ONEIDA 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 Oneida 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 Oneida 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

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 Oneida 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, cultural, social, and ecological) by practicing a land stewardship ethic which integrates the growing, nurturing, and harvesting of trees for useful products while conserving 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 MANAGING FOR SUSTAINABLE FORESTRY

810.1.1 Compartment Reconnaissance

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

reconnaissance 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.

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's Report of the Soil Survey for Oneida County.

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.

Land Type 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 management 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 County 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), Oneida County will use BMP's on the County 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 Oneida County Forestry employees practicing forestry will receive BMP training.

Additionally, Oneida County will require BMP training of all logging contractors that operate on County timber sales.

810.1.7 Forest Fire Management Refer to Chapter 600 (605)

810.1.7.1 Uncontrolled Fire Refer to Chapter 600 (605)

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. Increased regulations, the County's cost of completing the burn, and the risk of breakouts and uncontrolled fires will have to be considered as well as 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 Surveys

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 and silvicultural 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 Section 840) Wildlife projects are identified and implemented in collaboration with the County Forest Director, 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 good initial tools 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 Oneida County Planning and 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 (Wisconsin Historical Society 816 State Street, Madison, WI 53706) or the DNR's Archeaologist, (Wisconsin Dept. of Natural Resources 952 Tacoma Beach Road Sturgeon Bay WI 54235. 920-743-2083)

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

To date, numerous field trials have been completed or are ongoing on the County Forest. These trials include:

- Pennsylvania Sedge/Northern Hardwood Regeneration Study (Enterprise Block)

- Aspen Thinning Study (Cassian/Woodboro Block)
- Birch Strip Clear cut /Herbicide/Scarification Study (Lynne/Little Rice Block)

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 Oneida County Forestry, Land and Outdoor Recreation Committee meetings are open forums 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 (seedlings, sapling-pole, and saw timber) and structure (canopy layers, ground vegetation, dead and downed material, and inclusions). Forested communities within the Oneida County Forest cover approximately 80% of the County Forest.

Forest cover types found on the Oneida County Forest are:

Aspen - 39%. Consisting of primarily aspen species often found in combination with paper birch, red maple or balsam fir.

Northern Hardwoods - 16%. Consisting of a mixture of upland hardwood species including sugar maple, yellow birch, basswood, ash, red maple and oak.

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

Oak - 3%. Dominated by red oak, white oak, black oak and associated with other hardwoods.

Swamp Hardwoods - 1%. More than 50% swamp hardwood species including black ash, red maple, and elm.

Red Maple – 0.4%. More than 50% red maple. Often associated with aspen and white birch.

White Pine – 0.2%. More than 50% white pine.

Red Pine - 2%. More than 50% red pine.

Jack Pine – 0.1%. More than 50% jack pine.

Fir-Spruce - 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

Swamp Conifer - 1%. Lowland type typified by balsam fir, cedar, and spruce in combination with red maple and other lowland hardwoods.

Black spruce - 3%. More than 50% swamp conifer species with black spruce predominating.

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

White cedar - 3%. More than 50% swamp conifer species with white cedar predominating.

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

Other – 3% Consisting of non-productive black spruce and or tamarack.

820.2 NON-FORESTED COMMUNITIES

Non-forested communities within the Oneida County Forest cover approximately 20% of the forest. In broad categories, they are: upland (11%), wetland (86%) and water (3%).

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 (11%)

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, juneberry, sumac, ninebark and prickly ash.

820.2.2 Wetlands (86%)

Wisconsin State Statute NR 115.03(30) defines 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 non-compatible uses and improper 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 Oneida 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 18% 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.

Deep marshes - wetlands characterized by emergent vegetation 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.

Low prairie – wetlands with open, herbaceous plant communities covered by low-growing plants. They are dominated by native grasses and forbs associated with prairies, such as prairie cordgrass, big bluestem, and New England aster.

Calcareous fen – rarest wetland plant community in Wisconsin. They are found in wet, seepage sites that have an internal flow of groundwater that is rich in chemical compounds and creates harsh, alkaline soil. Species like the shrubby cinquefoil, Ohio golden rod, and sterile sedge are characteristic.

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.

Shrub-Carrs – wetlands composed of tall deciduous shrubs growing on saturated to seasonally flooded soils. They are usually dominated by willows or red-osier dogwood. Non-native shrub species invade shrub-carrs, especially where drainage and pasturing have disturbed the area. In particular, honeysuckle and buckthorn can invade quickly.

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.

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 (3%)

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 1% of the forest landscape. They are broken down into:

Lakes - lakes, ponds, and flowages in excess of 40 acres in an area; or 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 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

Oneida 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.

Oneida County manages its timber resource on a multiple use and sustainable basis. Economics play a part in management decision making, however, it is not the only factor taken into consideration. Ecosystem diversity, aesthetics, wildlife habitat, recreation and watershed protection are some of the other factors considered when making management decisions.

830.1.1 Aspen Management

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. A bulk 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 regeneration harvests as stands reach maturity (natural succession) and 2) selective harvest. In both instances, the end result is conversion to more shade tolerant timber types.

Oneida County is committed to maintaining its aspen acreage and will accomplish this by regenerating the mature aspen stands through the use of clearcuts and other even-aged harvesting techniques. 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.

830.1.2 Northern Hardwood Management

The northern hardwood timber type consists mainly of sugar maple, basswood, red maple, white ash and yellow birch. Other species found in the northern hardwood type are red oak, white birch, red and white pine and white spruce.

Northern hardwood stands are managed on an uneven-aged basis to produce quality hardwood timber. Individual tree selection is the most common method of harvesting in northern hardwood.

830.1.3 Red Pine Management

Red pine on the Oneida County Forest is typically of plantation origin. Plantations were established starting in the 1930's by the Civilian Conservation Corps and have continued to be established as conditions warrant. Natural stands of red pine also occur on the County Forest, however, the stands are typically small in size.

Red pine is managed for high quality timber production. Typical management of red pine plantations consists of a row thinning followed by a combination of row and individual tree removal or simply individual tree removal. Red pine stands on higher quality sites will be managed on a 150 year rotation.

830.1.4 White Birch Management

White birch on the Oneida County Forest is usually found in conjunction with other species such as aspen, red maple, balsam fir, and red oak. It is seldom found in pure stands of significant size. White birch is a desirable and valuable species used by wildlife, enjoyed by forest visitor and is sought after for paper and lumber production.

Management of white birch is typically on an even-aged basis. Stands that are predominately white birch (>50% of the over-story) and regeneration of white

birch is planned require removal of the majority of the overstory in all or part of the stand followed by some sort of ground scarification, such as anchor chaining to produce a suitable seedbed for white birch seed germination. The overstory removal can be accomplished in three ways:

1. Strip clearcuts: All trees are harvested in strips 60'-100' wide with alternating strips of the same width being left uncut. The alternating uncut strips are harvested when adequate white birch regeneration has been established in the original cut strips

2. Seed Tree Harvest: Individual quality white birch trees are left on an approximate 60'x60' spacing and all other trees are removed.

3. Shelterwood: Initial harvest leaves 20-40% crown cover followed by ground scarification. When seedlings reach waist high (2-4 years after the initial harvest) the remainder of the over-story is removed.

830.1.5 Northern Red Oak Management

Northern Red Oak is found scattered throughout the County Forest. It occurs in nearly pure stands and as a component of Northern Hardwood and Aspen/Birch stands. The management of Northern Red Oak concentrates on production of quality sawtimber and retention of oak for its value to wildlife. Oak is typically managed on an even aged basis. In pure oak stands several thinnings may occur before regeneration of the stand is needed. Individual tree removal to improve stand quality occurs during these thinnings. Regeneration is accomplished through shelterwood or seed tree harvests. Some sort of ground scarification may be required to provide suitable germination conditions for acorns. Deer browse on regeneration is a significant problem. Areas with high deer populations may pose a significant challenge to the regeneration of oak.

Oak is a declining cover type throughout Wisconsin and the Great Lakes Area due to improper management, difficulty regenerating oak and

mortality due to insects and disease. Oneida County will continue to attempt to maintain or increase the oak cover type within the County Forest.

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 Burr Oak (Quercus macrocarpa) is found in a few areas in the central block of the Oneida County Forest. Burr Oak is not harvested when encountered and regeneration is encouraged where possible.

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 even-aged stands. A mineral seedbed appears to be necessary

to regenerate white birch and it is assumed that most white birch present on the forest is of fire origin. Drought conditions of the mid to late 1980's, coupled with unseasonably warm temperatures and secondary pathogens (bronze birch borer and the birch leaf miner), resulted in mortality of nearly 50% of the white birch on the County Forest. Deer browsing on white birch regeneration severely limits it's ability to fully occupy a site.

Existing stands of white birch should be considered for scarification coupled with shelterwood harvests to encourage regeneration and maintenance of white birch on the forest. Initial trials using this method have proven successful.

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 browsing by deer.

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 Oneida 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 and other methods will continue to be investigated as methods to promote red oak regeneration and to maintain the type on the forest.

830.4 NON-NATIVE PLANT SPECIES OF CONCERN

Non-native invasive plant species can cause significant ecological and economic damage to the County 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, Oneida County Forest has few significant infestations of invasive plants. With training, vigilance, and control efforts, new infestations can be managed or eliminated. There are many highly invasive plants that are threatening to invade much of the northern forests in Wisconsin. Oneida County Forest personnel will continue to monitor the forest for the presence of non-native species. As new information and training becomes available those resources will be used to continue the fight against these species. Refer to Chapter 600 for information on non-native plant species.

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 Oneida County (on or near the County Forest).

Scientific Name	Common Name	State Status**
Potamageton confervoides	Algae-Like Pondweed	THR
Calypso bulbosa	Fairy Slipper	THR
Scirpus cespitosus	Tufted Club Rush	THR
Callitriche heterophylla	Large Water-Starwart	THR

**_Key -State Status_: END- endangered; THR- threatened; SC- special concern

830.6 OTHER PLANT SPECIES AND NATURAL COMMUNITIES OF CONCERN – Natural Heritage Inventory (NHI)

The NHI program at the DNR also tracks information on rare species and natural communities, in addition to legally protected species. 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 Oneida County (on or near the County Forest).

830.6.1 Special Concern Plants

Scientific Name	Common Name
Ophioglossum vulgatum Var. pseudopodium	Adder's Tongue
Rhynchospora fusca	Brown Beakrush
Myriohpyllum farwellii	Farwell's Water Milfoil
Utricularia geminiscapa	Hidden Fruited Bladderwort
Platanthera hookeri	Hooker Orchid
Leucophysalis grandiflora	Large Flowered Ground Cherry
Platanthera orbiculata	Large Round Leaf Orchid
Senecio congestus	Marsh Ragwort
Epilobium palustre	Marsh Willow Herb
Utricularia resupinata	Northeastern Bladderwort
Ribes hudsonianum	Northern Black Currant
Penstemon pallidus	Pale Beardtongue
Utricularia purpurea	Purple Bladderwort
Clematis occidentalis	Purple Clematis
Eleocharis bobbinsii	Robbin's Spkerush
Carex vaginata	Sheathed Sedge
Arethusa bulbosa	Swamp Pink
Potamogeton vaseyi	Vasey's Pondweed
Potamogeton capillaceus	Water Thread Pondweed

830.6.2 Special Concern Natural Communities

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

Alder Thicket	Lake-Shallow, Soft Seepage
Bird Rookery	Lake-Soft Bog
Emergent Aquatic	Northern Dry Forest
Springs / Spring Runs, Soft	Emergent Aquatic-Wildrice
Open Bog	Shrub Carr
Lake-Deep, Soft,Seepage	Lake-Deep,Very Soft, Seepage
Lake-Shallow, Soft, Drainage	Northern Dry-Mesic Forest
Northern Mesic Forest	Northern Sedge Meadow
Northern Wet Forest	Stream-Slow, Hard, Cold
Stream-Slow, Soft, Warm	Submergent Aquatic

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 Oneida 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 Forest Director, 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 the Wisconsin Environmental Policy Act (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 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 County Forest as conversion to other tree species occurs on private lands. Maintaining the acreage currently in jack pine will be a 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 Lowland Conifer

Cedar, hemlock, and balsam fir types are important for winter cover for many wildlife species. These forest types will be maintained where practical. The harvesting of cedar will be discouraged until proven methods of regeneration have been identified in relation to the browsing of cedar seedlings by deer.

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.

840.3.6 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 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.

Management modifications such as leaving red oak, pine or spruce in aspen clear cuts for wildlife food, shelter and nesting is one way to improve forest game species habitat.

840.3.7 Forest Non-Game Species

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

Management modifications such as leaving over-mature, hollow or dead trees in hardwood thinnings to serve as den/nest trees for birds such as woodpeckers, and leaving large dead trees on the ground (large woody debris) to serve as shelter for species such as salamanders are ways to improve non-game species habitat.

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 numbers 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 responds 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 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 bird species mentioned above are decreasing, according to the Federal Breeding Bird Survey (BBS), the majority of forest/shrub bird 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 Oneida County.

Scientific Name	Common Name	Federal Status*	State Status**
Dendroica cerulean	Cerulean Warbler		THR
Pandion haliaetus	Osprey		THR
Buteo lineatus	Red Shouldered Hawk		THR
Moxostoma valenciennesi	Greater Redhorse		THR
Ophiogomphus howei	Pigmy Snaketail		THR
Clemmys insculpata	Wood Turtle		THR
Haliaeetus leucocephalus	Bald Eagle	LT-PD	THR

**Key- Federal Status*: LT,PD- listed threatened, proposed for de-listing.

***Key- State Status*: THR- threatened,

840.5 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 Oneida County (on or near the County Forest).

Scientific Name	Common Name
Lioporeus triangularis	A Predaceous Diving Beetle
BIRDS	
Chlidonias niger	Black Tern
Dendroica caerulescens	Black Throated Blue Warbler
Parus hudsonicus	Boreal Chickadee
Coccothraustes vespertinus	Evening Grosbeak
Perisoreus Canadensis	Gray Jay
Falco columbarius	Merlin
Accipiter gentiles	Northern Goshawk
BUTTERFLIES	
Oeneis jutta	Tutta Arctic
Boloria freija	Freda Fritillary
Boloria frigga	Frigga Fritillary
Erebia discoidlis	Red Disked Alpine
Phyciodes batesii	Tawny Crescent Spot

DRAGONFLIES	
Willeamsonia fletcheri	Enony Bog Haunter
Gonphus veridifrons	Green Faced Club Tail
Somatochlora elongate	Ski Tailed Emerald
Neurocordulia yamaskanensis	Stygian Shadowfly
Stylurus scudderi	Zebra Clubtail
FISH	
Coreonus artedi	Lake Herring
Aphredoderus sayanus	Pirate Perch
Opsopoeodus emiliae	Pugnose Minnow
Clinostomus elongatus	Redside Dace
Rana catesbeiana	Bullfrog
MAMMALS	
Sorex arcticus	Arctic Shrew
Lynx Canadensis	Canada Lynx
Sorex hoyi	Pigmy Shrew
Sorex palustris	Water Shrew
Caenis youngi	A Caenid Mayfly
MUSSELS	
Alasmidonta marginata	Elktoe
Pleurobema sintoxia	Round Pigtoe
Hemidactylium scutatum	Four Toed Salamander

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

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 practice of silviculture within shoreland zoning jurisdiction is exempt from zoning permit requirements provided it is carried out without filling, flooding, draining, dredging, ditching tilling or excavating. Shoreland zoning jurisdiction is defined as “areas of Oneida County which are within one thousand (1,000) feet of the ordinary high water mark of navigable lakes, ponds or flowages. Lakes, ponds or flowages in Oneida County shall be presumed to be navigable if they are listed in the DNR publication "Surface Water Resources of Oneida County" or shown on the 7.5 minute series United States Geological Survey quadrangle maps and within three hundred (300) feet of the ordinary high water mark of navigable rivers or streams or to the landward side of the floodplain, whichever distance is greater. Rivers and streams in Oneida County shall be presumed to be navigable if they are designated as either continuous or intermittent waterways on the United States Geological Survey quadrangle maps. Flood Insurance Rate Maps, which have been adopted by Oneida County, shall be used to determine the extent of the floodplain of navigable rivers or streams in Oneida County. Floodplain areas are subject to the Oneida County Zoning and Shorelands Protection Ordinance.” *Ch. 9.90(A)(1) and (2) Oneida County Zoning and Shoreland Protection Ordinance*

Uses involving limited fill / dredge activity (shoreland alteration permit required)

The following uses are allowed provided a shoreland alteration permit is issued and provided the filling, flooding, draining, dredging, ditching, tilling or excavating, is limited as specifically provided below:

The construction and maintenance of roads which are necessary to conduct silvicultural activities or are necessary for agricultural cultivation, provided that:

(1) The road cannot, as a practical matter, be located outside the wetland.

(2) The road is designed and constructed to minimize the adverse impact upon the natural functions of the wetland.

(3) The road is designed and constructed with the minimum cross-sectional area practical to serve the intended use.

(4) Road construction activities are carried out in the immediate area of the roadbed only; and,

(5) Any filling, flooding, draining, dredging, ditching, tilling or excavating must be necessary for the construction or maintenance of the road.

Ch. 9.90(D)(3)(a) Oneida County Zoning and Shoreland Protection Ordinance.

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 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 DNR 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 Resources staff for the County. A map and list of the Outstanding and Exceptional Water Resources in Oneida County are included in Chapter 900.8.

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 Oneida 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) & EXCEPTIONAL RESOURCES

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

The Oneida County Forest contains several areas considered to be HCVF’s or areas of significant biodiversity value.

1. State Natural Areas (SNA): Gobler Lake SNA
2. High Conservation Value Forests
    a. Noisy Creek Cedars
    b. Enterprise Wetland Forest
3. Other Exceptional Resources
    a. Scott Creek
    b. Willow Rapids Bog
    c. Little Rice River

For specific information about these areas and the management of these areas see Chapter 530.

850.3.2 Rare, Threatened, and Endangered Ecosystems

The WI DNR keeps track of rare, threatened and endangered animals, plants and ecosystems through their Natural Heritage Inventory system (NHI). These are listed in Chapter 900.6.1. Each timber sale will have an NHI check performed prior to establishment. In the event any rare, endangered or threatened species or ecosystems are located within or near the proposed sale area, measures will be taken to minimize or eliminate any negative impacts the harvest may have on these species or ecosystems.

850.3.3 Culturally Significant Sites

Culturally significant sites including Native American sites, historic logging camps and a Civilian Conservation Corps camp are located on Oneida County Forest Property. For more information regarding these sites see Chapter 530.4.