County Forest is in Chapter 900.

830.6 OTHER PLANT SPECIES AND NATURAL COMMUNITIES OF CONCERN – NHI

The NHI program at the DNR also tracks information on rare species and natural communities, in addition to legally protected species.

Because the species and natural communities on the Juneau County Forest are constantly changing, the list for the Juneau County Forest is in Chapter 900.

830.6.1 Special Concern Plants

Special Concern Species are those species in 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.

A list of Special Concern plant species known to occur in Juneau County (on or near the county forest) is in Chapter 900.

830.6.2 Natural Communities

Similarly, specific records of natural communities within the county are also tracked. The list of the natural communities that have been recorded in Juneau County (on or near the County Forest) is in Chapter 900.

840 WILDLIFE SPECIES MANAGEMENT

840.1 BACKGROUND

For the purpose of this plan, wildlife will include all native birds, mammals, fish, amphibians, reptiles, and insects with a strong focus on the natural communities in which they live. Wildlife biologists will emphasize habitat management that interrelates and benefits wildlife, and complements sound forestry practices. Concerns about the biological diversity of the County Forest and how it fits into the regional, continental and global perspective, may cause wildlife management to place increased emphasis on segments of the forest community. Practices such as old growth, snag and den tree management, access management, forest openings maintenance, oak management, and aspen maintenance, can be priorities in the dynamics of forest management. A primary goal of wildlife management on the Juneau County Forest is to provide a diversity of healthy ecosystems necessary to sustain native populations for their biological, recreational, cultural and economic values.

840.1.1 Technical Planning

Planning will be a cooperative effort of the administrator, DNR liaison forester and wildlife biologist in formulating management plans and utilizing wildlife management techniques for the overall protection and enhancement of the forest community, of which wildlife is a key component.

840.1.2 Guidelines

DNR manual codes on Endangered and Threatened Species Permits Issue (1724.5), Feasibility Studies and WEPA Analyses for Establishing or Modifying Property Project Boundaries (2105.1), Guidelines for Defining Forest-Wildlife Habitat Management (2112), Forest Opening Maintenance and Construction (2112.1), and the Public Forest Lands Handbook (2460.5), are important references and guidelines in wildlife planning efforts.

840.1.3 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.

840.2 RESOURCE MANAGEMENT AND AREAS OF FOCUS

In applying this Plan to the forest, the following areas of focus were identified in achieving Plan objectives:

840.2.1 General Management Policies

Forest management practices may require modification to benefit wildlife and biodiversity in certain situations. The following will be considered in forest management planning:

- 1) Even-aged regeneration harvests (clearcuts) should vary in size and shape.
- 2) A diversity of stand age, size and species.
- 3) Mast-bearing trees and shrubs, den trees, and an adequate number and variety of snags.

- 4) Cull trees (future snag or den trees) not interfering with specific high value trees.
- 5) Timber types, habitat conditions and impacts on affected wildlife.
- 6) Access management.
- 7) Best management practices for water quality (BMP's).

840.3 HABITATS OF IMPORTANCE

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:

840.3.1 Aspen

The aspen type is recognized as providing habitat values to a wide variety of wildlife species. This type will continue to be regenerated, with consideration given to reserving scattered den and mast-producing oak trees in the management planning. .

840.3.2 Jack pine

Jack pine and its associated plant understory provide a vital mix of breeding and winter habitat for many wildlife species. This type will become increasingly important on the Forest as conversion to other tree species occurs on private lands. Jack pine habitat maintenance will be a high priority.

840.3.3 Forest openings

Permanent grass openings are essential to well-balanced wildlife habitat. Openings will be maintained where they exist or be developed where needed.

840.3.4 Oak

The oak type is important to wildlife because of its cavity-forming potential and mast production. Future management will focus on protecting and regenerating this type.

840.3.5 Forest Game Species

The management of forest game (white-tailed deer, ruffed grouse, black bear, turkey, snowshoe hare, and numerous furbearers) is centered on maintaining early successional species such as aspen, jack pine, white birch, and scrub oak; with aspen and oak being the primary species of importance.

Manual Code 2112 is a Wisconsin DNR document that establishes guidelines for measuring forest game habitat. It has been used like a barometer to measure changes in forest wildlife habitat. While the scope of Manual Code 2112 can be narrow (deer habitat units compared with landscapes and ecoregions) by today's management standards, the impacts are broad.

Foresters, in concert with wildlife biologists, will continue to monitor forest game species and adjust land management prescriptions where appropriate.

840.3.6 Forest Non-Game Species

Efforts will be made with the DNR to inventory existing populations, identify needs, and maintain valuable habitat types.

The Juneau County Forest has recorded incidents of nesting of the Northern Goshawk. These records are the southernmost nesting of this species in the state of Wisconsin. In order to promote continued use of the forest by this species, management practices will be slightly modified to promote forest conditions favorable for this species. Also, forest management activities will be timed so that nesting birds will not be disturbed. This will usually be in the late summer to late winter time.

840.3.7.1 Neotropical Migrant Birds

Neotropical migrant birds (NTMB) are songbirds that breed in North America and winter in Central and South America. There are over 120 species of NTMBs that spend a portion of each year in Wisconsin. Different NTMBs utilize a wide variety of habitats including forests, shrubs, and grasslands. Warblers, tanagers, vireos, thrushes, swallows, blue-winged teal and hummingbirds are just some

examples of NTMBs. In addition, these species play an important role in forest health by consuming large amounts of insects, including forest pest species such as gypsy moths and forest tent caterpillars.

In recent years, several neotropical species have experienced significant declines in population. These declines likely reflect a reduction in suitability, or a loss of habitat where these species breed, overwinter and/or migrate. Grassland birds seem to be experiencing the most precipitous declines range wide, due to a loss of habitat both in North America and on the wintering grounds in South America. However, species that nest in forests or shrublands, such as the cerulean warbler, golden-winged warbler, and veery are also declining nationwide.

In some cases these declines may be tied to forest fragmentation. There are really two forms of forest fragmentation, each with different impacts on forest birds. One form of forest fragmentation occurs when portions of a forest are converted into non-forest cover types (urbanization and agricultural). This is permanent fragmentation and poses the greatest threat to all forest wildlife. The second type is the fragmentation of habitat or cover type. This habitat fragmentation occurs naturally due to local geological features or can be a result of human activity (harvest activity). Both kinds of forest fragmentation have impacts on neotropical birds including changes in competition for resources, predation rates, and perceived quality of habitat. Each species of NTMB respond to forest disturbance differently. Since there are so many neotropical migrants that utilize a wide variety of habitats and successional stages it's difficult to make generalizations as to the impacts of forest management on the health of certain bird populations. Species such as chestnut-sided warblers and mourning warblers benefit from early successional species produced by clearcutting. Species that rely on more mature forests or interior forests, such as ovenbirds or black-throated blue warblers, will be negatively impacted by intensive forest management. To assure a rich diversity of NTMBs in Wisconsin's forests, emphasis should be placed on forest

management guidelines that promote habitat for NTMBs with the most specialized habitat needs.

Forests and associated wetlands of the western Great Lakes, including Wisconsin, support some of North America's highest densities and most diverse assemblages of breeding birds (Howe et al. 1996). While some forest/shrub species mentioned above are decreasing, according to the Federal Breeding Bird Survey (BBS), the majority of forest/shrub species that breed in Wisconsin are increasing.

Wisconsin's private, County, State, and National Forests are still relatively intact and have regained much of their structural and compositional diversity that was once reduced in the big "Cutover" in the early 1900's.

As habitat is lost and fragmented by development on private lands, Wisconsin's County Forests continue to provide increasingly important habitat to numerous NTMB species that occur in a wide variety of forest types and age classes.

840.4 LEGALLY PROTECTED ANIMAL SPECIES

The Federal Endangered Species Act of 1973 and the Lacey Act together provide for the protection of wild animals threatened with extinction. The State Endangered and Threatened Species Law also requires that the State assume responsibility for conserving wild animals by restricting and regulating the taking, possession, transportation, processing, or sale of endangered or threatened wild animals within its jurisdiction. Further, the Federal Migratory Bird Act and the Eagle Protection Act provide additional protection for certain species of birds. Because animals usually travel freely from one property to another, they belong to everyone. Therefore, if a species is legally protected, it is protected anywhere it occurs in Juneau County.

Because this list is subject to change without notification, the list of animals is in Chapter 900.

840.5 OTHER ANIMALS OF SPECIAL CONCERN & SPECIES OF GREATEST CONSERVATION NEED

Just as with plants, the DNR tracks information on rare animal species when some problem of abundance or disturbance 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. A list of Special Concern animal species known to occur in Juneau County (on or near the County Forest) is in Chapter 900.

In addition to NHI a statewide list of Species of Greatest Conservation Need can be found at: http://dnr.wi.gov/org/land/er/cwcp/SGCN_ID.pdf

840.6 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.

840.6.1 Technical Planning

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.

840.6.2 Water Surveys

Comprehensive lake and stream surveys on the County forest will be conducted by the DNR fisheries biologist as required. The publication, "Surface Water Resources of Juneau County", contains additional information relative to these waters.

840.6.3 Population Surveys

Surveys of fish populations in waters within the County Forest will be conducted by the DNR as required and will generally run concurrently with water surveys. Fish management programs will be guided by these surveys.

840.6.4 Lake Management

Management of lakes within the County Forest will be consistent with the capability of the resource and any unique aspects associated with that resource.

840.6.5 Stream Management

Trout streams on the County Forest will be managed to protect and enhance their quality. Streams containing warm water or cool water species will be managed to perpetuate their inherent qualities. Corresponding land and water use practices will be consistent with this policy. An inventory of water resources can be found in Chapter 900 of this plan.

840.6.6 Best Management Practices for Water Quality

Protection of water resources in the county will be consistent with the “Wisconsin Forestry Best Management Practices (B.M.P.s) for Water Quality”. Examples of these protective measures are:

1. Uncut riparian zones
2. Erosion control measures
3. Stream bank protection

840.6.7 Shoreland Zoning

The Juneau County Wetland/Shoreland Ordinance can be found in Chapter 900 of this plan.

840.6.8 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.

840.6.9 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 Juneau County Forest include:

- Castle Rock Lake
- Petenwell Flowage
- Wisconsin River
- Lemonweir River
- Yellow River

850 LANDSCAPE MANAGEMENT

850.1 BIOLOGICAL DIVERSITY

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. It also refers to ecological structures, functions, and processes that occur in ecosystems to sustain the system as viable entities. The forest landscape, a mosaic of plants and animals of various sizes and ages, are in constant flux due to succession from both natural and planned events.

Opportunities to manage Juneau County Forest lands toward these ends will be continued and enhanced, provided they are deemed to be in the public's best

interest by the Committee and within the framework of the County Forest Law (s.28.11 Wis. Stats.).

850.2 HABITAT FRAGMENTATION

The adoption of management plans and strategies developed cooperatively with neighboring forest owners and managers will help to consider fragmentation on a landscape level. A continued program of encouraging land acquisition within the forest blocking will decrease negative impact of forest fragmentation by land uses other than forestry.

850.3 HIGH CONSERVATION VALUE FORESTS / AREAS (HCVF) AND EXCEPTIONAL RESOURCES

Areas High in Locally, Regionally or Nationally Significant Biodiversity Values. Management of these areas can be modified to maintain or enhance the values of the area in question. The reason that the area was selected for its importance as an area of biodiversity significance will help to determine the practices that will be considered for the area. Maintenance will be the main consideration for any area where biodiversity is desired. A maintenance practice will usually be the least intrusive and least costly to do. An enhancement practice will be considered if the biodiversity values are being threatened and no action will cause the specific value to be lost.

850.3.1 Areas High in Locally, Regionally or Nationally Significant Biodiversity Values

850.3.1.1 Wisconsin Natural Areas

A portion of the Bass Hollow Recreational Area has been considered for inclusion as a State Natural Area. The area is in the unglaciated portion of Wisconsin and contains a Southern Dry-Mesic community. It contains a wide variety of vegetative species that have ranges located both in northern and southern Wisconsin. The area is used intensively by the local population as a local park. The area has a trail of about 3 miles which is used for hiking.

There is also an outdoor shelter and restrooms on an area adjacent to County Highway K.

This area will have modified management practices applied in order to maintain the uniqueness of the area. Management will also center on maintaining the walking trail for user safety concerns.

850.3.1.2 Species concentration areas (e.g. bat hibernacula, bird rookeries, etc.

There are no known species concentration areas on the Juneau County Forest.

850.3.1.3 Other

There are no known other areas of concern on the Juneau County Forest.

850.3.2 Rare, threatened, or endangered ecosystems

850.3.2.1 Relic Old Growth Stands

These stands, because of their small size will not have any special management practices applied to them other than those which would help to maintain them on the County Forest landscape. Management of the lands adjacent to them will be modified so that the practice will not interfere with the natural processes occurring on these areas. These buffer areas will be considered a part of the old growth stand. Their size will vary according to the needs of the protected stand.

850.3.2.2 Savannas including Oak openings and Oak Barrens

Management of these areas will be to maintain them as much as possible with species indigenous to the area. If the area is large enough, the area will be broken down into smaller units to facilitate management and so the untreated portion of the area will act as refugia for the treated area.

850.3.2.3 Natural Origin Pine Relics

This area, in the Blueberry trail area, will be maintained as much as possible in its present condition. Management will be aimed at keeping the white pine in the area and always having some white pine growing into the large

sawtimber size class to maintain the character of the area as older trees are lost.

850.3.2.4 Pine Barrens

These areas will be managed in a manner similar to the savannas and oak barrens types. These areas intermingled with other each other on the landscape often having similar flora and fauna inhabiting them in the lower portions of the landscape. It will take time to identify where pine barrens could be developed.

850.3.2.5 Geologic Features of Significance (e.g. gorges, dells, waterfalls)

The geological features on the Juneau County Forest will be protected from deterioration and destruction. Each feature will be analyzed to identify how the management practice should be modified to protect the feature.

Management around the feature will center on keeping vehicles away from the feature and a reduction of elimination of cutting of vegetation near the feature.

850.3.2.6 Eastern Hemlock Stands

These stands are relics that have maintained themselves naturally since the last glaciation. These areas will have no practices applied to them and they will have a buffer of sufficient size to protect them from damage or deterioration. Self maintenance will be applied to these stands.

850.3.2.7 Habitat for species identified as rare, threatened, endangered or of greatest conservation need (e.g. Karner blue butterfly areas, important bird areas, etc.)

The Juneau County Forestry Department is a participant in the Wisconsin Karner Blue Butterfly Habitat Conservation Plan (HCP) and has been from the start of the project. Management is done according to the HCP. The Clearfield and New Miner Units contain areas that are populated with the KBB. There are also other areas on the County Forest where the KBB could

be established if the opportunity presents itself. The Juneau County Forest uses the “shifting mosaic” management scheme for its management style. Before a management practice has been proposed and after the practice has been completed the areas are surveyed to identify the location of wild lupine and the location of new or established populations of KBB if they have established themselves. Wild lupine has established itself very well in areas where soil disturbance has just occurred, i.e. jack pine seed plantings, new red pine plantings. Continued disturbances will provide additional opportunities for creating KBB habitat. The County Forest also maintains an area where the management scheme is to feature, protect and enhance the population that already exists. These areas already contain a good population of wild lupine along with a good population of KBB.

Juneau County also has habitat of large diameter trees that can be utilized by the Cerulean Warbler, a neo-tropical migrant. This area is part of a larger area managed by the Department of Natural Resources and the U.S. Fish and Wildlife Service. Management will be modified to maintain this habitat for this and other neo-tropical migrants that need this type of habitat.

850.3.2.8 Rare & geographically restricted natural communities (e.g. mesic cedar forest, boreal rich fen, calcareous fen, dry prairie, felsenmeer, etc)

There are no areas of these types on the Juneau County Forest.

850.3.2.9 Other

Other areas of significance have not yet been located and identified. As they become known, assistance will be sought from resource experts to determine which management practices could be done without harming the resource. Management practices will be modified according to their recommendations.

850.3.3 Culturally significant sites

850.3.3.1 Burial mounds / cemeteries

The management around the burial site in the Town of Clearfield will be modified to protect the integrity of the burial site. The recently erected fence delineates the area that will receive intensive protection. Thinning in the pine plantation will be done to protect the fence so the burial site will not be disturbed by the logging. At present, the general management is by selectively marking the trees to be harvested. Selective harvesting would be done near the site but the residual basal area would be slightly lower than the other areas of the stand so that additional intrusions into the area will not be as frequent as in the remainder of the stand. The use of heavy equipment will be restricted in the area.

The management near the Native American archeological sites will be according to the recommendations of the Ho-Chunk Nation Cultural Archeologist. These sites will be located and recorded by the archeologist. Their location will not become a part of the public information domain. These sites are legally protected by several state and federal laws. If any disturbance or destruction is done on the sites, the Ho-Chunk Archeologist will be notified and a criminal investigation and prosecution will be prepared. A list of the local Ho-Chunk Nation natural resource personnel is in Chapter 900.

850.3.3.2 Logging camps

There are no areas of this nature identified on the Juneau County Forest.

850.3.3.3 Landmarks

There are no areas of this nature identified on the Juneau County Forest.

850.3.3.4 Other

There are no other sites of this nature identified on the Juneau County Forest.

850.3.4 Locally significant sites

There are no locally significant sites on the Juneau County Forest. If any are discovered, advice and recommendations from experts will be sought to determine the procedures necessary for their management.