COUNTY FOREST COMPREHENSIVE LAND USE PLAN

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CHAPTER 800

INTEGRATED RESOURCE MANAGEMENT

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 Iron County Forest during this planning period.

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 Iron 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, <u>sustainable</u> <u>forestry</u> 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 research and 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

Liaison 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. Currently, Iron County's GIS Forester updates and maintains the electronic reconnaissance data through the use of the DNR RAVEN program. The County then provides updated recon to the DNR Liaison Forester (refer to Chapter 340.5 and 340.6).

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*., 2002) 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.

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. This information is now available.

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 (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.

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 (page 6), Iron 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 erodable soil types, close proximity to streams or lakes, or steep slopes may require mitigating measures in excess of those outlined in the manual. All Iron County employees practicing forestry will receive BMP training. Additionally, Iron County will encourage BMP training of all logging contractors that operate on County timber sales. These more sensitive areas are identified on the erosion susceptibility map included in Chapter 900 – Appendix.

810.1.7 Forest Fire Management

810.1.7.1 Uncontrolled Fire

Refer to Chapter 600

810.1.7.2 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. WDNR Wildlife, Forestry, and Endangered Resources may be consulted about the need for prescribed burns. 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 840.7)

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. The Wildlife Biologist administers the “Dime an Acre” Habitat Grant and assists in administering the County Conservation Aids Program. (Also see Chapter840) 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 when they become available.

810.1.8.4 Mineral Resources

The DNR may provide information valuable for management of gravel and other mineral resources. (Also see Chapter 515).

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 840.7.6). 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, Forestry, and Wildlife will provide Natural Heritage Inventory (NHI) information and are available for consultation on endangered resources issues. Through a signed agreement with the DNR, County Forestry staff have received NHI training giving them limited access to data relevant to Iron County.

810.1.9 Local Silvicultural Field Trials

No official field trials are underway on the Iron County Forest currently.

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 Iron County Forestry 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 Iron County Forest cover approximately 88% of the Forest.

Forest cover types associated with the County Forest are (percentage is of the total Iron County Forest acreage):

Aspen - 23%. Consisting of primarily aspen species often found in combination with paper birch and red maple.

Northern Hardwoods - 38%. Consisting of a mixture of upland hardwood species including sugar maple, yellow birch, basswood, ash and red maple.

Hemlock Hardwoods – 1+%. More than 50% hemlock associated with northern hardwood species.

Oak – 1+%. Dominated by red oak, white oak, black oak and associated with other hardwoods.

Swamp Hardwoods - 5%. More than 50% swamp hardwood species including black ash, red maple, and elm.

Red Maple – 1+% (This timber type is under reported; typically included in NH with even-aged management). More than 50% red maple. Often associated with aspen and white birch.

White Pine – 1+%. More than 50% white pine.

Red Pine - 1%. More than 50% red pine.

Jack Pine – 1+%. More than 50% jack pine.

Fir-Spruce - 4%. 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

Swamp Conifer - 8%. Lowland type typified by balsam fir, cedar, and spruce in combination with red maple and other lowland hardwoods.

Black spruce - 2%. More than 50% swamp conifer species with black spruce predominating.

Tamarack – 1+%. More than 50% swamp conifer species with tamarack predominating.

White cedar - 4%. More than 50% swamp conifer species with white cedar predominating.

White birch – 1+%. Consisting of a majority of white birch. Often found in combination with aspen and red maple.

820.2 NON-FORESTED COMMUNITIES

Non-forested communities within the Iron County Forest cover approximately 12% of the forest. In broad categories, they represent the following percentage of the total acreage of the Iron County forest: upland 2%, wetland 9% and water 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 wildlife species, including invertebrates, amphibians, reptiles, mammals, and birds.

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

820.2.1 Upland Non-Forest makes up 2% of the total Iron County Forest

The Upland Non-Forest areas of the County Forest include:

Grass openings – consists of upland grasses, such as brome, quack, bluegrass, timothy, and many forb species. Bracken and sweet fern are common components.

Prairie (man-made) – ground cover predominantly of prairie grasses, including Little and Big Bluestem, planted by ICF and WDNR.

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

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, alder, juneberry, sumac, ninebark and cherry.

Rock outcrops and sand banks - rock outcrops include rocky tallus, and bedrock material. Prairie type forbs and grasses can be found on outcrops.

820.2.2 Wetlands make up 9% of the total Iron County Forest

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 Iron 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 9% of the total 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 feet.

Deep marshes - wetlands characterized by emergent vegetations such as cattails and pickerel weed and floating leaved plants such as white and yellow water lily and watershield. Water depths of 6 feet are typically found on deep marshes.

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.

Open bog – wetlands that are composed of living sphagnum moss growing over a layer of acid peat. Herbs and low shrubs colonize the mat and immature or stunted trees of black spruce and/or tamarack may be scattered through the area.

Coniferous bog – wetlands similar to open bogs, except that mature black spruce and/or tamarack trees are the dominant species growing on the sphagnum moss mat. Black spruce and heath family shrubs are characteristics only of acid peats, whereas tamarack can grow in calcareous peats, such as those of northern white cedar swamps.

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.

Lowland hardwood swamp – wetlands dominated by deciduous hardwood trees. Soils are saturated during much of the growing season, and may be inundated by as much as a foot off standing water. Species include black ash, red maple, yellow birch, and northern white cedar.

Coniferous Swamp – wetlands dominated by lowland conifers, primarily northern white cedar and tamarack. Soils are saturated during much of the growing season and may be inundated by as much as a foot of standing water. Soils are usually organic. A sphagnum moss mat is not present.

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, and

beggarsticks. 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 makes up 1+% of the total Iron County Forest

Open water habitats are permanently flooded lands below the deep-water boundary of wetlands. Water is generally too deep to support emergent vegetation except at their margins. 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 1+% of the forest landscape. They are broken down into:

Lakes - lakes, ponds, and flowages in excess of 20 acres in an area; or impounded rivers in excess of 1/8 of a mile in width.

Streams - intermittent or permanent watercourses with slow water velocities and are usually defined as smaller than a river.

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

Iron 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.
- Wildlife needs (deer yards; den trees; coarse woody debris; spring and fall food).
- Wetland protection

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 Iron County Forest is described as follows:

830.1.1 Northern Hardwood Management (NH)

The Northern Hardwood cover type is moderately to highly shade tolerant. The predominant species include sugar maple, basswood, red maple, white ash, and yellow birch. Other associated species include black cherry, white pine, balsam fir, hemlock, white spruce, and northern red oak.

Management options for Northern Hardwood stands include uneven aged or even-aged silviculture systems. Individual stand assessment including species composition, stand structure, stand quality (present and potential crop trees), stand

age, and site quality, determines which silviculture system will be used to meet management objectives.

One of Iron County's forest product goals is to produce high quality sawtimber on a sustained yield basis for economic purposes. Uneven-aged silviculture systems are best suited for this goal. The recommended and generally accepted natural regeneration methods include single-tree selection and group tree selection.

Even-aged management may be used on poorer quality sites to produce quality products and encourage mid-tolerant species. On these sites shelterwood and overstrory removal are the recommended and generally accepted regeneration methods.

The WDNR Silviculture Handbook, Chapter 40, provides detailed guidance for Northern Hardwood management including uneven-aged, even-aged, conversion, and degraded stands (2005). Any departures from this chapter will be documented and approved by both the county and state. Iron County is currently working on a document that describes specific goals and objective for Northern Hardwood management. When completed and approved, this document will be included in Chapter 900.

During the next fifteen years, Iron County Forest recon data lists approximately 43,300 acres of northern hardwood scheduled for management activity. Approximately 2880 acres of northern hardwood will require some type of management activity annually. Projected labor forces from both the county and DNR will not allow the county to meet that annual acreage goal. Iron County will continue to strive to actively manage between 1500 and 1800 acres of northern hardwood each year. Alternative methods of managing hardwoods will need to be researched and applied if feasible. Alternative methods may include contract timber sale establishment, additional full time or part time workers, interns, and alternative sale specifications.

830.1.2 Red Pine Management (PR)

Red pine is relatively shade intolerant and grows best on well-drained loamy sands or gravels. Red pine occurs naturally in northern Wisconsin forest types, however, most commonly in Iron County it is planted in plantations. Red pine plantations are not generally considered ideal wildlife habitat, especially as tree canopy base rises.

Management alternatives are determined by management objectives such as quality sawtimber, cabin logs or fiber production. Even-aged management through the implementation of thinnings followed by a regeneration harvest is most common. Uneven-aged management is rarely used, except in extremely sensitive aesthetic areas.

Stocking guides found in the WDNR Silviculture Handbook, Chapter 32, are key to managing red pine stands (2004). Any departures from this chapter will be documented and approved by both the county and state.

830.1.3 White Pine Management (PW)

As a cover type and an associated species, white pine was more common in northern Wisconsin forests during the pre-European settlement era. White pine could become a more important component on some habitat types by optimizing management opportunities. As with most cover types, habitat type is the preferred indicator of site potential.

To optimize vigor, white pine should be grown in full sunlight. Even-age management with the periodic thinnings based on basal area control can produce veneer and grade lumber.

White pine is an important tree for a number of wildlife species. Total numbers of wildlife species tend to be higher in mixed white pine types.

Several issues affecting white pine management include white pine blister rust and white pine tip weevil.

See the WDNR Silviculture Handbook, Chapter 31, for specific management recommendations and guidelines (2002). Any departures from this chapter will be documented and approved by both the county and state.

830.1.4 Jack Pine Management (PJ)

Jack pine is a shade intolerant species that occurs throughout the sand regions of the Forest. This species is shade intolerant and is naturally 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 on the landscape.

The most widely used, and successful method is scarification followed by harvest. This method is most advantageous from an economic and ecological standpoint, lending itself to a more natural condition. This would be the preferred method of regenerating Jack Pine in Iron County. Planting has been successful, however, it requires more expenditure and administration.

From a landscape perspective, the jack pine type is declining as it is converted either successionally or through planting to other species. Iron County Forest should attempt to minimize conversion of jack pine to other species in order to stem long-range decline of this forest type. *See Chapter 33, Silviculture Handbook, WDNR, 1995.* Any departures from this chapter will be documented and approved by both the county and state.

During the next fifteen years, Iron County Forest recon data lists approximately 5490 acres of pine, fir and spruce scheduled for management activity. Annual pine acreage goals will require approximately 360 acres of active management each year.

830.1.5 Aspen Management (A)

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 the coppice method, often referred to as clearcutting.

The aspen type is recognized as very important in providing habitat values to a wide variety of wildlife species as well as being an important species for economics through fiber production. A portion of the County Forest revenue is 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.

Iron 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 may be mitigated by retaining pine and/or hardwood tree species on the sites, limiting the size of harvests, and creating irregularly shaped sale boundaries. *See Chapter 43, Silviculture Handbook, WDNR, 2002.* Any departures from this chapter will be documented and approved by both the county and state.

During the next fifteen years, Iron County Forest recon data lists approximately 11,700 acres of aspen scheduled for management activity. Annual aspen acreage goals will require approximately 780 acres of active management each year.

Most of these acres are scheduled towards the end of the life of this comprehensive plan (2015 –2020). ICF will make efforts to spread the rotation of aspen by harvesting some stands earlier and some later than scheduled. Labor for sale establishment and administration of these maturing aspen stands will need to be in place during that time span.

830.1.6 Hemlock- Hardwood Management (HH)

The Hemlock-Hardwood type is a shade tolerant association. The even-aged (shelter wood) system can be successfully employed in managing Hemlock and Yellow Birch. Use of the all-aged selection system often results in difficulties of securing regeneration of both Hemlock and Yellow Birch species, limiting its usefulness to specific sites.

Management objectives for Hemlock Hardwood are usually determined in relation to other management objectives, such as wildlife, aesthetics, and old growth. Habitat type is usually the preferred indicator of site potential. Historically, Hemlock is difficult to regenerate. As a result, Iron County has managed these stands for aesthetic, wildlife, and old growth potential.

The extent of this vital resource has been steadily declining over the past fifty years. It is the intention of Iron County to maintain and promote the Hemlock-Hardwood type on the County Forest. Future research findings and successful outcomes from field trials with Hemlock Hardwoods may be applied on the County Forest to meet this goal. *See Chapter 39, Silviculture Handbook, WDNR, 1990*. Any departures from this chapter will be documented and approved by both the county and state.

830.1.7 Oak Management (O)

Northern Red Oak is a shade intolerant species found in scattered, localized areas throughout the Iron County Forest. Oak type is typically managed using even-aged silvicultural systems.

To regenerate Oak, shelter wood systems have proven most successful. These systems provide shade for establishment of regeneration, often include seed-bed preparation, and provide for removal of over-story to release the regeneration once an establishment threshold has been attained.

The Oak type is recognized as providing habitat values to a wide variety of wildlife species as well as being an important species for economics through quality saw timber production. The extent of this vital resource has been steadily declining over the past fifty years. It is the intention of Iron County to maintain and promote the Oak type on the County Forest. Future research findings and successful outcomes from field trials with Oak may be applied on the County Forest to meet this goal. *See Chapter 41, Silviculture Handbook, WDNR, 1990.* Any departures from this chapter will be documented and approved by both the county and state.

830.1.8 Swamp Hardwood (SH)

The Swamp Hardwood type is predominantly Black Ash. Black Ash is considered a shade intolerant type and is typically managed using even-aged silivicultural systems. Intermediate thinning and shelterwood harvesting methods, depending on site characteristics, have been successful in reproducing Swamp Hardwood types. Historically, Iron County has managed this type in relation to adjacent aspen or northern hardwood types.

Swamp Hardwood stands are considered important cover types for water quality. This resource has the potential to be significantly affected by the invasion of Emerald Ash Borer. To minimize impacts from this insect agent, Iron County may be required to manage Swamp Hardwood stands on a more intensive level during the life of this plan. *See Chapter 46, Silviculture Handbook, WDNR, 1990.* Any departures from this chapter will be documented and approved by both the county and state.

830.1.9 Swamp Conifer Management (SC)

Swamp Conifer is typically managed using even aged silivicultural systems. The Swamp Conifer type, when managed on the Iron County Forest, will follow silvicultural guidelines listed for Balsam Fir, White Cedar, Black Spruce and Tamarack. *See Chapter 35, Silviculture Handbook, WDNR, 1998.* Any departures from this chapter will be documented and approved by both the county and state.

830.1.10 Black Spruce Management (SB)

The Black Spruce type is considered shade tolerant; however not as tolerant as common associated species such as Balsam Fir and White Cedar. Black Spruce stands are considered important cover types for water quality. Through natural succession the type may be maintained or converted, depending on a variety of factors. Management concerns of special importance for lowland forest types include endangered resources, biodiversity, wildlife, aesthetics, and BMPs for water quality.

When these stands are managed, techniques outlined in *Chapter 36, Silviculture Handbook, WDNR, 1995 guidelines will be used.* Any departures from this chapter will be documented and approved by both the county and state.

830.1.11 Tamarack Management (T)

The Tamarack type is considered very shade intolerant. Even aged silviculture techniques are utilized to reproduce the type. Tamarack stands are considered important cover types for water quality. Management concerns of special importance for lowland forest types include endangered resources, biodiversity, wildlife, aesthetics, and BMPs for water quality. When these stands are managed, techniques outlined in *Chapter 37, Silviculture Handbook, WDNR, 1990 guidelines will be used.* Any departures from this chapter will be documented and approved by both the county and state.

830.1.12 White Cedar Management (C)

The Cedar type is considered shade tolerant. Even aged silviculture will be applied when stands become over-stocked. Cedar stands are considered important cover types for water quality. Management concerns of special importance for lowland forest types include endangered resources, biodiversity, wildlife, aesthetics, and BMPs for water quality.

Winter cover, especially for deer (deer yards) will be considered and maintained wherever possible when management is considered. Regeneration is considered difficult as a result of heavy use by winter deer herds. When these stands are managed, techniques outlined in *Chapter 38, Silviculture Handbook, WDNR, 1990 guidelines will be used.* Any departures from this chapter will be documented and approved by both the county and state.

830.1.13 Fir Spruce Management (FS)

The fir-spruce type is naturally occurring and considered very shade tolerant. The type can be managed using even-aged or all-aged silvicultural systems depending on management objective. White spruce plantations are also widely scattered across the Iron County Forest.

The fir-spruce type is often found adjacent to northern hardwood and other upland types; and is usually managed in conjunction with these associated stands. The Iron County Forest recognizes the importance of the buffering quality of this transitional type. Management considerations for this edge type include endangered resources, biodiversity, wildlife, aesthetics and BMPs for water quality.

Historically, this type has been subjected to Spruce budworm infestations. Future management shall recognize that this type is prone to impacts from periodic insect outbreaks and will attempt to minimize potential losses. *See Chapter 34,*

Silviculture Handbook, WDNR, 1995. Any departures from this chapter will be documented and approved by both the county and state.

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 southeast block. Due to butternut decline, fewer individuals are present that 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.

830.3 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 earthworms or browsing by deer, rabbits, voles, and mice. 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 is 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 in some areas of the state.

830.3.2 Northern red oak

The red oak type is widespread across the County Forest outside of the low fertility sandy soils. 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 and too much shade.

Red oak has very high wildlife value due to its mast production and longevity with a 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 Iron County Forest.

Silvicultural trials using prescribed burns coupled with shelterwood harvests appear to be successful. However, conducting these burns on a large scale has

proven difficult. Scarification, planting, and other methods will continue to be investigated.

830.3.3 Intermediate Tolerant Northern Hardwood Types

Several associated species found in the Northern Hardwood cover type include Yellow Birch, Basswood, Black Cherry, White Ash and Black Ash. These species are considered intolerant based on their shade tolerance. Once regeneration is established they require increased sunlight to survive and develop vigorously.

As a result of the light requirement these species are disappearing from our Northern Hardwood stands under the uneven aged management system using single tree selection. In order to maintain species diversity in our Northern Hardwood stands, group tree selection (canopy gaps) may also be implemented during management. In some stands, even aged management is an option to promote and maintain species diversity.

Most of these species have light seeds requiring exposed mineral soil for germination. In order to provide this requirement seed bed preparation is necessary. Options for seed-bed preparation include scarification, or prescribed burning prior to harvest. Once regeneration is established removal of the overstory will provide necessary light.

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. 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.

Invasives of concern on Iron County Forest land include reed canary grass, purple loosestrife, spotted knapweed, wild parsnip, giant hogweed, buckthorn and garlic mustard.

Iron County Foresters will be encouraged to seek out and document intrusions of the above mentioned species, and any other specie that may become a problem and provide methods for controlling or eradicating the species from the Forest. Training in invasive specie recognition and control shall be included in the Forestry Department crew work plan during this plan.

If an invasive is observed, accepted control methods shall be used as soon as possible to the extent that funding allows mitigating the affects of the invasive.

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. Below is a list of legally protected plants known to occur in Iron County (on or near the County Forest).

Scientific Name	*Common Name*	*Federal Status**	*State Status***
Botrychium mormo	Little Goblin Moonwort	species of concern	END
Calypso bulbosa	Calypso Orchid		THR
Listera convallarioides	Broad-leaved Twayblade		THR
Moehringia macrophylla	Large-leaved Sandwort		END
Polystichum braunii	Braun's Holly Fern		THR
Pyrola minor	Small Shinleaf		END

**Key -Federal Status*: LE- listed endangered; LT- listed threatened; LT,PD- listed threatened, proposed for de-listing; LE-LT- listed endangered in part of its range, threatened in another part; C- candidate for future listing

***Key -State Status*: END- endangered; THR- threatened; SC- special concern

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.

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. Below is a list of Special Concern plant species known to occur in Iron County (on or near the county forest).

Scientific Name	Common Name
Asplenium trichomanes	Maidenhair Spleenwort
Botrychium manganese	Mingan's Moonwort
Carex folliculata	Long Sedge
Carex pallescens var. neogaea	Pale Sedge
Dryopteris filix-mas	Male Fern
Dryopteris fragrans var remotiuscula	Fragerent Fern
Goodyera oblongifolia	Giant Rattlesnake-plantain
Leucophysalis grandifora	Large-flowered Ground Cherry
Malaxis brachypoda	White Adder's Mouth
Plananthera orbiculata	Large Roundleaf Orchis
Rhibes hudsonianum	Northern Black Currant
Streptopus amplexifolius	White Mandarin
Woodsia oregana var. cathcartiana	Oregon Woodsia

830.6.2 Natural Communities

Similarly, specific records of natural communities are also tracked. The following natural communities have been recorded in Iron County (on or near the County Forest).

Common Name
Black Spruce Swamp (old seral stages)
Northern Hardwood Swamp (old seral stages)
Northern Mesic Forest

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 with 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, are wildlife priorities in the dynamics of forest management. A primary goal of wildlife management on the Iron 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 to achieve 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 trees in the process.

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 priority where appropriate.

840.3.3 Forest openings

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

840.3.4 Lowland conifer

Cedar, hemlock, and balsam fir types are important for winter cover for many wildlife species. These forest types will be maintained and encouraged where practical.

840.3.5 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. Oaks scattered within other forest types should be maintained.

840.3.6 Yellow Birch

Yellow birch is found as a component in several different timber types on the Iron County Forest including Northern Hardwood, Hemlock-Hardwood, and Swamp Hardwood. In each of these timber types, yellow birch is an important seed source for many birds. It also provides excellent den sites for wildlife because of its potential to grow to a large diameter.

840.4 FOREST WILDLIFE

840.4.1 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.

Opportunities for management modifications to improve habitat for forest game species include: maintenance of red oak pockets in even-aged regeneration harvest; mast species; beaver management considerations; pine roost trees for turkey management; retention of large diameter yellow birch for pine martin and fisher den sites.

840.4.2 Forest Non-Game Species

Efforts will be made with the DNR to inventory existing populations, identify needs, and maintain valuable habitat types. The Iron County Forest will encourage the retention of large hollow or cavity trees when establishing timber sales.

840.4.2(a) 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, including road construction, utility corridors and 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 succesional 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 affected 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.

840.5 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 Iron County.

Scientific Name	*Common Name*	*Federal Status**	*State Status***
Martes americana	American Pine Martin		END
Canis lupus	Timber Wolf	LE	PROTECTED
Haliaeetus leucocephalus	Bald Eagle	PROTECTED	
Accipiter gentilis	Northern Goshawk		SC/P
Dendragapus canadensis	Spruce Grouse		THR

Pandion haliaetus	Osprey	THR
Moxostoma valenciennesi	Greater Redhorse	THR
Notropis anogenus	Pugnose Shiner	THR
Hendersonia occulta	Cherystone Drop Snail	THR
Clemmys insculpta	Wood Turtle	END
Emydoidea blandingii	Blandings Turtle	THR

**Key- Federal Status*: LE- listed endangered, LT- listed threatened, LT,PD- listed threatened, proposed for de-listing, LE-LT- listed endangered in part of its range, threatened in another part, C- candidate for future listing

***Key- State Status*: END- endangered, THR- threatened, SC- special concern SC/P- fully protected, SC/N- no laws regulating use, possession or harvesting, SC/H- take regulated by establishment of open/closed seasons, SC/FL- federally protected as endangered or threatened, but not designated by WDNR, SC/M- fully protected by federal and state laws under the Migratory Bird Act.

840.6 OTHER ANIMALS OF SPECIAL CONERN - NHI

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. Below is a list of Special Concern animal species known to occur in Iron County (on or near the County Forest).

Scientific Name	*Common Name*
Napaeozapus insignis	*woodland jumping mouse*
Sorex arcticus	*Arctic shrew*
Sorex hoyi	*Pygmy shrew*
Sorex palustrus	*Water shrew*
Accipiter gentilis	*Northern Goshawk*
Aio otur	*Long-eared Owl*
Carduelis pinus	*Pine Siskin*
Catharus ustulatus	*Swainson's Thrush*
Coccothraustes vespertinus	*Evening grosbeak*
Dendroica caerulescens	*Black-throated Blue Warbler*

Falco columbarius	*Merlin*
Anas rubripes	*Black duck*
Ardea herodias	*Great Blue Heron*
Botaurus lentiginosus	*American Bittern*
Perisoreus canadensis	*Grey Jay*
Poecile hudsonica	*Boreal Chickadee*
Circus cyaneus	*Northern Harrier*
Philohela minor	*American Woodcock*
Caprimulgus vociferus	*Whip-poor-will*
Hylocichla mustelina	*Wood Thrush*
Glaucomys sabrinus	*Northern Flying Squirrel*
Pseudacris triseriata	*Boreal Chorus Frog*

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.

During the spring/summer of 2006, a birding survey was conducted across the Iron County Forest. This thorough survey was conducted by a birding specialist. Many threatened, endangered and "species of special concern" were identified. When a final report is submitted, it will be added to the 15 Year Comprehensive Plan as an addendum to Chapter 900. At that time, Iron County Forestry Department will review and determine if part or all of the information and recommendations should be adopted and added to the appropriate chapters.

840.7 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 aquatic communities by protecting watershed quality. Management of County Forest lands will attempt to preserve and/or improve fish habitat and water quality.

840.7.1 Technical Planning

Management of all waters within the County Forest is the responsibility of the

DNR. Technical assistance will be provided by the local DNR fisheries biologist. Studies and management will be conducted in the manner described in DNR Fish Management Handbook 3605.9.

840.7.2 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 Iron County", contains additional information relative to these waters.

840.7.3 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.

840.7.4 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. If resources are available, lake access will be provided where practical.

840.7.5 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. Maps inventorying water resources can be found in the appendix to this plan (Chapter 900).

840.7.6 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
4. Protection of ephemeral ponds (aka vernal pools)

840.7.7 Shoreland Zoning

Iron County Forest will follow all applicable Township and County Zoning Ordinances. Current Ordinances are available at local town clerks offices and the Iron County Zoning Administrator office.

840.7.8 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.

840.7.9 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. An "erosion susceptibility map" identifying these more sensitive areas of the Forest can be found in the Appendix – Chapter 900. 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 Iron County Forest are included in the Appendix – Chapter 900.

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 Iron County Forest lands toward these ends will be continued and improved, 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

850.3.1 Wisconsin State Natural Areas

850.3.1(a) Penokee Range

This high conservation value forest contains a northern mesic forest of sugar maple, basswood, yellow birch and occasional hemlock covers most of the area. Patches have old-growth characteristics, and other places mature hardwoods persist. Numerous forested seeps occur through of the site adding diversity. Abundant bedrock features are prominent throughout the area. With various slopes, from bare exposed rock to permanently shaded and wet cliffs, rock features abound in the area. Thin soil bedrock areas have drier soils promoting establishment of pines, oaks, and white birch. Bare dry and moist cliff faces have plants and animals specialized for living on the harsh environment. Rare plants, such as Braun’s holly fern, white mandarin, Mingan’s moonwort, and long sedge

(found 200 miles north of its known range in the central sands). The site has huge populations of Black-throated Blue Warbler (highest concentration known in the state), Golden-winged Warbler, Swainson's Thrush, and is utilized by hawks migrating in the fall. The core of the area is the no cut zone (see map in Chapter 900). The remainder of the area is managed primarily for uneven-aged hardwoods, but also includes the wetlands along Alder Creek. The entire area has been designated an Important Bird Area (IBA) to recognize the exceptionally high concentrations of Black-throated Blue Warblers and Golden-winged Warblers. Timber management will continue outside the core area. A map of the site is found in Chapter 900.

850.3.1(b) Carpenter Creek Hemlocks

This high conservation value forest features upland mesic cedar forest, hemlock/hardwoods and a boreal forest ground layer on the steep clay seep banks of Carpenter Creek. The site has hemlock, white cedar, white spruce, white pine, balsam fir, and hardwoods as its dominant trees. The ground layer is rich and diverse with four rare plant species. Especially noteworthy are pockets of ephemeral ponds in the flat terrace areas and seeps along the steep banks. Bird life is equally diverse with 17 species of warbler known from the site during the breeding season with many being most commonly found in boreal Canada. Management in the hemlock and white cedar areas as well as on the erosion prone steep clay bank of Carpenter Creek would be passive. The exceptional bird diversity at this site is promoted in the Great Northern Wisconsin Birding Trail. A map of the site is found in Chapter 900.

850.3.1(c) Potato River Falls

This 10 to 20-acre site is an exceptional resource. The 90-foot waterfall is one of the premier scenic attractions in Wisconsin. Although separated into upper and lower sections with cascades in between, the falls multiple aspects give is characteristics not found in singular plunge waterfalls. The site is significant from geological interpretation standpoint with opportunities to view the red clay

till and Glacial Lake Duluth sediments from the "Ice Age" to viewing Keweenaw conglomerate, shale and sandstone of the late Precambrian age. Also included in the features are plants that thrive on wet exposed rocks, such as lichens, liverworts, and especially ferns. Management considerations are to promote longer-lived tree species, minimize erosion from volunteer trails by providing informational signs and focusing activity on developed trails. A map of the site is found in Chapter 900.

850.3.1(d) Potato River Water Gap/Upson Lake

This area has three units (Upson Lake, the gorge along Potato Creek and Corrigan's look-out) when combined recognizes a significant geological feature. The high conservation value site provides for the interpretation of the Penokee Range glacial geology (mountain formation, erosion, scouring of cirque lakes by ice sheets, and the erosion forces of a river in creating watergaps) through the range. The timber management would not change except that clearcuts to regenerate aspen would be small. Most of the timber management would be uneven aged and would be very complementary of the interpretive geological values. Access to Upson Lane and fishing opportunities will remain the same with future development limited to existing facilities. Development at Corrigan's look-out will be limited to foot travel on a primitive trail. The Potato River in its gorge with a 75-foot area on both sides could interpret the watergap close up. This site is primarily a geology interpretation site, although rare plants occur in the river gorge and on the bare rock outcrop. A map of the site is found in Chapter 900.

850.3.2 Areas High in Locally Important Biological Diversity

850.3.2(a) Tyler Forks Muskeg

This high conservation value forest contains a large acidic muskeg of mature black spruce forest progressing as the soil becomes wetter, to a scattered black spruce/wire grass sedge muskeg. Eventually a sphagnum lawn community emerges around a bog lake at the center. Species of conservation concern are the

freija fritillary, bog copper, and round-leaved orchid. Management will be limited to the periphery and any management will employ BMP's for water quality.

850.3.2(b) Swamp Creek Cedars

This small high conservation value forest contains a relatively undisturbed cedar swamp with some old-growth present. Open sphagnum understory was noted. A potential exists for calypso orchid. Future investigations should look for this plant. Management would be minimal until future inventory would provide better data for management recommendations.

850.3.2(c) Glacial Lake Duluth Sand Dunes

In the western part of the county forest lying north of Hwy 2 is a significant geological feature. A series of sand dunes formed when the waters of Glacial Lake Duluth were at an elevation of 1,100 feet. The former beach and sand dune landscape is still evident northwest of Cedar. Recognition of the sand dune does not change any timber management activities. Restrictions may be placed on new road construction and removal of dune sand.

850.3.2(d) Remote Waterfalls

Iron County has numerous waterfalls. Most are promoted as tourist stops. The county has a unique blend of amenities that go along with the experience of waterfall viewing with some areas developed, some areas easily accessible, and some areas remote with a wild area experience associated with the waterfalls. Five waterfalls on Iron County Forest (Wren, Foster, Rouse, Little Balsam, and Spring Camp) promote the wild area experience. Access is via primitive roads or hiking overland. Timber management would focus on maintaining the aesthetic qualities of a wild area experience near the waterfalls. Primitive and rustic access will be maintained.

850.3.3 CULTURALLY SIGNIFICANT SITES (see Chapter 530.3)

850.3.3(a) Logging camps

Numerous abandoned logging camps exist on the Iron County Forest. For information of the sites may be obtained from the Iron County Historical Society.

850.3.3(b) Landmarks

No monumented landmarks exist on the Iron County Forest. Locations of locally known areas such as scenic vistas, Wisconsin/Michigan stateline intersection, Radar Hill, B-47 crash sites, may be obtained from the Iron County Historical Society or the Hurley and Mercer Chambers of Commerce.

850.4 OLD GROWTH

850.4.1 Old Growth / Benchmark Stands

Iron County Forestry has designated the Penokee Range Biological Reserve as a "no management zone." As a result this area, approximately 2500 acres, may be a future Old Growth benchmark. Other areas of the Iron County Forest that will be reserved for Old Growth include those listed in Chapter 530 High Conservation Value Forests/Areas and Exceptional Resources.

850.4.2 Extended Rotation Forest

Extended rotation represents mature forests managed for both forest products and for the development of some of the ecological and social benefits associated with older forests. These sites are dominated by biologically mature trees that are older than their traditional rotation age and younger than their average life expectancy. In general, management prescriptions on these sites are delayed beyond the normal rotation that is used on the balance of the forest. These extended rotation stands may be aspen, northern hardwood, pine, or any other species that creates stand conditions with large diameter trees, native plant conditions, and course woody debris and down timber. The potential for these types of extended rotation forests currently exist on the Iron County Forest.

850.4.3 Presumed Climax Forest Cover

With the development and acceptance of habitat classification as a management tool, land managers are gaining a much better understanding of the natural successional patterns on differing habitat groups and soil types. Iron County may address the issue of old growth by managing for a presumed climax overstory on a percentage of the habitat and soil types that exist on the forest. It is important to understand that there are often multiple possibilities for a climax overstory on many habitat types. It is also important to understand that the climax overstory on certain sites may not be as socially and economically beneficial as an early or mid successional species.

850.5 OTHER SPECIAL MANAGEMENT AREAS

Currently there are no other special management areas under consideration.