DEPARTMENT OF NATURAL RESOURCES:

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Blufflands/Rochester Plateau
Subsection Forest Resource Management Planning

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# ADDENDUM

High Biodiversity Area Management Plan

## Whitewater North Fork Area

Final

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Division of Forestry Planning Document
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This document is on the Internet at http://www.dnr.state.mn.us/forestry/subsection. Information about the Division of Forestry Subsection Resource Management Plan (SFRMP) process can be found at the same web address. This information is available in an alternative format upon request.

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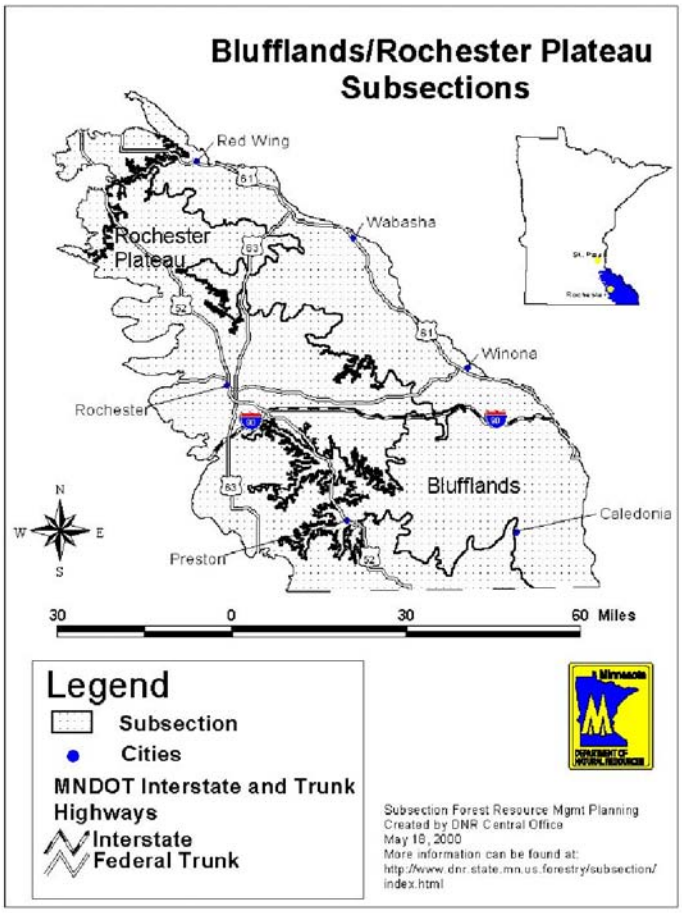
# Introduction

This plan will guide management decisions and practices on the Whitewater North Fork area (Appendix 1). The Whitewater North Fork area is one of 13 MCBS sites of outstanding biodiversity on lands administered by the DNR Division of Forestry, and Section of Wildlife in southeastern Minnesota. The management philosophy for this area is based on a landscape level perspective of ecosystems and the species that use these ecosystems. This plan is intended to be used in conjunction with the Blufflands/ Rochester Plateau Subsection Forest Resource Management Plan (SFRMP) that was completed by the DNR in 2002, and will be revisited every 7-years as part of an adaptive management process.




# Background & Rationale

The Minnesota Department of Natural Resources (MNDNR) completed the Minnesota County Biological Survey (MCBS), a systematic survey of the natural areas within the Whitewater Wildlife Management Area (WMA) in the mid-nineties. The results of this survey provide increased knowledge of the status and distribution of rare species and native plant communities. An ecological evaluation was written for this area to provide more detailed interpretation of the biodiversity significance of the area. The availability of this information and other existing data such as the Whitewater WMA Master Plan, MCBS, SFRMP, and Cooperative Stand Assessment (CSA) forest inventory data provides an opportunity to develop long-term management plans for this area that will help to maintain and enhance the natural resources of this area. Thoughtful management planning in this area is of critical importance in the face of escalating development pressure in the surrounding landscape, increasing fragmentation, and global change. Recommendations in this plan are written for State-owned land. Private landowners within the project boundary will be contacted and offered management assistance for their land if they desire.

Division directors for the DNR Divisions of Wildlife, Forestry, and Ecological Services determined that long-term management plans would be developed for the 13 identified high biodiversity areas. The division directors also provided that management of these sites should focus on the site as a whole, employ practices that perpetuate endangered, threatened, or special concern species, and native plant communities while following the mandates of forestry or wildlife administered lands.

# Site Description

The Whitewater North Fork area includes the largest and most significant natural area in Olmsted County and is an important natural area in southeastern Minnesota. The Whitewater North Fork area incorporates a variety of native plant communities including: maderate cliffs, algific talus slopes, and maple-basswood

forest on steep north-facing slopes; floodplain forests on bottomlands, mesic and dry-mesic oak forest on shallow slopes, and dry cliffs, bedrock bluff prairies and oak woodland on steep south-facing slopes. The large integrated valley provides habitat for a variety of rare species that are dependant on the shade and hydrological regimes of mesic closed canopy forest types. Six species listed as State Endangered or Threatened were identified in this area. These include: a Pleistocene relict snail, the bluff vertigo (*Vertigo meramecensis)* glade mallow *(Napaea dioica)*, golden-seal *(Hydrastis Canadensis)*, narrow-leaved spleenwort *(Diplazium pycnocarpon)*, and Leedy's roseroot *(Sedum integrifolium ssp. Leedyi)*. The Leedy's roseroot population is one of only six locations of this subspecies presently identified in the world and is a federally listed Threatened species (Appendices 2 and 3).

Maintenance of the maple-basswood community type on the slopes and the floodplain forest on the valley floor is the major goal of this area. This slope and valley area has the highest concentration of rare animal and plant species and many of these are dependant on the cool moist habitat created by the above community types. The steep slopes in this area result in sensitivity to altered drainage patterns that may result form certain management operations. The North Fork Project area also has dryer native plant communities that should be maintained through a variety of management techniques including fire and brush removal.

The Whitewater North Fork area is one of four high biodiversity sites located within Whitewater WMA. Two boundaries delineate the areas of significance with this plan. The Critical Habitat Zone boundary denotes the core area of locations of rare natural features. This area encompasses 1,556 acres (1,161 acres of State Land). The majority of the lands in the critical zone are part of the Whitewater WMA (Appendix 2). As stated above, this management plan guides management decisions and practices on only the state-owned lands within this boundary. The Project Boundary is 3,877 acres (2,324 acres of State Land). There may be opportunities for partnering with private landowners to protect and manage the unique resources in the area. Conservation easements, cost-share programs to establish permanent cover and management agreements might be pursued.

A large portion of Section 3, T107N R11W, is designated as Old Growth. These stands as well as those listed under the last Short-Term Management Directive will be placed in reserve forming a large continuous block of forested lands. These areas are associated with well-shaded, wet-mesic habitat of the forested toe of the slopes and are rich in state-listed plants and animals. A riparian corridor will connect this Section 3 to the eastern Critical Habitat Zone in Section 1, T107 R11W, another large block of continuous forest.

Stands not identified as "reserve" or "ERF" will continue to be managed through other techniques including timber harvest. Opportunities will be explored to convert some of the state-owned agricultural lands to deciduous hardwood forests or native grasses to further buffer sensitive slopes (Appendix 4).

A minimum maintenance road runs through the entire north fork, parallel to and crossing the stream several times. The Wildlife Area Manager will continue to work with Quincy Township Board to encourage them to vacate this road to reduce erosion, which continues in this right-of-way.

## Long Range Vegetation Management Goals

The long-range management goal for the area is to maintain and regenerate native plant communities and the biodiversity of the area using processes that mimic the natural disturbances that helped to maintain and establish these communities. This plan will meld the goals of biodiversity enhancement, game management for such species as wild turkeys, white-tailed deer, ruffed grouse, and recreation into an

adaptive management process. Management goals and recommendations will be based on current management knowledge and be directed by Minnesota Voluntary Site-Level Forest Management Guidelines. These recommendations may change as more information from research and monitoring becomes available. To help achieve these goals some of the stands identified in the CSA database have been set aside from timber management or placed in Extended Rotation Management (Appendix 4).

# Implementation

This section is organized by the major native plant community types that occur in the area. Management objectives are identified for each community type within the area. Short-term management directives are also identified for most of the community types and include management activities that will take place over the next seven years. This plan will be reviewed as part of an adaptive management process during the DNR SFRMP process every seven years.

The Whitewater North Fork Area has a variety of rare species and community types (see list in Appendix 3). Management in these areas will be performed in a manner that mimics natural disturbance processes and is sensitive to the maintenance of the native plant communities and the species found within these communities. The Whitewater North Fork landscape is a mix of closed canopy-moist upland and lowland forest, and dryer woodland and prairie communities. The goal for this area is to maintain the mix of community types providing a variety of habitat for numerous rare species. Any logging used in the management of these areas will be designed to mimic natural disturbance process and will be performed in a way that minimizes soil compaction and damage to the understory species. Management will be performed using existing road and trail systems and the construction of new roads will be kept to a minimum.

## Oak forest (mesic and dry-mesic subtype)

**Description -** Dominated mostly by red oak *(Quercus rubra)* and basswood *(Tilia americana),* with lesser amounts of white oak *(Quercus alba),* and sugar maple *(Acer saccharum),* occurs on steep north-facing slopes on the south sides of the river valley, and on less sloping terrain on the upper parts of the valley sides. These stands are mostly even aged and floristically have a lot in common with maple-basswood stands, though they lack many of the spring ephemerals. The dry-mesic variant of the forest is dominated by red and white oak, with some bur and northern pin oak *(Quercus macrocarpa* and *Q. ellipsoidalis),* is also present in some locations in this area. Two rare plant species were documented in the mesic oak stands on this site.

**Long-term objective -** Many of the high quality mesic oak forests are succeeding to more mixed hardwood communities and eventually will succeed to a maple-basswood community. These areas contain red and white oak, basswood, cherry, aspen and other hardwood species in the canopy. Those areas with a preponderance of maple/basswood and northern hardwood regeneration will be allowed to succeed to maple/basswood forests. Consultation with Ecological Services personnel will then need to be made to determine if/when future timber harvests are desirable to manage for a diverse age class within these stands. Management techniques will be designed to mimic natural disturbances such as blow downs, disease, and fire. Management in the mesic oak forest areas will be designed to minimize canopy loss and techniques such as group selection will be examined for their effectiveness.

Those stands that have a high component of oak and other shade intolerant regeneration (central hardwoods as identified in the CSA) will be managed to augment the oak component for the benefit of numerous game and non-game species. Some of these stands are threatened by invasion of nonnative

species such as buckthorn and honeysuckle. Management options might include prescribed fire, timber harvest, supplemental planting of oak both pre- and post- harvest, and post-sale silvicultural treatment efforts. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

**Short-term plan -** Stand 1, Section 31, T108N R10W; and Stand 8, Section 6, T107N R10W, were identified in the SFRMP process for harvesting over the next 7 years. Because of the advancing age of the oak resource, further investigation and on-site fields visits may be necessary to better identify those additional stands of oak with the greatest probability of future regeneration (Appendix 5). This may necessitate adding an addendum to the current planned timber harvest list. The United States Forest Service (USFS) is initiating a research project focusing on management of mesic oak forests including oak regeneration and invasive species response. Some of the sites selected in the North Fork Project area may be identified as research sites. Management activities will be designed in cooperation with the Whitewater WMA Manager, Area Forester, Regional Ecologist, Non-game Specialist, and USFS investigators to fit research and management needs.

## Oak woodland-brushland

**Description -** Dominated by open-grown bur and northern pin oaks. These areas were once savanna that succeeded to woodland with fire suppression. Most of the woodland now has a very dense thicket of a wide variety of shrubs and small trees underneath the oaks. Dry-mesic to mesic forest herbs are common in much of the woodland, indicating succession to forest. A few woodland slopes are more open and savanna-like, such as most of the steep south-facing slopes in the northeast quarter of section 1 of Quincy Township (Olmsted County) and could revert to savanna with prescribed burning. The effects of past grazing are evident in much of the woodland portion of the site, as armed shrubs are frequent. Some areas have been invaded by the exotic shrub common buckthorn *(Rhamnus cathartica)*.

**Long-term objective** - Oak woodland-brushlands will be managed to encourage the maintenance of the oak woodland-brushland community or encourage regeneration of the savanna communities through controlled burning and, where feasible to open up canopies, carefully planned logging. Many of these areas have been disturbed by past grazing and have dense understories of prickly ash and other native shrubs that follow grazing. A management goal is to reduce these invasive shrubs. Areas that are threatened by invasion of non-natives will be managed to reduce the threat of these species. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

**Short-term plan -** An aspen stand was identified in the SFRMP process in this community for harvesting over the next 7 years. It is stand number 13, Section 2, T107N R11W.

## Floodplain forest and lowland hardwood forest

**Description** - These areas are in moderate to poor condition dominated by variable amounts of basswood, black willow *(Salix nigra)*, cottonwood *(Populus deltoids)*, silver maple *(Acer saccharinum)*, bur oak, black ash *(Fraxinus nigra)*, and hackberry *(Celtis occidentalis)* occupies a large area on level bottomlands within the site. Boxelder *(Acer negundo)* is a common subcanopy tree. There are several large, standing snags, deadfalls and canopy gaps caused by the death of American elms *(Ulmus Americana)* and past logging. High native herb diversity is present in this part of the site. Exotic species prevalent in this community include creeping charley *(Glechoma hederacea)* and reed canary grass *(Phalaris arundinacea)*. The latter is colonizing drifts of sand and silt along the river margin that are washing into the valley from upstream and upslope erosion. These forests constitute a significant amount of the total

forest cover within the site and provide larger, more continuous areas for forest than if the forest was limited to steep slopes. As such, the bottomland forests are an important component of the habitat for many forest birds that occupy the area, including the three rare bird species Acadian flycatcher *(Empidonaz virescens)*, Cerulean warbler *(Dendroica cerulean)*, and Louisiana waterthrush *(Seiurus motacilla)*.

**Long-term objective -** These areas will be managed to maintain a diverse floodplain forest community type and to encourage the continued existence of the forest interior bird species that currently occupy these areas. Areas that are not threatened by reed canary grass and are regenerating the overstory species such as cottonwood and silver maple will be maintained with minimal management. Areas of floodplain forest that are dominated by reed canary grass will be managed to minimize this risk. Areas that are regenerating box elder as the major understory species will be managed to encourage the regeneration of overstory species such as cottonwood and silver maple and decrease the dominance of box elder. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

**Short-term plan -** Stand number 2, Section 3, T107N R11W, was identified in the SFRMP process for harvesting over the next 7 years. This timber type is predominately box elder, elm and bur oak. On-site field evaluation may allow this area to be managed as a more diverse lowland hardwood forest in the future (Appendix 5).

## Maple-Basswood Forest

**Description** - Dominated mostly by sugar maple, basswood, and red oak occur on steep, north-facing slopes within the site. At the tops of the slopes, the stands grade into mesic oak forest dominated principally by red oak. On the lowermost toe slopes, the forest grades into a richer, wet-mesic variant of maple-basswood forest in which oaks drop out and species more tolerant of high soil moisture become important, such as black ash. The maple-basswood stands in the site are mostly mature, second-growth stands, with a few areas containing sugar maples of status. Blowdowns are a common fate for larger trees in stands on steep, talus-laden soils. Although much of the area was grazed many years ago, grazing effects are not visible in these stands, perhaps because cattle avoided the steep slopes where these occur. These are mature stands with highly diverse assemblages of plant species, including numerous spring ephemerals. Seven of the fifteen rare plants species in the site were documented in this forest type including Moschatel *(Adoxa moschatellina)*, Golden-seal, and Twinleaf *(Jeffersonia diphylla)*.

**Long-term objective -** These areas will be managed to maintain the maple basswood forest community and the full canopy cover that is typical of this native plant community. Harvest activity should limit canopy gap creation wherever possible and account for fill in by remaining crowns. Seasonal and equipment restrictions should be used to limit soil disturbance. In the North Fork area, maple basswood plant communities are found on steep slope and the soils and understory species found in these communities are sensitive to disturbance. Areas should be monitored for nonnative species invasion. Where nonnative species invasion is prevalent management action should be taken. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

**Short-term plan** - No activities are planned during the next 7 years.

## White Pine-Hardwood Forest

**Description** - The stands occur on dry to wet-mesic sites, mostly as narrow bands. White pine *(Pinus strobes)* is present as a dominant canopy or super canopy tree and varies from scattered to dense cover.

The composition of these stands varies with site moisture, ranging from stands co-dominated by red oak, basswood, sugar maple and white oak in mesic to dry-mesic sites, to dryer sites with bur oak and northern pin oak. Many plants typical of mesic hardwood forests are found in these stands. Canada *yew (Taxus Canadensis)* is found in most of these pine stands. Cool, moist north-facing slopes, particularly above maderate cliffs or algific talus slopes, also have other species rarely seen in southeastern Minnesota, including shining clubmoss *(Lycopodium lucidulum),* bunchberry *(Cornus Canadensis),* one-sided pyrola *(Pyrola secunda),* and yellow birch *(Betula alleghaniensis).* There is an old growth stand along the Logan Branch dominated by 130 year old trees. This stand contains some unusual plants such as partridge berry *(Mitchella repens),* velvet-leaved blueberry *(Vaccinium myrtilloides),* and the State Endangered golden-seal.

**Long-term objective -** The management goal for this area is to maintain the White Pine-Hardwood Forest plant community. These areas are sensitive to loss of canopy cover that results from timber harvests. In order to maintain this community type, areas should be monitored for white pine regeneration. Those areas that exhibit white pine regeneration should be allowed to continue natural regeneration. Those areas outside the Old Growth stand that exhibit a lack of white pine regeneration should be managed to encourage white pine regeneration. This management may include some form of scarification or logging to encourage white pine regeneration. Any management in this area should be conducted in a manor that is sensitive to the needs for the community as a whole. Field visits will be performed to determine best management for any stands listed in the short-term management directive. In addition, a collaborative effort by the Section of Wildlife, Division of Ecological Services, and the Division of Forestry to develop a management plan for the old growth stand should be considered.

**Short-term plan** - Evaluate and monitor these stands over the next seven (7) years to determine whether white pine regeneration is evident. Develop management strategy should no natural regeneration be present. Timber stand number 1, Section 34, T108N R11W was identified during the SFRMP process for selective harvest during the next seven years. While it includes predominately central hardwood species, white pines are present and there may be opportunities to increase white pine regeneration in this area (Appendix 5).

## Maderate cliffs and Algific Talus slopes

**Description** - These communities occur on north-facing exposures. These two kinds of features have unusually cold microclimates as a result of systems of fissures extending back into the bedrock layers where ice persists throughout much of the summer. Cold water and air emerge from the cliff face or talus. Algific talus slopes accumulate areas of peat as a result of cold temperatures and slow soil decomposition rates. These cold microhabitats support an unusual biota adapted to cold environments, including several rare, disjunct plant and snail species. Leedy's roseroot is an extremely rare, Pleistocene relict plant that persists on one massive maderate cliff within the site. Other disjunct plant species typical of more northern distributions associated with maderate cliffs and algific talus slopes in the site include northern black current *(Rives hudsonianum),* Canada yew, yellow birch, alpine enchanter's nightshade *(Circaea alpine),* and mountain maple *(Acer spicatum).* Fourteen species of land snails have been identified from algific talus slopes, including locations for two Pleistocene relict species listed as rare in Minnesota these include Bluff vertigo and Hubricht's vertigo *(Vertigo hubrichti).*

**Long-term objective -** Maintain and protect the sensitive habitat of these areas. Avoid management activities that would threaten these areas. Include buffers between adjacent sites when management is implemented.

**Short-term plan -** See final Summary of Short Term Management Directive on Page 7.

## Dry cliffs

**Description** - Numerous, small-disturbed dry cliffs of dolomite and sandstone occur on south-facing slopes throughout the site. These cliffs are sparsely vegetated with a distinctive flora, including slender lip-fern *(Cheilanthes feei),* smooth cliff brake *(Pellaea glabella),* and the rare cliff goldenrod *(Solidago sciaphila).*

**Long-term objective -** Maintain and protect these habitats. Avoid management activities that would threaten these areas.

**Short-term plan** - No activities planned during the next 7 years.

## Bedrock bluff prairie

**Description** - Occur on well-drained bedrock outcrops on the uppermost parts of steep south-facing slopes and narrow ridge tops. These bluff prairies are dominated mostly by sideoats grama *(Bouteloua curtipendula),* little bluestem *(Schizachyrium scoparium),* and plains muhly *(Muhlenbergia cuspidate).* Big bluestem *(Andropogon gerardii)* often dominates in small areas of deeper soils. A diverse set of shrubs are scattered in these prairies, including leadplant *(amorpha canescens),* ninebark *(Physocarpus opulifolius),* and prairie willow *(Salix humilis).* Species diversity in these prairies is generally high. Plains wild indigo *(Baptisia bracteata var leucophaea)* is a Special Concern species growing on three of the prairies within the site.

**Long-term objective** - These areas will be maintained with periodic fire and brush cutting to control woody competition. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

**Short-term plan** - Conduct inventory of the Bedrock bluff prairie communities in the North Fork and initiate burn frequency to renovate and increase bluff prairie acreage in this area.

## Summary of short-term management direction

As mentioned above in the long-term goals some of the stands identified by the CSA database will be placed in a reserved and ERF status during the current and upcoming stand review process of the Blufflands/Rochester Plateau SFRMP. At the present, this is a seven (7) year vegetation management plan.

Stands placed in reserve include stands 3, 4, 8, 9, 13, and 14, Section 1, T107N R11W; stands 16 and 9, Section 2, T107N R11W; and stands 4, 5, 6, 8, 10, 22, and 24, Section 3, T107N R11W. These stands are associated with the well-shaded, wet-mesic microhabitat of forested toe slopes rich in state-listed plants and animals. It is intended that these same stands will be reserved upon future timber stand review.

The entire slopes encompassing the above stands will be managed to avoid disturbances that might compromise the unique species and microhabitats as identified in the Project Evaluation while allowing some form of timber harvest/management on stands which break over the top of the slopes into the uplands. These timber harvest/management stands would include CSA Type (stand) 1, Section 31, T108N R10W, and CSA Type (stand) 8, Section 6, T107N R10W. Group selection should be considered upon the review of the Division of Ecological Services to mimic small blow downs that may have

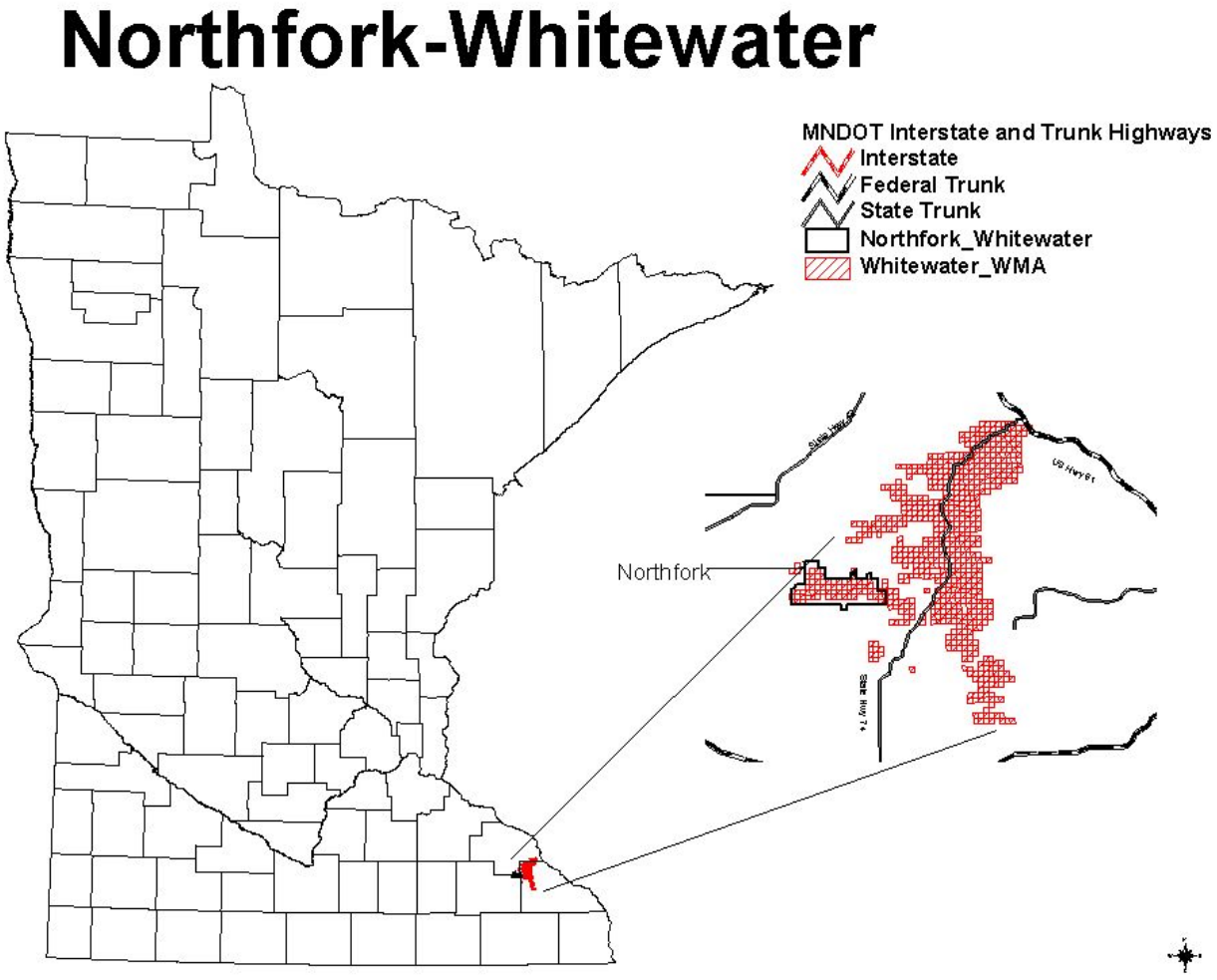
occurred in the past. Management concerns such as undue edge effects on interior birds will be considered when examining management technique that allow for oak regeneration.

Extended Forest Rotation has been slated for stands (types) 6 and 11, Section 1, T107NR11W; stands 10 and 11, Section 2, T107N R11W; and stands 6, and 9, Section 6, T107N R10W. Objectives are to maintain a riparian corridor connecting these two sections of high biological diversity while allowing timber harvest entry to manage for a diverse floodplain forest.

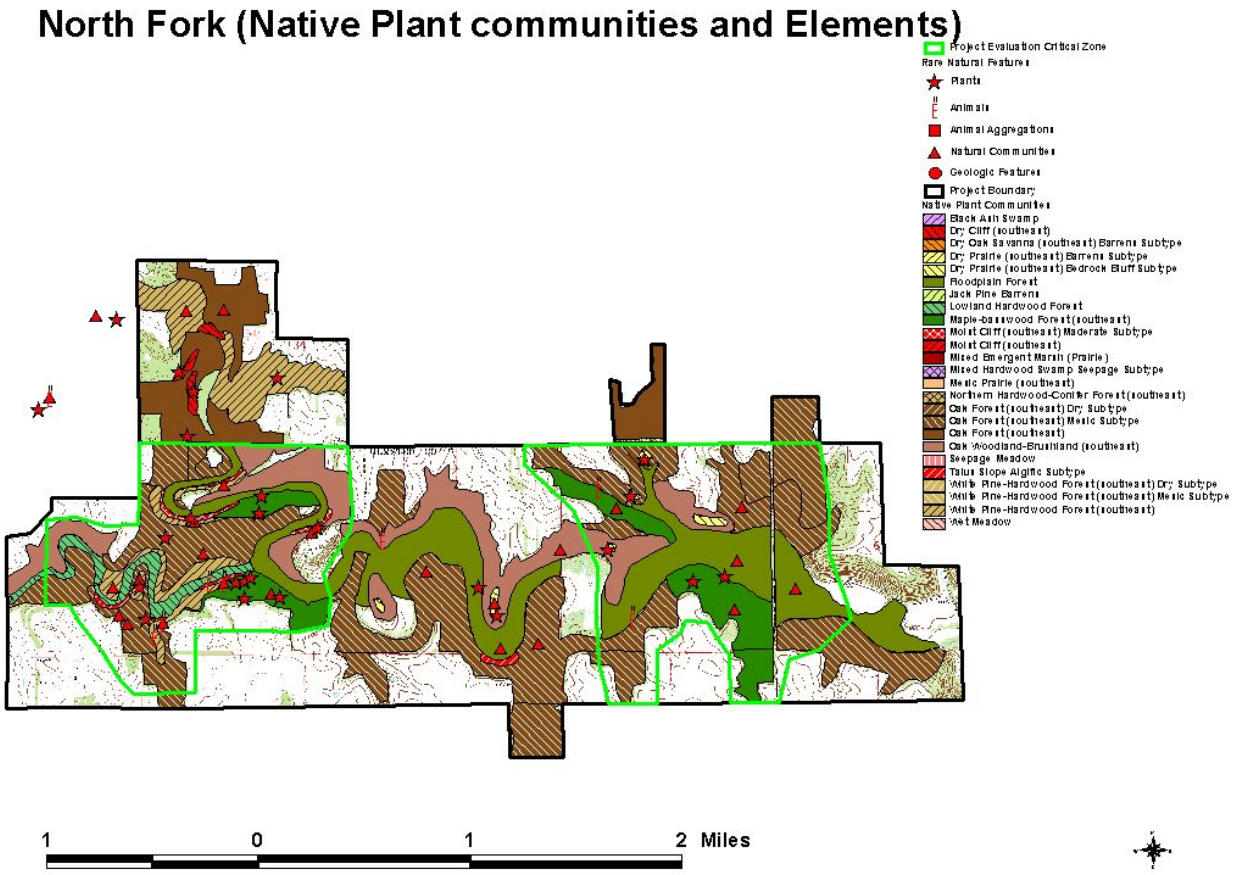
## Short-term Stand Management

| Township | Range | Section | Stand # | Action |
|---|---|---|---|---|
| 107 | 10 | 6 | 8 | Harvest |
| 107 | 11 | 2 | 13 | Harvest |
| 107 | 11 | 3 | 2 | Harvest |
| 108 | 11 | 34 | 1 | Encourage White Pine Regen. |
| 107 | 11 | 1 | 3,4,8,9,13,14 | Reserve |
| 107 | 11 | 2 | 9,16 | Reserve |
| 107 | 11 | 3 | 4,5,6,8,10,22,24 | Reserve |
| 107 | 10 | 6 | 6,9 | ERF |
| 107 | 11 | 1 | 6,11 | ERF |
| 107 | 11 | 2 | 10,11 | ERF |
| 108 | 10 | 31 | 1 | Harvest |

## Appendix 1: Whitewater WMA & North Fork Project Area



# Appendix 2: Native Plant Communities & Rare Elements



# Appendix 3: Rare Features Summary – North Fork Area

| **Native Plant Communities** | **EO-Rank[1]** |
|---|---|
| Dry Cliff (Southeast Section) | **BC** |
| Dry Prairie (Southeast Section) Bedrock Bluff Subtype | **B, BC** |
| Maple-Basswood Forest (Southeast Section) | **B, B, B** |
| Moist Cliff (southeast | **BC** |
| Moist cliff-maderate subtype | **A, C, C** |
| Oak Woodland-brushland (Southeast Section) | **BC** |
| Oak Forest (Southeast Section) Mesic Subtype | **B, B** |
| Talus Slope (Algific Subtype) | **AB** |
| White Pine-Hardwood Forest (Southeast Section) Mesic subtype | **BC** |

| **Rare Plants** | **EO-Rank[1]** | **Status** |
|---|---|---|
| *Hydrastis Canadensis* (Golden-seel)-2 | **C** | **E** |
| *Sedum integrifolium* ssp. *Leedyi* (Leedy's roseroot)-1 | **A** | **E** |
| *Napaea dioica* (Glade mallow)-1 | | **THR** |
| *Diplazium (Athyrium) pycnocarpon* (Narrow-leaved Spleenwort)-1 | **B** | **THR** |
| *Adoxa moschatellina* (Moschatel)-4 | **A, A, C** | **SPC** |
| *Baptisia bracteata* v. *leucophaea* (Plains wild indigo)—2 | **C, C** | **SPC** |
| *Carex woodii* (Wood's Sedge)-1 | | **SPC** |
| *Dryopteris goldiana* (Goldie's fern)-2 | **A, C** | **SPC** |
| *Jeffersonia diphhylla* (Twinleaf)-2 | **B, B** | **SPC** |
| *Panax quinquefolius* (American Ginseng)-1 | | **SPC** |
| *Solidago sciaphila* (Cliff Goldenrod)-5 | | **SPC** |
| *Actaea pachypoda* (White Baneberry)-3 | **B, C** | **NON** |
| *Athyrium thelypteroides* (Silvery Spleenwort)-2 | **A** | **NON** |
| *Arabis laevigata* (Smooth rock-cress)-1 | | **NON** |
| *Taenidia integerrima* (Yellow pimpernel)-1 | **C** | **NON** |

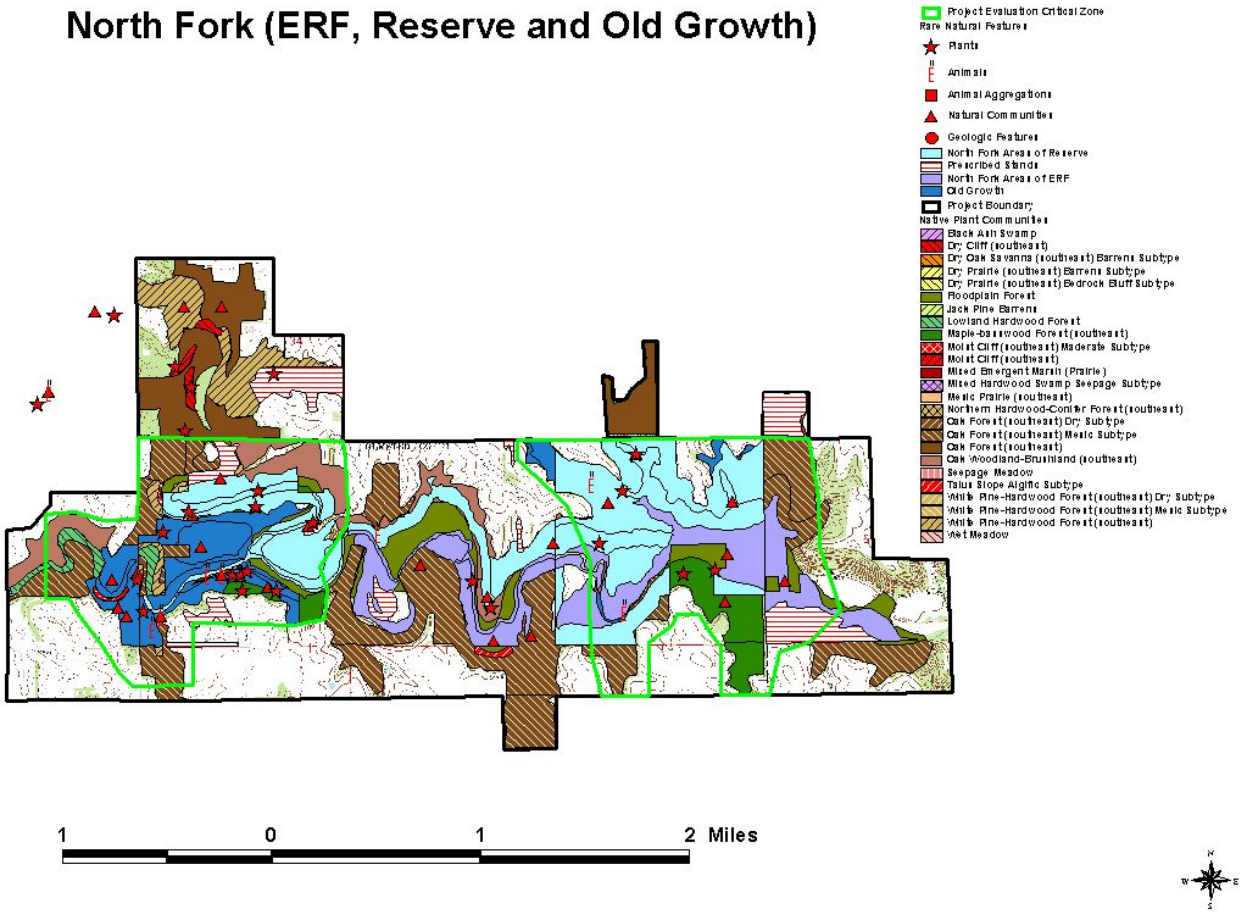
| **Rare Animals** | |
|---|---|
| *Empidonac virescens* (Acadian flycatcher)-1 | **SC** |
| *Vertigo meramecensis* (Bluff vertigo [snail])-2 | **T** |
| *Crotalus horridus* (Timber Rattlesnake)-2 | **THR** |
| *Vertigo hubrichti* (Hubricht's vertigo [snail])-1 | **NON** |
| *Seiurus motacilla* (Louisiana Waterthrush)-2 | **SPC** |
| *Lampropeltis triangulum* (Milk snake)-1 | **NON** |

Key:

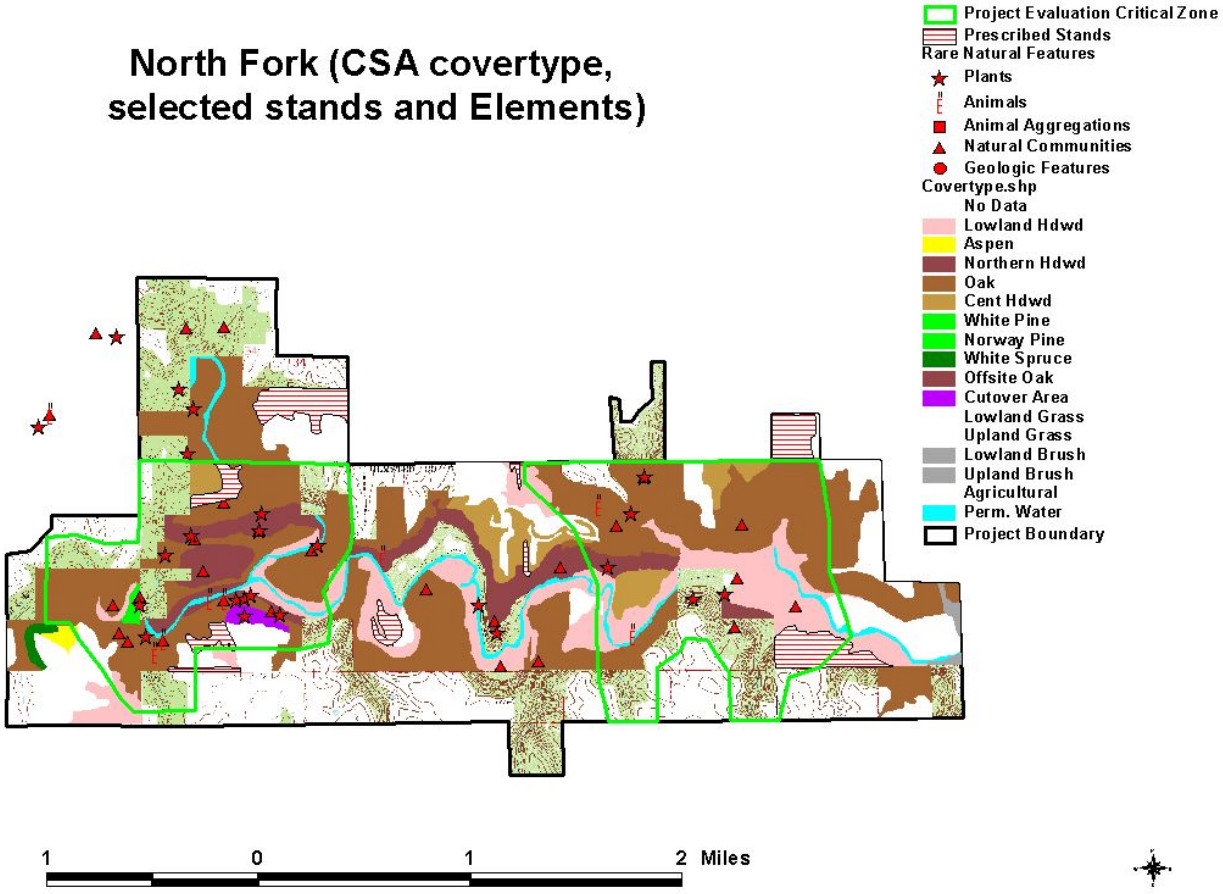
[1] ecological quality rank where A=highest quality and D=lowest quality (multiple ranks indicate multiple occurrences)

[2] number following rare species listing refers to number of occurrences recorded in the area

# Appendix 4: Reserved, ERF and Old Growth Stands



# Appendix 5: CSA Types, Selected Stands and Rare Elements



# Appendix 6: Additional Management Guidance

## Harvest of high quality maple-basswood communities

Selective harvest will be allowed if site teams jointly develop detailed plans that include joint on-site visits. The following conditions will apply:

- Oak resources can be salvaged as these sites are converted to purer maple basswood communities. This should be done by selective, individual or small group marking and removals.
- Harvest activity should limit canopy gap creation wherever possible and account for fill in by remaining crowns.
- Seasonal and equipment restrictions should be used to limit soil disturbance; horse logging on frozen ground should be done where appropriate in the most sensitive sites).
- Trees should be jointly marked as well as the layout for access and skid trails to minimize any additional permanent fragmentation.
- Portions of stands that support unique or rare resources (such as a rare species or a rich spring ephemeral flora) may be delineated for no harvest.
- A pre and post treatment monitoring and evaluation protocol for species and communities of concern (both native and exotic) should be developed and implemented in each stand. Harvest plans should also take into account whether or not invasive exotic species occur in stands immediately adjacent to those being harvested.

With respect to the last bullet, Ecological Services staff will continue discussions with USDA Forest Service staff to further explore the opportunities to collect pre-treatment data during the 2004 field season.

## Mesic oak communities and oak regeneration

The mesic oak communities should be managed. The benefits of an oak component to wildlife species, particularly game species, are important. These stand types should be individually examined, selecting those with the greatest chance to regenerate oak to actively manage through timber harvest and other silviculture techniques. Those with advanced maple-basswood regeneration should be allowed to succeed to more shade tolerant northern hardwoods. Subsection timber management plans should consider small, medium, and large-scale harvests in these types to provide habitat for game and non-game species, including forest interior birds.

A variety of types of harvests and other silvicultural practices should be practiced as well. Clear-cuts are the norm to regenerate oak in southeastern Minnesota, but efforts to apply group selection and shelterwood cuts should be applied where appropriate. Group selection creates a feathered edge effect that is far different than that created by cutting next to an open agricultural field and mimics those natural blowdowns that occurred in 1998 in the southeast. Look for opportunities to clear-cut the steeper portions of the forested type while scarifying the soil pre-sale. Shelterwood or group selection harvest should be applied on the more level terrain.

Prescribed fire should also promote oak regeneration, either prior to or after a sale in an attempt to reduce shade tolerant competition. Through the use of this tool, we may be able to reduce our pre- and post-sale chemical treatments. The highest quality biodiversity sites for recreation will receive the highest priority

for prescribed fire funding. Wildlife will work with the Divisions of Ecological Services and Forestry to ensure that these sites are regenerated through the application of fire.

### Aspen and white pine pockets

The cover type goal as listed in the Blufflands/Rochester Plateau Subsection Forest Resource Management Plan is to maintain or moderately increase the white pine acreage and increase the aspen acreage for various wildlife and non-game species. As stated in the plan, there are relatively few stands of aspen larger than five-acres in size in southeastern Minnesota.

Native white pine stands are limited in number, but provide multiple benefits to numerous game and non-game species from roosting sites for wild turkeys to perches and roost areas for bald eagles. The department believes it is necessary to access some of the sites for management to ensure natural regeneration occurs.

Options to minimize any intrusion through the maple-basswood communities should include the following:

- A search for any pre-existing old homestead roads or trails that could be used for access and whether exotic species are present in the area which might be introduced along such a corridor if made active again;
- List alternate means to access the white pine such as through private land, through other disturbed communities, etc; and
- Timing of access whereby any mechanical scarification would take place during fall or early winter, reducing the "footprint" upon the trail used to access such stands. The department believes such efforts to maintain or increase the native white pine acreage in this landscape outweigh the minor impacts to surrounding northern hardwood communities.

Small aspen clones in high quality sites should only be harvested when a harvest is already planned and approved by the team, at the same time, within the immediately surrounding stand in which the clone is embedded. Other conditions mentioned under the high quality maple-basswood communities section above should also be addressed. If harvest in the stand in which the aspen is embedded is not planned, then a special effort to cut the aspen should not be made.