

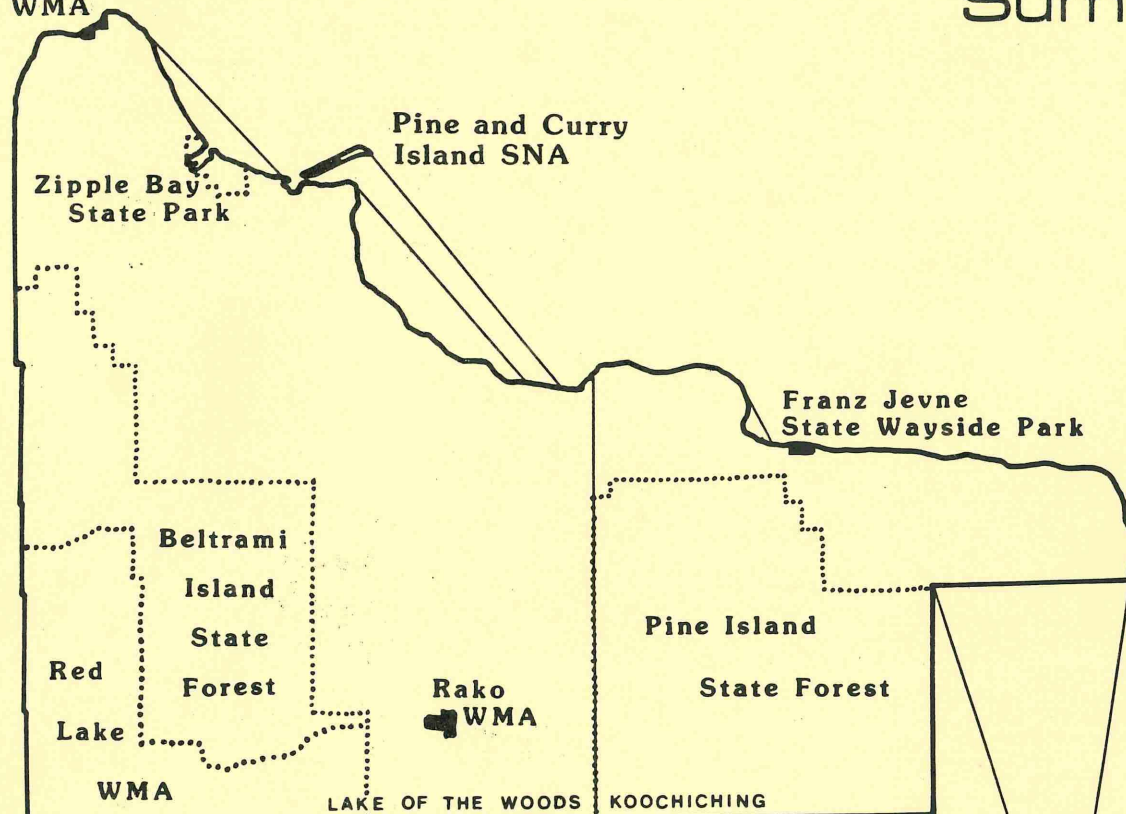


BAUDETTE AREA

Forest Resource Management Plan

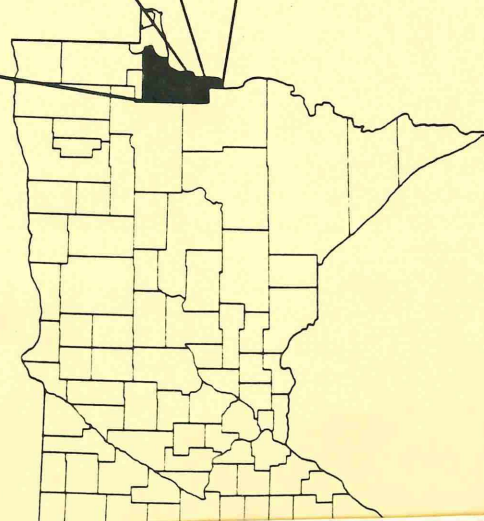
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Summary



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**SUMMARY OF THE
BAUDETTE AREA
FOREST RESOURCE
MANAGEMENT PLAN**

**Public Review Draft
March 1990**

**Prepared Pursuant to the
Forest Resource Management Act of 1982
(Minnesota Statutes Section 89.012)**

**Minnesota Department of Natural Resources
Division of Forestry
500 Lafayette Road
St. Paul, MN 55155-4044**

APR 4 1991

INTRODUCTION

PLANNING PURPOSE AND PROCESS

Planning is being conducted in response to legislative direction which requires the DNR to complete both statewide and "unit forest resource plans" for each geographic administrative unit of the Division of Forestry (Minnesota Laws 192, Chapter 511). The Division has selected its administrative areas as the appropriate planning unit.

The statewide Minnesota Forest Resources Plan (MFRP) was originally completed in 1983 and last updated in 1987. It provides the statewide framework of policy and direction within which the area plans function.

The purpose of an Area Forest Resource Management Plan is to set forth specific goals and objectives for the management, protection, development and production of forest resources in a Division of Forestry area. Area plans provide guidance for area forestry programs and management activities. The plans are also designed to help coordinate the Division of Forestry's activities in an area with those of other DNR units, other agencies, local governments and the private sector. Area plans are developed by an interdisciplinary planning team consisting of DNR natural resource specialists including foresters, wildlife managers, fisheries managers, recreation and minerals specialists, enforcement officers and others. Several portions of this plan were developed by these resource specialists as part of the planning process.

PLAN FORMAT AND CONTENT

Section I, Introduction, includes explanations of legal requirements for unit planning, the relationship of unit plans to the statewide MFRP and the interdisciplinary planning team.

Section II, Area Overview, describes the social, physical and natural character of the area. Descriptions of Resource Management Units are also included.

Section III, Assessment and Program Direction for the Division of Forestry, presents an analysis of the resource situation and outlook for each of the programs administered by the Division of Forestry. Based on this analysis and the Minnesota Forest Resources Plan, a general management direction or strategy is established for the area. Although the plan is organized by program it should be understood that there is considerable overlap in some programs.

Direction or strategy established at the area level is further refined for sub-divisions of the area for appropriate Division of Forestry programs. These sub-divisions are called resource management units (RMU's).

PUBLIC INVOLVEMENT

The goal of public involvement in the Baudette Area Plan is to involve interested and knowledgeable publics in the project so that the best possible resource management program is developed and maintained. Efforts are being made in developing this plan to promote an understanding of natural resource management, to obtain advice and public opinions, and to gain public support for DNR resource management programs.

AREA OVERVIEW

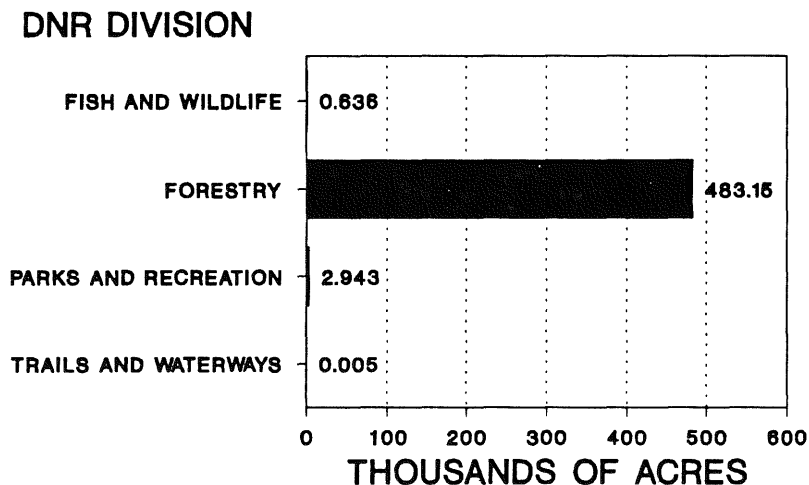
The Baudette Forestry Area contains most of Lake of the Woods County along with a small portion of Koochiching County. The area lies in the northeastern portion of the former glacial Lake Agassiz. The major portion of the area was originally poorly drained peat bog with numerous Lake Agassiz beach ridges. The area is sparsely populated, with most of the population being concentrated in a corridor running east and west through the center of Lake of the Woods County. Land use in the northern part of the area is a mixture of agriculture, forest and marsh. The central part is mostly forest with some marsh. The southern extreme consists of vast patterned bogs and forest.

The Division of Forestry is the major administrator of State land in the area. Figure 1 shows the amounts of land administered by the DNR.

The total forest encompasses approximately 669,030 acres within the statutory boundaries, of which 505,954 acres are administered by the Division of Forestry. There are 142,454 acres of forestry administered land inside the Beltrami Island State Forest within the Baudette Area. There are 142,015 acres of forestry administered land inside the Pine Island State Forest within the Baudette Area. The Division of Forestry administers 198,680 acres of land outside state forests in the Baudette Area.

Figure 1

LAND ADMINISTERED BY DNR IN THE BAUDETTE AREA



SOURCE: DNR LAND RECORDS 3/1/89

HISTORY

The first residents to leave an extensive archaeological record in the Baudette area were from the Laurel Culture. They dominated the period from 200 B.C. to 800 A.D. They were mound builders and built the Grand Mound, the largest burial mound in Minnesota and now the site of a Minnesota Historical Society Interpretive Center, 50 miles east of Baudette along the Rainy River.

The Blackduck Culture succeeded the Laurel in about 800 A.D. Their remains have been found across from Wheelers Point and on islands in Lake of the Woods. This culture disappeared around 1400 A.D.

In 1732 Pierre La Verendrye found northern Minnesota populated by Cree, Monsonis, Assiniboine and Sioux Indians.

British possession of the land west of Lake Superior began the age of the voyagers, who became important in this region for the fur trade. Lake of the Woods was a major link in the voyagers' route. All trade returning from the north and west had to cross the lake. In the 1840s fur trading gradually subsided.

In 1885, the area got its first permanent settler when Wilhelm Zippel settled on the south shore of the lake at Zippel Bay. In the 1890s more settlers followed. Most of the earliest arrivals chose to make their homes on the shore of the lake and fish for a living.

Baudette and Spooner became incorporated villages in 1906. Spooner is now East Baudette. Figure 2 shows the level of development in the early 1900s.

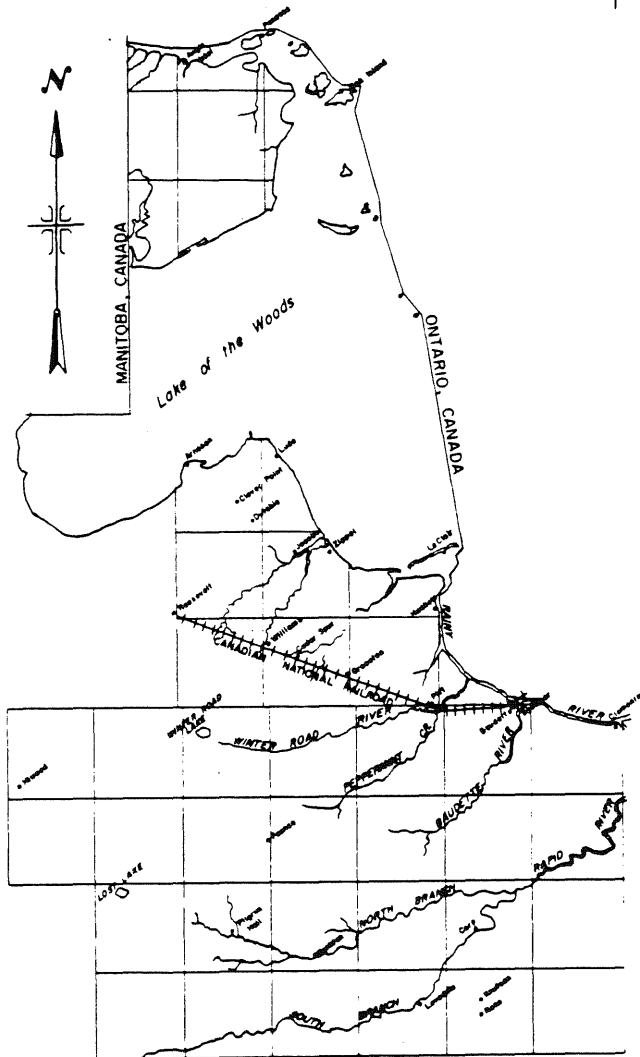


Figure 2: Development pattern in the early 1900s.

By this time the area was economically dependent on the lumbering business. Agriculture had not yet gained a substantial foothold in the area. Two sawmills, the Shevlin and the Engler, had the capacity to saw 40 million board feet of lumber a year. These mills did not always reach capacity, but did produce many millions of board feet of timber.

The mills had just started operation in 1910, when a disastrous forest fire struck. On October 7, the towns of Graceton, Pitt, Baudette, Spooner and the entire northern half of Lake of the Woods County were reduced to ashes (see fire program for more information). Fortunately, the lumber mills were spared and there was some reason for optimism.

One of the effects of the fire was to improve the land for agriculture, but agriculture would not replace lumbering as the mainstay of the local economy until the 1920s.

After recovering from the fire there was a settlement boom and nearly every 160 acre plot which was available for homesteading was claimed.

Much of the land was low and wet. In order to alleviate the problem a plan was made to drain the bogs. Beginning in 1912, dredges started to excavate Judicial Ditches. The ditches were intended to leave the land suitable for farming but despite much expense this goal was not achieved. Settlers abandoned the land. With the taxes on the abandoned land delinquent, the county was forced to default on the loan that it had received to pay for the ditching work. The State of Minnesota made the payments on these loans and acquired title to large amounts of land.

For some, the problems of farming poor agricultural lands continued. In 1935 the state and federal governments decided that it would be more economical to move settlers off marginal land and onto land with better soils that were more suited for agriculture. These settlers had been able to adequately feed and cloth themselves but were unable to pay for the schools and other government services. Faunce, Bankton, Hiwood, Norris and neighboring communities went out of existence as a result of this government program.

Despite the setbacks to agriculture, enough good land existed so that farming became an increasingly important segment of the economy. By 1940 there were 1200 farms in Lake of the Woods County. Agriculture suffered again in the 1950s and 1960s, and there was a drastic reduction in the number of farms. Even so, today it is a very important segment of the economy.

The following quote is from A Brief History of Lake Of The Woods County, Lake of the Woods Historical Society, 1980:

The attractions of Lake of the Woods County are much as they were when the pioneers came to settle. Fishing, hunting, forests, water, clean air, relatively inexpensive land and space to live and play...that pioneer spirit which enabled people to overcome the hardships of a wilderness survives in a population which is determined to bring Lake of the Woods County to its full potential. May we be wise enough to recognize those factors which make for the quality of life...and prudent enough to preserve and expand them.

RESOURCE MANAGEMENT UNITS

Purpose And Delineation

Resource management units (RMUs) are intended to promote an ecosystem perspective in natural resource management. Different ecosystems (i.e., combinations of biological communities and their physical environments) present differing opportunities for management.

The Baudette Area has been subdivided into three RMUs (Figure 3) based on differences in surficial geology, soils, and other resources. In most instances RMUs are comprised of similar geomorphic regions which are mapped and described in the Minnesota Soil Atlas (Univ. of Minn. Ag. Exp. Station, 1975-80).

Physiographic Units (RMUs)

The Baudette Area contains two broad physiographic units: The Agassiz lacustrine plain-Bigfork Valley (RMU 1) and the Agassiz Peatlands (RMU 2 & 3). RMU 3, 3A, and 3B splits out the vast patterned peatlands in the Southern part of the Agassiz peatlands.

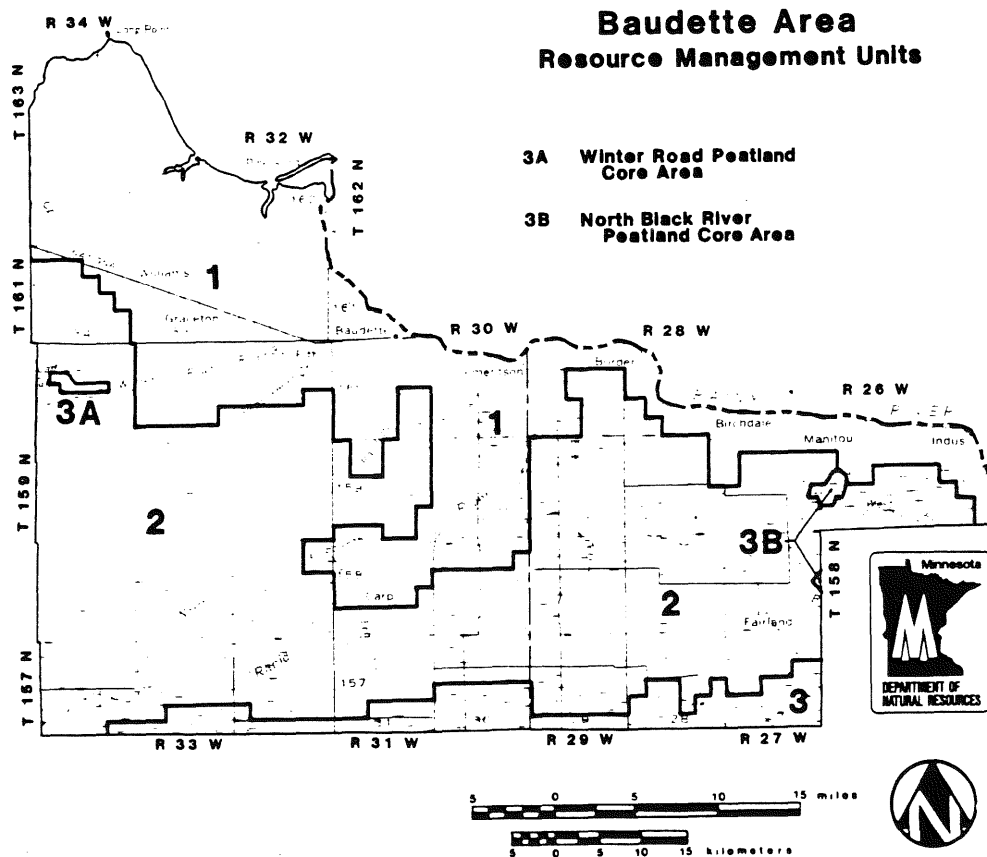


Figure 3

ASSESSMENT AND PROGRAM DIRECTION FOR THE DIVISION OF FORESTRY

PROGRAM STAFFING SUMMARY

Area Program Highlights

Table 1 shows past and projected staffing levels for Division of Forestry programs in the Baudette Area. This information provides only a rough indication of the relative emphasis

placed on each program. Certain programs are sensitive to outside factors such as weather (e.g., fire), or economic conditions (e.g., timber sales). Other programs rely heavily on contracted labor which the time summaries do not reflect.

TABLE 1: Staffing in Hours Spent on Division Programs by Baudette Area Personnel in Fiscal Years 1984-88. Includes projections for Fiscal Years 92 and 97.

Program	FY84	FY88	FY92	FY97
Land Administration	616	398	777	500
Forest Recreation	274	234	114	250
Forest Roads	1357	767	1268	1000
Timber Management	11298	11099	12000	12000
Fish & Wildlife Habitat	309	324	350	400
Nursery & Tree Improvement	147	116	24	100
Private Forest Management	375	416	590	700
County Assistance	15	5	3	10
Urban & Community Forestry	2	0	5	20
Pest Management	55	93	19	40
Forest Resource Inventory	919	1545	655	500
Utilization & Marketing	24	13	24	20
Fire Management	1835	3122	1880	2000
Planning & Environmental Review	71	82	93	100
Maintenance & Administration	3425	3684	4011	3500
Information & Education	147	160	163	200
Training	456	858	659	700
Total	21,325	22,916	22,635	22,040
Full Time Equivalents*	12.3	13.2	13.1	12.7

* A full time equivalent (FTE) is 1,730 hours per year and is based on an average division employee
Source: MN DNR Division of Forestry time summaries (unpublished) for Fiscal Years 1984-86.
Area staff and program managers projections for FY 88, 92, and 97.

STATE FOREST LAND MANAGEMENT

State Land Administration Program

The goal of the State Land Administration Program is to achieve the optimum pattern of forest land ownership for the management of forest resources to best serve the needs of Minnesota's citizens and to maximize long-term resource and economic benefits through efficient resource management, land acquisition, leasing, sales, and exchange.

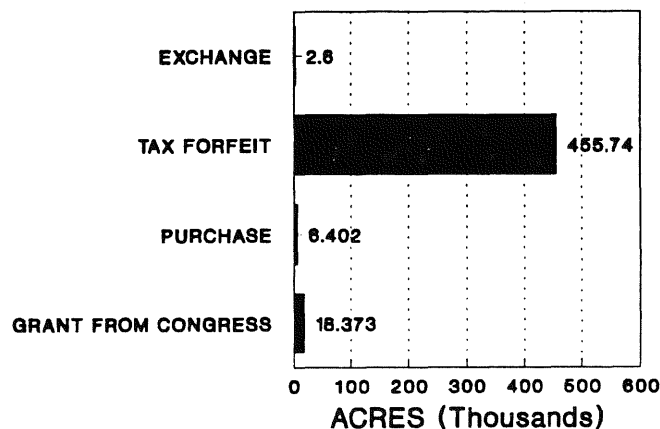
The Ownership Base

The state has experienced three major processes by which land entered state ownership. The first was through various federal land grants. Most of these grants occurred during the nineteenth century, although additional acreage was granted by the federal government as late as the 1950s. The Federal government granted about 16.5 million acres to the state of Minnesota. Figure 1 shows the general methods of state land acquisition of the 483,115 acres of forestry-administered land in the Baudette Area.

Figure 4

LAND ADMINISTERED BY FORESTRY IN THE BAUDETTE AREA

MEANS OF ACQUISITION



SOURCE DNR LAND RECORDS 3/10/89

Trust Fund Lands

Trust fund lands are those that were received by Minnesota from the federal government with the condition that receipts from them be used for specific education purposes. Most of these lands were granted to the state after it achieved statehood in 1858.

School Lands and Swamplands

The two major types of trust fund lands are the school lands and swamplands. School lands originally consisted of grants of sections 16 and 36 in each township (or in lieu selections made in the case of tracts that had been occupied or reserved prior to transfer of title to the state). These lands were granted to the state by the federal government for the purpose of establishing and developing a system of public schools.

Minnesota received about 4.7 million acres of swampland grants from the federal government in 1860 to encourage drainage and improvement of swamplands with money received from the sale of those lands.

Tax Forfeiture

Tax forfeiture is the second process by which land has entered state ownership. State laws provide for the transfer of title to land that is tax delinquent for more than three years. Most titles to tax-delinquent land are held in trust by the state for the taxing districts.

The decline of logging in the area during the early 1900s brought a growing demand for agricultural lands. Pressures mounted for the development of drainage projects to reclaim the swamplands for agricultural use.

State legislation (1887) had already authorized the organization of county drainage districts to be financed by bonds issued by the county. The Volstead Act of 1908 subjected federal lands in drainage projects to ditch assessments. Later legislation (1909) subjected state lands in drainage

projects to assessments the same as privately owned lands. Prior to 1925, legislation also authorized drainage construction at the initiation of only a small minority of the property owners who would have to pay for the project. With this encouragement, over 1500 miles of ditches costing approximately \$3 million dollars were dug in Beltrami and Lake of the Woods Counties between 1909 and 1917.

The drainage program was largely unsuccessful. Much of the drained land was never settled; other areas were abandoned soon after settlement. Poor soils, severe climate, inefficiency of drainage ditches, and distance from markets made farming impossible.

The state assumed debts of certain drainage projects in seven counties in exchange for clear title to the tax-forfeited land within the project areas. A number of conservation areas were formed from these drainage project areas. Receipts from the management of land within these separate conservation areas were combined by the legislature in 1949 to form the Consolidated Conservation Areas Fund, and the areas became known as Consolidated Conservation areas and the land within as Con-Con land.

The state received title to more than 1.6 million acres of Con-Con land in the original transfer of titles. In return, the state assumed about \$4,750,000 in county drainage debts. Subsequent tax forfeiture within the conservation areas transferred additional acreage into Con-Con status. Over the years much of the Con-Con acreage has been sold back to the private sector.

The existence of substantial acreage of tax-forfeited land in these counties is a measure of the quality of much Con-Con land for private use and development. Most of the tax-forfeited land has relatively low use and development, relatively low suitability for cultivation, and low potential for other economic uses. The fact that so much of this land went tax forfeit at least once indicates that development efforts have been attempted and failed.

Return of this land to private control poses the prospect that future development efforts may fail and the land will again go tax forfeit.

Acquired Lands

The third method of land entering state ownership was through acquisitions. Lands were acquired from private landowners or other governmental units through fee purchase, gift, land exchange, transfer, county board resolution (50-50 land, 50 percent of income goes to counties), condemnation, and Land Utilization Project acquisition.

Minnesota In-Lieu-Of-Tax Payments and Con-Con Payments

The impact of public land ownership on the local tax base has long been a concern to local governments. In 1949 the legislature passed a law that gives 50% of the proceeds from management of Con-Con lands to counties. In 1979 the legislature passed a law that makes payments to the counties based primarily on the acreage of land in various categories.

Determination of payments to the counties is determined by five separate statutes that prescribe general rates to be paid for different land types, alternative rates for certain types of land, and special rates for some counties.

The net In-lieu of taxes payable in 1988 for Lake of the Woods County was \$165,152. An additional \$82,608 was paid to Lake of the Woods County for Con-Con payments (50% of the proceeds from management of state land).

Federal Resettlement Program

The Land Utilization Project (L.U.P.) was initiated by the Federal government in 1933, under the National Industrial Recovery Act. Much of the land settled during the drainage period had been abandoned or tax-forfeited. A few scattered settlers, however, still lived on the area. The combination of unproductive lands and the economic depression of the 1930s, forced many settlers into an extreme financial crisis. The L.U.P. authorized the Federal Government to purchase submarginal lands from isolated and distressed settlers and to relocate these people on more accessible and productive lands.

In the Baudette Area, the Division of Fish and Wildlife administers 33,951 acres of L.U.P. lands that are leased from the Federal government.

Leasing

The Division of Forestry is responsible for approving requests for leases, licenses, and easements on Forestry lands and the subsequent monitoring of other sites for contract compliance. The Bureau of Real Estate Management, upon approval of the rates, issues the contracts and maintains the land records and accounts for these contracts. There are currently 134 contracts in the Baudette Area.

Land Classification

Optimal land ownership patterns and land use patterns vary by management objective. Scattered parcels have significant value in terms of wildlife, recreation, and minerals, whereas more contiguous blocks are desired for wood fiber production.

The land classification system used in Lake of the Woods County utilized the classifications

completed in the early 1970s as a starting base. A classification committee consisting of three members appointed by the Lake of the Woods County Board and representatives of the DNR Divisions of Forestry, Fish and Wildlife, Minerals and the Bureau of Real Estate Management first met in January of 1984. The purpose of this committee was to identify lands to be retained or disposed of by sale or exchange. A third classification category called provisional is used to identify lands where no agreement upon the disposition could be reached. Provisional land will be reviewed periodically.

Lake of the Woods County and the DNR have agreed upon the following classifications:

Specific Proposals for Lake of the Woods County

Land Sale

About 2,883.32 acres of surplus lands identified to be sold, will be disposed of on a schedule to be determined by the Lake of the Woods County Board.

Transfer of Administrative Control

Transfer of administrative control of 28,338.32 acres in six tracts from the Division of Forestry to the Division of Fish and Wildlife. These lands have been designated as Wildlife Management Areas by the Commissioner.

State Forest

About 133,035.16 acres have been given administrative and scattered state forest status in Lake of the Woods County. These lands will not be part of a named state forest, but instead the specific parcels will be given the same legal status as the named state forests. This action must be approved by the Legislature.

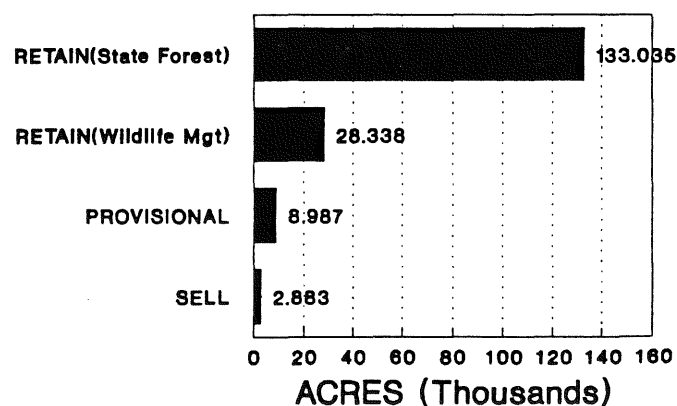
Provisional

About 8987.90 acres have been classified as provisional. These lands will be reviewed in 1999 or sooner if significant land use patterns develop (see Figure 5).

Figure 5

RECOMMENDATIONS FOR FORESTRY LAND OUTSIDE OF STATE FORESTS IN THE BAUDETTE AREA

RECOMMENDATIONS



Specific Proposals for Koochiching County

This will be deferred to the Region II Forest Management Plan, now in progress.

Peatland in RMU 3

All land in RMU 3 is classified retain in order to protect the ecological integrity of the peatland. Therefore, no sales, exchanges, or transfers of administrative control are proposed.

Beltrami Island Lease

The current 50 year lease from the federal government ends on August 2, 1990. This lease will automatically be renewed for three

successive terms of fifteen years each, unless written notice to the contrary is given by either party.

The DNR supports the renewal of the lease with the Division of Fish and Wildlife continuing to act as the administrator of the lands with cooperative management by the Division of Forestry.

Leasing of State Lands

The goal for leasing will be to identify lease opportunities, and work with the Bureau of Real Estate Management to improve the quality of lease administration, including service to the public and consistent lease rates reflecting market conditions.



Forest Recreation Program

The goal of the Division of Forestry Recreation Management Program is to cultivate the outdoor recreation potential of Minnesota state forest lands by providing developed recreation areas and opportunities for dispersed recreation activities that are compatible with other forest uses and consistent with user demands.

There are an abundance of outdoor recreation opportunities in the Baudette Area. With few exceptions, water based resources have been privately developed at the most favorable access points. State administered lands have proved to be very suitable for dispersed recreation activities including hunting, snowmobiling, trapping, nature study, and berry picking.

Opportunities for expansion or development of existing facilities are present on both public and private land. Dispersed recreation opportunities may be increased through better public information, maps, promotion, and an improved network of forest and county roads.

Expanding the amount of forestry administered facilities is not recommended at the present time. Privately-owned facilities will expand their services as demand develops. The Division of Forestry has the opportunity to improve the Baudette Area recreation experience by continuing to rehabilitate, properly maintain, and develop the forest road and trails system and existing recreation facilities. Facilities administered by the Division of Forestry will be analyzed to ensure they can accommodate additional use and complement services supplied by private enterprise. The Division of Forestry will avoid new construction of recreation facilities that compete with the private sector or duplicate existing opportunities. Efforts will be made to cooperate with both public and private recreation providers in this planning.

Information and Education

Public awareness of state facilities will be increased through Information and Education programs and by producing maps that show dispersed recreation opportunities and accesses. The Division of Forestry and the Lake of the Woods Chamber of Commerce should cooperate on publication of a recreation user map that will include public lands and facilities.

Franz Jevne State Park

The Franz Jevne State Park is presently administered by the Division of Forestry for the Division of Parks and Recreation due to its small size relative to other state parks and its close proximity to the Birchdale Field Station. To formalize this transfer of administrative control, legislation will be proposed by the Department that would rename this park the "Franz Jevne State Forest Campground." This change would clarify the legal and administrative responsibility within the Department. Existing facilities will be upgraded by proposed additions of a fish cleaning house, trail development, new picnic tables, road graveling, I & E programs, and construction of a small fishing dock.

Recreational Motor Vehicles

Division of Forestry-administered lands in the Baudette Area are generally open for use by recreational motor vehicles. A recreational motor vehicle is defined as:

Any self-propelled vehicle and any vehicle propelled or drawn by a self-propelled vehicle used for recreational motor purposes, including, but not limited to, trail bike or other all-terrain vehicle, hovercraft, or motor vehicle licensed for highway operation, which is being used for off-road recreational purposes, but not including snowmobiles.



In the Baudette Area, recreational motor vehicles are currently prohibited in all State Parks, Non-ATV Grant-in-Aid Trails, Scientific and Natural Areas, State Forest Campgrounds and Day-Use Areas, Designated Walking Trails, State Wildlife Management Areas, State Water Access Sites, State Historic Sites, and State Rest Areas (exceptions must be posted or established in management plans that include opportunity for the public to comment on the exceptions). Recreational motor vehicle use has increased during the last ten years and this trend is expected to continue. There is concern that in some situations, RMV-caused disturbances negatively impacts wildlife, vegetative resources, soils and other types of recreation. The Division of Forestry does not intend to develop any trails specifically for RMV use. The Division will, however, consider proposals for grant-in-aid ATV trails should clubs in the area be interested in developing a trail in the future. Areas normally open to

recreational motor vehicle use can be closed on a temporary or permanent basis when such use is causing or is likely to cause:

- 1) significant damage to state property
- 2) conflict with other users
- 3) damage to environmentally sensitive areas, or
- 4) unsafe operation conditions or levels of use.

Walking Trails

Designated "Walking Trails" will be closed to motor vehicles, recreational motor vehicles, and snowmobiles from March 15, to December 15. The primary objective of these trails is to provide opportunity for trail associated recreation in a setting undisturbed by vehicles. The location of these trails is shown on the large map in the appendix. Motorized vehicles may be used on these trails for designated management purposes by DNR authorization.

Snowmobile Trails

The Division of Forestry currently maintains 52.5 miles of snowmobile trails in the Baudette Area. Maintenance of the four snowmobile shelters will be continued through snowmobile trail funding. Additional trail use opportunities are provided by 90 miles of grant-in-aid trail administered by Lake of the Woods County. Snowmobiling on state forest trails has increased in recent years. Grooming has been contracted at a level that provides for the highest use periods such as Christmas vacation and the Bemidji to Baudette annual expedition. Conflicts between logging traffic and snowmobile use are kept to a minimum by use of designated trails. Conflicting trail uses between snowmobilers and logging traffic will be solved by temporarily rerouting where possible. Traditional snowmobile use of portions of the Aichele and Nelson forest roads will continue. Traffic regulations and user education is vital to the safety of all users. An updated version of the current snowmobile map will be made to include changes in the grant-in-aid system.



Direction by RMU

RMU 1

The primary resource management focus will enhance wildlife habitat which will in turn provide increased recreational opportunities for hunting and for observation. Most forest access trails will remain open to provide dispersed recreational opportunities. Selected trails will be designated as "Walking Trails" and will be restricted to motorized vehicle use by permit only.

Assistance will be provided to other forest landowners and administrators regarding multiple use forest management. The Division will cooperate with other recreation providers, when possible by making state administered lands available for trail development through leases and agreements when compatible with state forest land management practices.

Table 2: Rehabilitation of Facilities in RMU 1

Facility	Cost
Franz Jevne Campground	
Fish Cleaning House	\$ 8,000
Trail Development	2,000
Picnic Area Tables	1,500
Campsite Tables & Rings ..	4,500
Toilet Replacement	8,000
Gravel Road, campsites ..	10,000
Signing & I&E	2,000
Roll In Dock	2,000
Total	\$37,000
Blueberry Hill Campground	
Toilet Replacement	\$ 4,000
Gravel Road 4	2,000
Signing Road 4	500
Campsite Tables & Rings ..	3,500
Total	\$10,000

RMU 2

Campgrounds will remain primitive in a natural forest setting. Forest recreational facilities will be maintained so they continue to be complementary to private resort facilities in RMU 1. Recreational access will be developed in conjunction with forest management activities and as designated recreational trails. Alternate trail routes or cautionary signs will be used where trail use conflicts exist. Detailed land ownership and road access maps will aid the public in use of the forest for dispersed recreation.

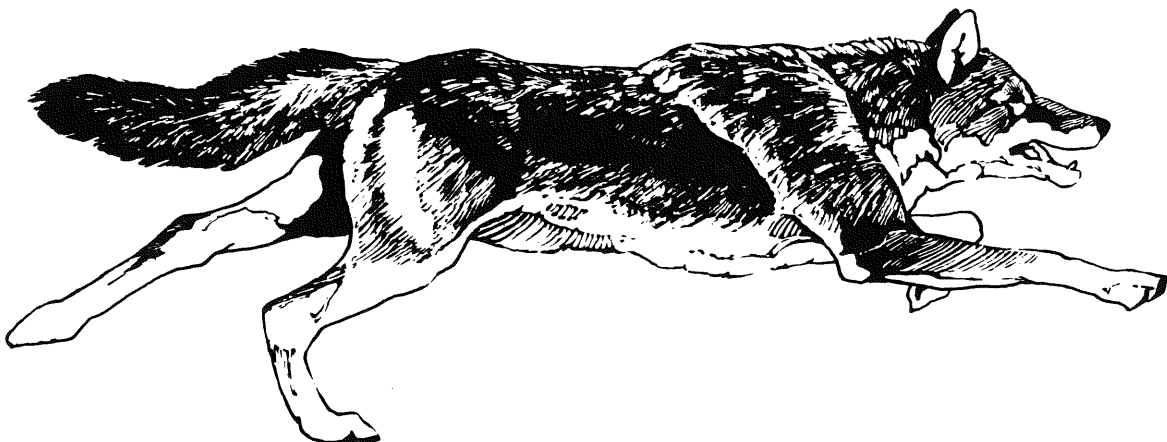
Table 3: Rehabilitation of Facilities in RMU 2

Facility	Cost
Faunce Campground	
New Toilet	\$4,000
Tables & Rings	1,500
Total Cost	\$5,500

RMU 3

This RMU provides the least amount of recreational use due to its inaccessibility. It contains part of one of the largest and most unique ecosystems in the nation known as the "Big Bog" or Red Lake Peatland. Recreational use includes: hunting, trapping, and nature study. Unique plants, wildlife and geology are features of the peatlands.

Recreational use will be monitored by forestry personnel while performing routine management activities to insure that only those recreational activities compatible with the area occur.



Forest Road Program

The goal of the state forest road program is to develop and maintain a state forest road system that will provide adequate access for the protection, management and utilization of Minnesota's forest resources. The Division of Forestry's strategy for attaining this goal is to continue to manage state forest roads in cooperation with other public and private land managers to ensure coordinated and responsible forest road use and development.

The Baudette Area contains 177.05 miles of Division of Forestry administered roads in the Class 2-5 designation.

Upgrading of the trunk system has been underway since 1980. Bridge redecking, culvert replacements, road class upgrading, new bridge construction, roadside vegetation control, and surfacing has been emphasized for safety and summer hauling of full highway loads.

All forest roads will be restricted by seasonal weight limits during spring breakup. This weight restriction will usually run concurrent with county weight restrictions. Individual roads will be closed for additional periods to protect them during wet conditions, or to protect resources during periods of high fire danger.

A road identification system will be developed and road signs installed as outlined in the proposed state forest road plan. Forest roads will be mapped, signed, and identified on state forest maps for user safety and convenience.

Approximately 56 miles of road reconstruction will be performed during the next ten years. Approximately six miles of new Class 6 logging spurs will be built per year in the next ten years.

Timber management and sales along roads and highways will take into consideration visual impacts. The following guidelines will be adopted for cutting on lands adjacent to major roads or highways:

1. Regeneration of clear cut areas adjacent to major state or county highways will be clearly visible to motorists prior to cutting adjacent stands, if this delay is silviculturally sound.
2. Clear cuts will be no more than 1/4 mile in length adjacent to roads.
3. When harvesting along roadside edge, cutting and slash disposal regulations will produce an aesthetically acceptable cutover designed to promote rapid regeneration.
4. Regeneration of timber harvest areas adjacent to major roads by artificial means will be identified to the public by plantation establishment signs, upon successful establishment.



Resource Management Units

RMU 1

This unit has an excellent transportation network administered by the Department of Transportation and the counties. There are 1.8 miles of forest roads existing in this RMU. Franz Jevne Park Road - .3; Aichele - 1.5 (of 6.5).

No roads above Class 6 will be built. The main emphasis of the forest road management program in this RMU is to provide access to DNR administered lands.

Retaining existing public access to state administered lands will be a high priority. Incidental brush clearing by mechanical shears that are accessing resource management projects will clear encroaching vegetation from ditch (judicial) grades which serve as public access. Existing forest roads will be maintained at their current level, or upgraded as response to planned management activities. Contract grading of existing forest roads will be performed as needed.

RMU 2

This unit contains 174.55 miles of forest roads Class 2-5 which are accessed by state and county roads. These existing forest roads are built on sandy beach ridges or ditch grades. Maintenance requirements include spot graveling, culvert replacement, roadside vegetation control, removal of blown down trees, and turnout construction. Upgrading of five miles of the Aichele Forest Road to standards similar to the other forest roads in this RMU will provide all season access for multiple resource management purposes.

An additional 29.3 miles of Class 3 roads will be constructed during this ten-year period. Location of new construction, and 56 miles of reconstruction will be driven by management activities identified through TMPIS.

Seasonal weight restrictions by specific forest road will be utilized to prevent damage to forest roads during spring breakup.

Snowmobile recreational trails will be moved from the Nelson forest road to a parallel or alternate course where feasible. Timber management traffic will be separated from snowmobile traffic corridors.

RMU 3

This unit has limited access consisting of ditch grades and Christmas tree cutting roads. State land ownership is in a contiguous block. No deposits of gravel are presently leased and no gravel exploration is anticipated.

The forest road system is connected to this RMU by ditch grades and winter logging trails. No roads above Class 6 will be constructed in this unit. The only maintenance to be performed will be on the one-mile segment of the Fiero Trail which bisects RMU 3 to connect to the Pine Island Forest Road. Access will continue to be by helicopter or snowmobile for management purposes.

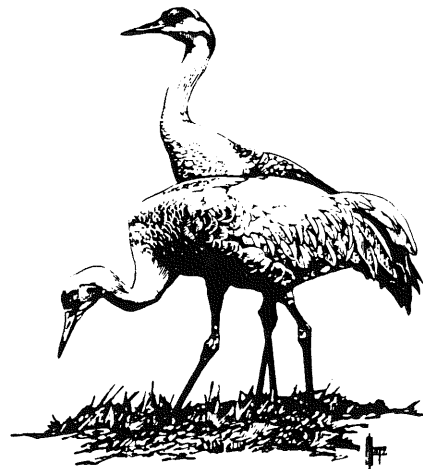


TABLE 4: New Road Construction in RMU 2 by Priority

ROAD NAME	MILES
Boise Boulevard	2.8
Wayland Road	4.0
Frontier-Farmer Loop	3.5
Diamond Ridge Winter Road	19.0
Total	29.3

TABLE 5: Road Reconstruction in RMU 2 by Priority

ROAD NAME	MILES
Rapid River	9 of 26
Aichele	5 of 6.5

TABLE 6: Road Graveling - Maintenance and Reconstruction in RMU 2

ROAD NAME	YARDS
Bankton	6"x 14'x 3 miles 4,110
Hogsback	6"x 14'x 4 miles* 5,480
East Rapid River	6"x 14'x 9 miles* 12,330
Pitt Grade	6"x 14'x 9 miles 12,330
Fiero	6"x 14'x 6.75 miles 9,248
Frontier	6"x 14'x 6 miles 8,220
Sandsmark	4"x 14'x 4.25 miles 3,880
Total	55,598

Timber Management Program

The goal of the Timber Management Program is to efficiently apply sound silvicultural practices to regenerate and improve productivity of state-owned forest lands while providing a sustained yield of forest resources for Minnesota citizens.

This goal is met primarily by regulating timber harvests and by regeneration of harvested areas. The basic function of regulating harvests is to promote sustained yields of forest products. The basic function of stand regeneration is to assure that state lands are maintained in appropriate cover types to meet future multiple use demands.

The Timber Management Planning Information System (TMPIS) is a program that has been developed to use Phase II inventory information to select stands for various management practices based on the following criteria: Site index, stocking, damage, age, stand size, and distance from a road. The use of TMPIS in the development of this plan has shown timber management activities that could or should be done if there were no constraints on budget and staff and if all timber recommended for harvest could be sold. It is also based on the assumptions that the mix of products (i.e., pulpwood, sawtimber) to be provided and silvicultural techniques used will remain relatively constant.

Station foresters and Area Wildlife personnel ran the TMPIS for each RMU. They used forest inventory information, their knowledge of access and market conditions, management guidelines, and wildlife habitat compartment evaluations to determine which stands selected by TMPIS should be listed for various management practices. Recommended annual harvest levels are set from the inventory for the purpose of creating an equal distribution of timber among age classes within a forest type. This will assure a continuous annual yield of forest products. Annual

harvest is based on the present distribution of age classes, the total present volume of timber, and the condition of this timber.

Many of the timber types in the Baudette Area occur primarily in the older age classes. The highest cutting priority will be given to the older age classes to correct this imbalance.

General Timber Direction By RMU

RMU 1

The management emphasis in RMU 1 will be on the improvement of wildlife habitat, particularly transition habitat, for such species as deer, moose, sharptailed grouse and sandhill cranes. Forest cover types will be maintained to enhance winter cover, provide habitat diversity, and an even distribution of timber type age classes. Intensive forest management for pulp and sawtimber will occur in some locations.

RMU 2

The timber in RMU 2 will to be managed with an emphasis on fiber production, with concerns for wildlife habitat addressed by coordination with the Section of Wildlife. The forest road system will be upgraded and maintained to ensure access for timber management. Timber will be protected from wildfire, insect and disease and all other types of damage.

RMU 3

In this RMU forest management activities will be limited to a few productive conifer stands. Management activities will center around the protection of the unique qualities of the Red Lake, Winter Road Lake and North Black Root River Peatlands.

Timber Harvest Activities

The timber harvest for the next ten years will be planned to meet the following objectives: Provide wood for the forest industry; improve or maintain wildlife habitat by following the Forestry/Wildlife habitat management guidelines; follow sound silvicultural practices;

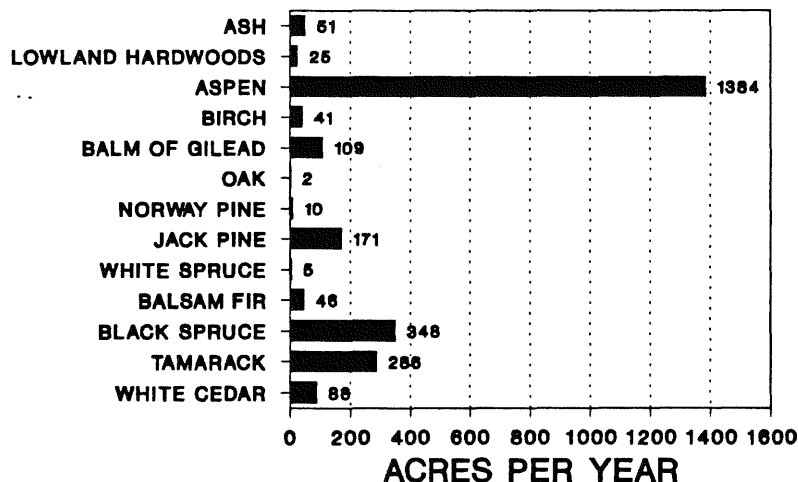
protect other resource values including recreation and water quality; and, protect the timber resource from excessive insect or disease damage.

The harvest activities identified by this planning process for the next ten-year period are illustrated in the following figure:

Figure 6

ANNUAL TIMBER HARVEST BUDGET

TIMBER TYPE



Timber Regeneration Activities

Regeneration accomplishments over this planning period will be limited by available manpower and budgets. For these reasons, sites will be selected based on the following criteria:

The first priority will be to regenerate acreage as it is harvested each year.

The second priority will be to regenerate previously harvested areas that have not

regenerated adequately by themselves, or are to be converted to a more suitable species for the site.

The third priority will be to regenerate unstocked and understocked sites that are not needed in their present form for wildlife habitat or other purposes. Regeneration of these sites involves heavy use of mechanical and/or chemical site preparation, followed by planting.

The following figures illustrate the artificial and natural regeneration called for by TMPIS:

Figure 7

ARTIFICIAL REGENERATION TEN YEAR TOTALS F.Y. 88-97

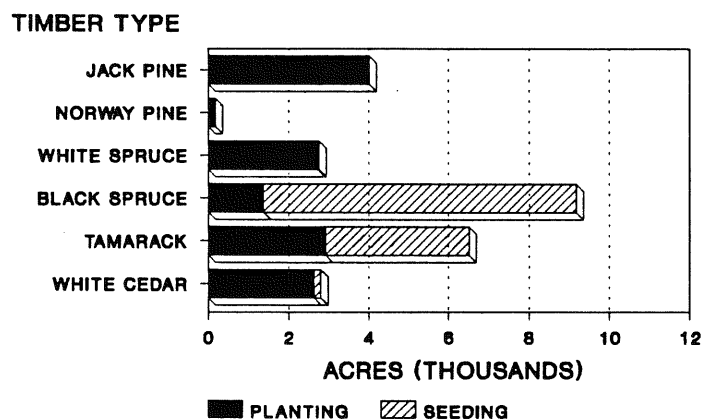
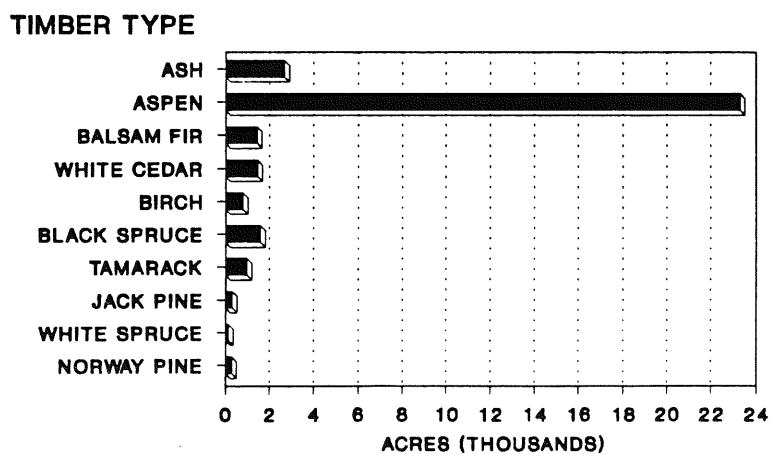


Figure 8

NATURAL REGENERATION (SEEDING, SPROUTING AND UNDERSTORY) TEN YEAR TOTALS F.Y. 88-97



Fish and Wildlife Habitat Management Program

The DNR's habitat management efforts are designed to promote habitat diversity and maintain or improve habitat through integration of forestry and wildlife management. Practices used to achieve these goals include: timber management designed to promote diversity of cover types and age classes, creation and protection of critical habitats (e.g., forest openings, transition habitat, deer wintering complexes, old growth); and protection of significant natural features. Regular communication between Division of Forestry and Section of Wildlife personnel is necessary to maintain coordinated management efforts.

Habitat Enhancement

Habitat enhancement will be accomplished, in part, through timber management activities (harvest and reforestation). These activities, for the next ten years, have been planned cooperatively by Baudette Area and Section of Wildlife personnel using the Timber Management Planning Information System (TMPIS), a computerized timber planning model.

Other significant habitat modifications will be accomplished through projects designed to meet habitat needs (e.g., prescribed burns, establishing conifers for future winter cover, and forest openings creation and maintenance).

Habitat of Special Concern

Some habitat types are of special importance and concern. Important habitat types in the Baudette Area are described and discussed in the full plan.

Upland Intolerant Forest Types

The shade-intolerant or sun-loving forest types include aspen, balsam of Gilead, birch, jack pine, oak, and upland brush. These early forest successional types make up 24 percent of all cover types on DNR-administered lands. Many wildlife species, including most of the important forest game species are dependent on these types. Consequently, maintaining appropriate amounts, distribution, and age of intolerant forest types is important.

Transition Habitat

This habitat type is comprised of upland grass, upland brush, muskey, lowland brush, lowland grass, and poorly stocked forest cover types which are, collectively or in themselves, extensive or are adjacent to agricultural lands.

Transition habitat has been maintained in the Baudette Area by fire and hydrology. Absence of fire has resulted in woody vegetation encroachment on both upland and lowland sites. Much transition habitat on private lands has been converted to agriculture.

Protection and management of transition habitat on public and private land is critical to wildlife species such as sharp-tailed grouse, sandhill cranes, and moose which depend on this dwindling habitat.

Deer Wintering Complexes

Quality winter habitat contributes to the maintenance of productive white-tailed deer populations in northern forest areas. Wintering complexes provide deer thermal protection and food sources. During severe winters, deer often migrate several miles to traditional wintering areas or deer yards. In the Baudette Area, white cedar, jack pine, and balsam fir are cover types that provide deer with high quality thermal protection. Protecting

the integrity of deer wintering complexes and winter deer habitat is essential when planning management activities.

Forest Openings

Forest openings are upland herbaceous areas, 1/2 acre or larger, dominated by grasses and forbs. At least 36 bird species and 15 mammals are associated with forest openings. Openings provide important spring and fall forage for deer. They are used extensively by bear as sources of forage, and are important courtship areas for woodcock. Maintaining existing openings and creating additional openings is an important part of forest habitat management.

Old Growth

The DNR has established an inter-disciplinary task force to define and locate old-growth forest in Minnesota and to develop guidelines for its identification and management on DNR-administered lands.

Forest Age Class Diversity

Diversity of forest cover type age classes, stand size, and geographic arrangement of successional stages are important habitat considerations in managing forest wildlife. Species such as ruffed grouse and white-tailed deer utilize a variety of plant communities, of different successional stages, at different times of the year. A significant number of other species require specific sizes, age classes, and arrangements of cover types as a part of their habitat. At least 85 birds and 27 mammals occurring in the Baudette Area are associated with mature and overmature forest types. Providing these age classes is an important consideration in forest habitat management.

In order to maintain stable populations of a variety of wildlife species in the Baudette Area, well distributed overmature forest will be emphasized.

It will be a priority over the next ten years to maintain well distributed overmature age classes in all timber types. Ten percent of the acreage in each timber type will be managed beyond normal rotation to accommodate the needs of wildlife species which require overmature forest types.

Riparian Habitat

Riparian habitat includes areas of standing and flowing water such as lakes, ponds, streams, shrub and forested swamps, and marshes. A riparian zone includes wetland habitats and associated adjacent habitat. Numerous wildlife species make disproportionately high use of riparian zones because many of their life needs are met by the highly productive and diverse riparian plant communities.

Buffer zones at least 100 feet wide along river, stream, lakeshore, and wetland edges will be maintained.

Peatlands

Portions of four peatlands occur in the Baudette Area. These patterned peatlands are an important part of the worldwide boreal peatland systems. Although peatlands lack the vertebrate species diversity and richness present in upland habitats, they are unique habitats. Twenty-five vascular plants and wildlife species that occur in Minnesota peatlands are endangered, threatened, or of special concern. Protection of these peatland ecosystems is important because of the unique habitat they provide, and their ecological significance.

Featured Wildlife Species

Featured species in the Baudette Area are:

White-tailed Deer
Ruffed Grouse
Sharp-tailed Grouse
Moose
Black Bear
Gray Wolf
Rare Northern Owls
Sandhill Crane

Snag/Cavity Associated Wildlife

Individual trees or groups of trees will be reserved on timber sale and plantation development sites. Selected buffer areas in riparian zones will be cooperatively managed to protect critical habitat. In addition, wildlife personnel will continue placing waterfowl and songbird nesting structures.

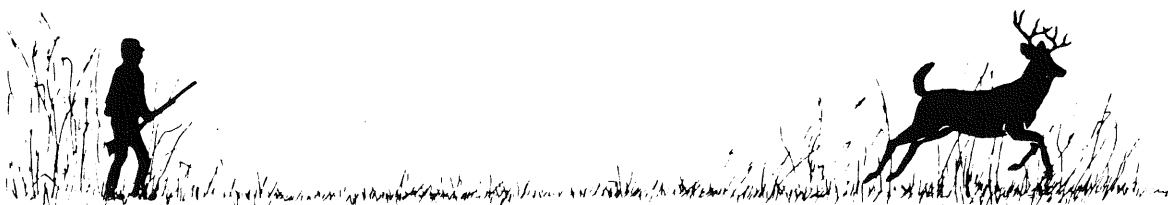
Resource Management Units

RMU 1

Primary emphasis for habitat management will be enhancing the transition habitats which have deteriorated in quantity and quality on both public and private lands. Improving existing transition habitat and converting poor quality forest to brushland will receive special emphasis. Wildlife such as sharp-tailed grouse, sandhill crane, yellow rail, sharp-tailed sparrow, moose, and deer will benefit from this management. Prescribed fire will be the primary tool used to manage transition habitat.

A second priority will be forest habitat management. This habitat management will involve cooperative planning of timber sales, forest development projects, and Section of Wildlife funded habitat improvement projects. Habitat projects will include: maintenance and improvement of deer wintering complexes, shearing and burning of noncommercial aspen and other intolerant deciduous types, management of forest openings, and establishing food plots.

Management for endangered, threatened, and special concern wildlife species will continue to be directed at protection of important breeding areas for piping plovers, bald eagles, common terns, and sandhill cranes.



Moose

Within moose hunt Zone 11, the population goal is the maintenance of a minimum of 50-65 moose. This population level enables issuing at least five permits per season, which is the minimum number of permits required to open a hunt zone. Habitat improvement projects such as shearing shrubs and intolerant hardwoods, prescribed burning, and brush diskings will be implemented in an effort to increase this moose population to a huntable level.

Sharp-tailed Grouse and Sandhill Cranes

Specific compartments will receive special emphasis for these species. Management within these compartments will be directed at improving the quality of existing transition habitat.



White-tailed Deer

Both farmland and forest deer management units are included. Habitat management strategies will include:

Using forest habitat compartment evaluation to prioritize habitat alterations; coordinating timber sales and plantation development on both public and private lands; coordinating winter cover needs; and direct habitat improvement on public and private lands.

Specific forest habitat compartments have been selected for intensive deer habitat management because they contain important winter deer habitat. Management will emphasize maintaining existing conifer types that provide thermal cover, and where cover is needed, establishing additional conifer types to augment existing cover or to replace cover lost to harvest or succession. Additional management will be directed toward providing adequate deer food sources within and near thermal cover.

Ruffed Grouse

Ruffed grouse are the most abundant and sought after small game bird in the Baudette Area. Ruffed grouse are strongly associated with aspen dominated forests and also with cover types that contain at least 20 percent aspen. Ruffed grouse management will emphasize aspen sale design that provides the proper interspersions of grouse food and cover. Guidelines have been developed that will create the diversity of aspen age classes in close association desired for improved grouse habitat.

Piping Plover

The goal for piping plover management is to increase the breeding population to 25 pairs. Strategies will involve: monitoring the Lake of the Woods piping plover population, its reproductive success, and effects of predation on the population; designation of Harbor and South Shore WMAs; and searching for undocumented nesting areas.

RMU 2

Wildlife habitat management will involve integration of timber management activities with habitat management activities. Opportunities to improve forest wildlife habitat through Section of Wildlife funded habitat projects include: browse regeneration through shearing and prescribed burning, development and maintenance of forest openings, and cooperative development of timber access. By increasing forest habitat diversity, species such as deer and ruffed grouse will be benefited, as will many wildlife species associated with young hardwood forest habitats.

Management to protect unique plant communities and habitat of endangered, threatened, and special concern species such as gray wolf, short-eared owl, yellow rail, sandhill crane, and American bittern will be pursued.

Forest Openings

A long-term goal in RMU 2 is to attain a five percent minimum of upland deer habitat in forest openings. Additional openings construction in this RMU will be prioritized by Forest Habitat Compartment (FHC) evaluation. Construction in conjunction with maintaining existing openings will help achieve the desired quantity and distribution of this important habitat type.

White-tailed Deer

RMU 2 includes portions of two forest deer management units (DMUs). Habitat improvement will be prioritized by forest habitat compartment evaluation. Habitat management strategies will include: coordinating timber sales, aspen recycling, deer winter complex management, and initiating direct habitat projects.

Specific forest habitat compartments have been selected for intensive deer habitat management because they contain important winter deer habitat. Management will emphasize maintaining existing conifer types that provide thermal cover, and where cover is needed, establishing additional conifer types to augment existing cover or to replace cover lost to harvest or succession. Additional management will be directed toward providing adequate deer food sources within and near thermal cover.

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In addition, specific habitat compartments have been targeted for intensive ruffed grouse management. This will be done by cooperatively designing small block cuts in the aspen type.

Black Bear

Bear habitat management will emphasize riparian habitat and management of forest types for soft mast production, expansion of oaks to produce acorns for mast, and hardwood type management to provide young forest and forest openings for food sources.

Gray Wolf

Minnesota gray wolf populations are most affected by prey availability (i.e., deer population densities and alternative prey sources) and human-caused mortality. Recent research suggests there is a road density

(1 mile/square mile) above which wolf populations (i.e., reproducing packs) can be negatively impacted. Wolf Management-Road Densities guidelines will be implemented. Deer density goals for the three RMUs within the Area exceed the level required to maintain the existing gray wolf population.

Rare Northern Owls

Specific compartments have been selected for intensive habitat management to encourage more nesting by great grey and northern hawk owls, and to document nesting activity by boreal owls.



RMU 3

This RMU includes the north edge of the Red Lake peatland (RMU 3) and the east side of the Winter Road Lake peatland (RMU 3A), and the west edge of the South Black River and North Black River peatlands (RMU 3B). With the exception of ditches constructed in the early 1900s, these peatlands differ little from their pre-settlement condition.

Management will be broad or extensive rather than intensive and will be primarily habitat preservation. Little effort will be directed at improving wildlife habitat and wildlife-related recreational opportunities. Wildlife habitat management activities that are done may involve large-scale prescribed burning directed at controlling plant succession.

With the exception of State Highway 72 and the Fiero Forest Road, access is limited to ditch grades and winter trails. Recreational opportunities such as hunting sharp-tailed and spruce grouse, and snowshoe hare, and ob-

serving rare plants, butterflies, and birds are available. The opportunity also exists for scientific study of poorly understood plant communities.

Special Protection of Peatland Core Areas

Protection of peatland core areas will be emphasized. These peatlands will be managed according to provisions contained in the 1984 DNR report: Recommendations For the Protection of Ecologically Significant Peatlands in Minnesota. Timber will not be harvested in the peatland core areas. Prior to the initiation of any development proposal or management activity within these peatland areas, the Section of Wildlife's Scientific and Natural Area (SNA) program will be contacted. This coordination will ensure that the core areas and their significant features receive adequate consideration and will help protect them relative to any management activity.

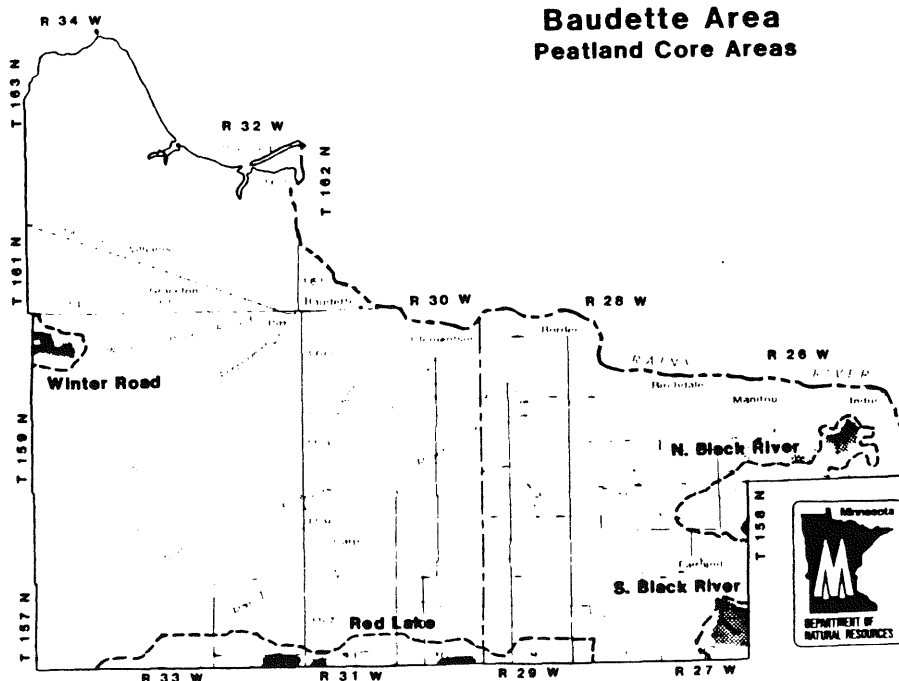


Figure 9: Peatland Core and Watershed Areas

COOPERATIVE FOREST MANAGEMENT

Private Forest Management Program

The goal of the PFM Program is to improve multiple-use forest management on non-industrial private forest (N.I.P.F.) lands to benefit the resources, the landowner, and the economy. The Division's strategy for achieving this goal is to first identify N.I.P.F. landowners interested in improving forest productivity, and then to provide the necessary incentives and assistance. Landowner incentives promoted through information and education programs include the desire to maximize profits, cost share assistance, increased wildlife benefits, improved recreational benefits, tax reductions, and the Tree Farm Program.

Typical PFM activities include:

1. Promoting proper forest management through personal contacts with forest landowners, as well as many types of information and educational activities.
2. Developing multiple-use forest management plans for landowners by adhering to the DNR Forestry/Wildlife habitat guidelines (1985) and Baudette Area Forestry/Wildlife specific procedural policy (revised 2-7-88).
3. Providing landowners with advice and assistance on forest activities, such as:
 - a. Timber harvest and marketing
 - b. Wildlife habitat management
 - c. Timber stand improvement
 - d. Forest insect and disease control
 - e. Tree planting
4. Providing information on financial incentives, such as cost sharing and forest tax laws.

5. Promoting landowner recognition.
6. Assisting on urban forestry projects.
7. Cooperating with other agencies, vendors, industrial and consulting foresters to maximize landowner services and benefits.

Landowner contacts and public education about PFM Programs are produced through information and education programs, including:

1. Local news releases.
2. Speaking to school, civic, and other local groups.
3. Educational workshops, clinics, and field days.
4. Promoting and assisting woodland owner organizations.
5. Arbor Day promotion through civic and school programs.
6. Attendance by Forestry and Wildlife personnel at Federal Conservation Program signups days such as CRP signup by the ASCS Office.

As of April 1, 1990, the Baudette Area had 93 detailed Private Forest Management Plans on file, servicing 10,294 acres. There are 41 landowners, and 7,413 acres involved in the Tree Farm Program. The PFM Plan provides a professional Forester's evaluation of a property's characteristics and potential for forest management. There is no charge for this service, but a limit of 4-man days of professional assistance time per year is allowed to a landowner.

Forest Regeneration

The Baudette Area has approximately 4,800 acres of private plantations. Tree spacing has widened over the past 20 years, from 4'x 4' common in the early 1960s, to 7'x 8' spacing today. Several closely spaced plantations have been noncommercially thinned under cost sharing programs. Several private conifer plantations will reach merchantable size for commercial thinning near the end of this ten-year management plan. Markets have traditionally been available to utilize these products and are anticipated to be available in the future.

The Baudette Area intends to increase the number of landowners served in this ten-year management period. A goal for the next ten years will be to complete an additional 60 plans that cover 2,400 acres. Present staffing will continue to handle the PFM Program.

Timber stand maintenance covers a variety of work, including thinning, release, and pruning. A major objective of private tree planting should be to develop well stocked stands which will not require release from competition, or precommercial thinning.

Cost-share incentives are a vital part of the PFM Program. More money is annually available than is used.

Multiple-use resource management and successful plantation establishment and maintenance will be emphasized. Public education on proper multiple-use forest management is an integral part of private forest management.



Urban Forestry Program

The goal of the Division's urban forestry program is to help cities, towns, and suburbs maintain and improve their community forests and to assist private homeowners, no matter where they are located (on a farm, near a lake shore, in a small town or large metropolitan area), with the management of any trees or associated plants they are growing for ornamental, aesthetic, or conservation purposes.

Urban forestry activities in the Baudette Area are limited by the small population of the area. Advice and assistance is provided to city

councils and private home owners in selection of trees, planting techniques, spacing, and location of plantings. This assistance helps community officials and private homeowners develop wildlife habitat, improve watershed areas, minimize soil erosion, establish windbreaks, and manage trees and associated plants for the aesthetic pleasure they bring. Identified insect and disease problems that affect municipal and residential trees is an important urban forestry responsibility of the area.

The urban forestry effort will continue to increase slightly as a response to expanding populations. Arbor day activities will be promoted, and the area will distribute information and education through the media on insects and diseases, and tree maintenance.



Forest Pest Management Program

The goal of the Forest Pest Management Program is to provide efficient forest resource protection from insects, diseases, and competing vegetation to increase productivity and reduce pest losses.

Insects and diseases are the major causes of growth loss and mortality in Minnesota forests. The activities of pests such as the spruce and jack pine budworms, white pine blister rust, dwarf mistletoe, oak wilt, Dutch elm disease, and wood decayers result in loss of about one-half of the annual forest growth in the state. In addition to volume losses, losses occur from a reduction in tree quality and from alterations of forestry practices.

The Division of Forestry is charged by state law with controlling forest pests on public and private lands within Minnesota. The division provides forest protection assistance to nursery, Christmas tree, nonindustrial, industrial, urban, municipal, county, and state forest managers or landowners. Assistance is provided to reduce resource losses and limits on productivity. Management guidelines, standards, examples, and risk evaluation systems for managing pests are examples of the types of assistance that are provided.

Insects and diseases are a part of the forest ecosystem and will always have the potential of causing catastrophic losses. Under inten-

sified forest management practices, their potential impact is greater than under an extensive management system since intensified forestry practices tend to develop more monocultures and tree values increase because more money is spent on each tree. Losses can be managed only through the integration of forest pest management techniques into forest management activities. Insect and disease management should be an objective when planning and carrying out any forestry activity. Integrated pest management can reduce losses directly by affecting the pest and indirectly by altering conditions contributing to a pest population build up. An integrated approach requires a pest management program with strong training, evaluation, and research components so that the resource managers are continually appraised of changing pest levels and are aware of pest management principles and strategies.

To manage insects and diseases, the Baudette Area personnel and the Division's forest pest personnel will work together to integrate forest pest management techniques into silvicultural practices. The forest pest program provides management guidelines, basic biological information for the insect and disease pests, and risk rating systems for the major forest types and pests. Baudette Area personnel will conduct surveys, implement risk rating systems, and carry out management strategies. Regularly scheduled workshops will be conducted to keep Area personnel aware and informed of insect and disease identification, life cycles, and management principles and techniques.

FOREST RESOURCES ASSESSMENT

Forest Resource Inventory Program

The goal of the Division's Forest Inventory program is to collect, process, maintain and distribute reliable information on the present status and dynamics of the state's forest resources to a variety of user groups. Information regarding the location, character and current condition of the state's forest resources is essential for effective management planning and decision making.

A forest inventory is a sampling method used to determine the forest resource of a particular area or unit. The sampling system measures some or all of the resource component on a plot which is a proportional representation of the total forest. The forest inventories developed to inventory Minnesota's forest resources are called Forest Inventory and Analysis (FIA) and Cooperative Stand Assessment (CSA).

FIA inventory can be compared to the surveys conducted by pollsters where they randomly contact 1,000 people in the country to determine a trend, or a position, or an attitude. The people interviewed represent all the people in the country. In FIA, information is obtained from forested plots instead of people. This information then represents the forest resources of Minnesota.

CSA inventory is a much more intensive survey. Every vegetative cover type is identified through photo interpretation. All merchantable types and most of the non-merchantable types are field checked. Data is collected by plot sampling, which describes the composition and condition of each forest stand at the time of the examination. A vegetative cover type map is made for each township. The boundaries of the individual forest types are

outlined and each forest type described on the map. Individual stand data is put into the computer data bank. The Division's objective is to integrate the inventory with advances in remote sensing and geographic mapping in order to produce a comprehensive forest resource assessment.

This data has been extremely useful in overall resource planning, research, and in promoting new or expanded forest industries in Minnesota.

FIA inventory will be measured every 10 years. During the next four years the forest inventory unit and the north central forest experiment station will measure 9000 commercial forest land plots statewide. FIA plots in Koochiching and Lake of the Woods Counties are being remeasured by independent contractors. Completion of Koochiching County Plots was in 1988. Lake of the Woods County plots remeasurement will be contracted with a starting date of 9/88 with completion projected to be 9/89. The initial CSA survey has been completed in the Baudette Area. It was started in 1978 and finished in 1986. This inventory included all DNR administered lands. Private lands were not included though some private land was type-mapped but not sampled by field crews. Field sheets, type maps, computer printouts, and stand information summaries are used and maintained in area, field station, and wildlife offices.

The CSA needs to be accurate and up to date. An alteration procedure was initiated in 1981 to incorporate changes in an area's vegetative cover brought about by natural and artificial manipulations such as logging, shearing or flooding. These alterations are extremely important in maintaining the integrity and accuracy of the inventory data. Improved alterations procedures are being developed to

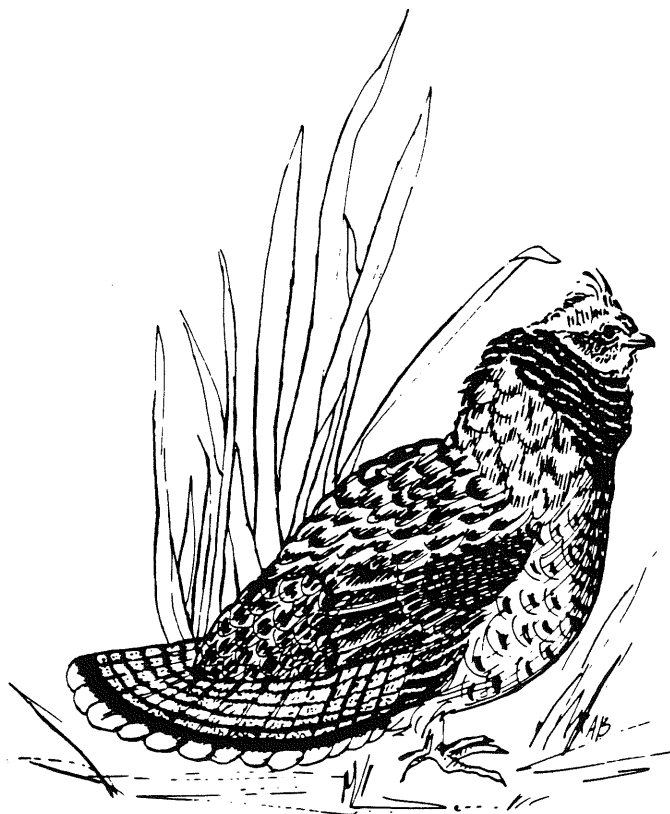
assure the inventory system is kept current. In addition, steps are being taken to utilize computers to more rapidly access forest inventory information for field office use. The capabilities of the Geographic Information System in Grand Rapids, allows for all stand management data to be linked with updated stand maps.

The CSA will be updated and kept current through several techniques. Models developed by the North Central Forest Experiment Station (and adjusted by the analysis of FIA data) will be used to update the records of undisturbed stands. Remote sensing (35mm photography) will also be used to locate disturbed stands, verify noncommercial stands and reduce the need for field checks. The third method of updating will require field checking stands.

Area personnel, based on experience working with existing CSA data will identify stands needing field reinventory. Criteria prescribed by the area management team as stands requiring field reinventory include:

- Stands at high risk of loss that are beyond rotation age
- Stands with high risk
- Stands in error on original survey
- All stands acquired through land trade or purchases
- Stands inventoried with the old system
- Plantations 20-30 years old
- Stands with unique characteristics

All stands to be reinventoried must be manageable as determined by timber management criteria or identified as unique by department programs. Cooperative procedures need to be standardized to maintain ties to biological surveys for special values, reduce duplication of survey effort and share data.



Utilization And Marketing Program

The goal of the Forest Products Utilization & Marketing program is to: 1) Expand the use of Minnesota's wood resources, 2) Increase the value of forest products produced in Minnesota, 3) Increase the wood-using efficiency of Minnesota's forest products industry, so that the resources of the state's forest lands are utilized to best meet the needs of Minnesota's citizens.

Current markets for forest products vary throughout the state, based on available tree species and location. Jack pine pulpwood, for instance, enjoys strong markets in the Baudette Area, but has virtually no demand around Bemidji.

Some species in the Baudette Area, jack pine, red & white pine, and tamarack, are well balanced in terms of supply versus demand, where markets approximately equal the annual supply. Aspen, birch, balm of gilead, balsam fir, and spruce are in oversupply. Except in Koochiching County, cedar has more demand than supply.

Small sawmills are abundant in the Baudette Area, and, in general, sawbolts of most species can be sold; however, there is a limited pulpwood market.

In June of 1988, however, Boise announced a major expansion which will dramatically change the amount of wood purchased from the Baudette Area. The planned expansion and modernization will cost over \$500,000,000. When complete, the mill will employ 190 additional people and consume an additional 350,000 cords of wood. A portion of this wood will come from Lake of the Woods and Roseau Counties, providing a much needed aspen pulpwood market.

Due to a Canadian surcharge, the Boise Canada plant in Fort Francis buys little or no

wood directly from Minnesota producers. Most of their Minnesota wood is purchased through the International Falls mill. International Bilrite recently began manufacturing aspen and balm of Gilead sheathing board in International Falls. Currently in the start-up phase, they are not expected to consume much wood from the Baudette Area, except perhaps from the easternmost portion.

Improvements are needed in markets for pulpwood sizes of many species. While the Boise expansion will offer aspen pulpwood markets, other species, often found mixed in aspen stands, still have no market. Pulpwood is generated from the upper parts of a tree each time a sawlog is harvested, and the lack of pulpwood markets may hinder timber harvesting in the area as a whole.

The high volume of aspen sawed presents another opportunity for the establishment of some sort of value-added facility. While much of the volume is low-grade and of little value, the high-grade lumber could be sorted out and further processed. Low grade lumber would go to traditional markets, such as pallets.

Transportation of timber is a major problem in and around the Baudette Area. The long hauling distances to major markets make transportation costs critical. Railroads are no longer an option. In recent years, the Champion Paper concentration yard at Williams was closed and the Burlington Northern line from International falls to Bemidji was abandoned. These events spelled the end of railroad importance in this area for wood transport.

Highways have become the most important method of wood transportation. Primary roads are Trunk Highways 11 and 72, running east and west from Warroad to International Falls and south to Blackduck, respectively. Both are year-round, ten-ton routes. Secondary haul roads are county and township roads or forest roads. Major portions of Lake of the Woods county are accessed only by these secondary roads.

The primary goal for utilization and marketing in the Area is to increase the use of surplus wood resources, thus increasing the benefits derived from that use. Benefits are social and economic, as well as the timber, wildlife, and recreational advantages of a managed forest.

The surplus resources shown below in Table 7 include all ownerships and all site classes. Almost 75% of the stands are within one mile of a road. These figures would be of

use to primary (roundwood-using) industries. While the volumes are not adequate to support a major industry, they would certainly be sufficient for a smaller facility, using perhaps 30,000 cords/year.

Secondary industries are interested in mill production in the local area. Table 8 shows volumes of major species that were sawed in mills in counties around Baudette.

Table 7: Surplus Forest Resources in Counties Surrounding Baudette
(for species with over 10,000 cds/yr annual surplus)

- Volume In Thousand Cords -

County	Species	Allowable Harvest	Annual Surplus	Accumulated Surplus
Lake of the Woods	aspen	44	36	340
	balm	16	15	148
Roseau	aspen	31	30	280
Beltrami	balm	24	20	198
	birch	27	15	147
Koochiching	cedar	24	20	200
	balsam fir	44	20	205
	balm	32	22	221
	birch	36	30	302
	red maple	15	14	142
Totals	Species	Allowable Harvest	Annual Surplus	Accumulated Surplus
.....	aspen	75	66	620
.....	balm	72	57	567
.....	birch	63	45	449
.....	balsam fir	44	20	205
.....	red maple	15	14	142

Economic development opportunities, based on surplus forest resources, will be identified and promoted. Recruiting new industries is the most difficult form of economic development, with the poorest cost/benefit ratio. Because of the long hauling distance from major markets, the Baudette Area is not currently under consideration for immediate industrial development plans by a major industry. A local economic development group is active, however, and, considering additional surplus resources available from surrounding counties, they may succeed in attracting a new wood using industry to the area.

A major emphasis of the Utilization & Marketing program is business retention, insuring that existing wood-based companies in the area do not fold for lack of business skills. While new wood industry is desirable, existing wood industries are crucial to the economic well-being of the area, and every effort must be made to maintain them. Small wood product companies, such as sawmills, are frequently untrained in business management skills, and tend to gain the most from assistance. Key wood products manufacturers will be provided with technical and business management assistance, in an effort to keep them operating productively.

Developing existing industries is generally more successful than recruiting new ones; however, there are few established major wood products industries that impact the Baudette Area. The major expansion and modernization of the Boise paper mill at International Falls will definitely impact the Baudette area, as well as the Warroad area to the west. This expansion, however, will not be operational until late 1990.

Wood energy will be promoted in feasible commercial and institutional applications. Potential conflict between energy and industrial resource users will be monitored and managed.

Northern States Power had been considering converting several existing power plants in Minnesota to wood fuel within the next decade. Their wood energy program has been delayed at this time. If these conversions are successful, NSP may consider constructing new power generation plants at various locations along their existing power transmission grid (which bisects Roseau and Lake of the Woods Counties). A plant of this sort would be a major wood consumer, and would have a substantial impact on the wood resource. Preliminary estimates of available resources

Table 8: Volumes of Major Species Sawed in 1985

- Volume in Thousand Board Feet -				
County	Aspen Species	Pine Species	Cedar Species	Birch Species
Lake of the Woods	700.....	1,400	200	50
Beltrami	5,800.....	4,700	600	1,900
Roseau	90.....	1,200	200	10
Koochiching.....	18,000.....	3,000	2,000	300
Totals.....	24,590.....	10,300	3,000	2,260

indicate that the construction of such a plant in the Baudette area is feasible. The local development group has already discussed this possibility with NSP, and they are expected to continue to pursue it.

The flow of market information within the forest products community will be increased, to assist the development of existing companies, particularly in value-added processing.

A value-added or secondary processing industry adds value to lumber or other raw materials by processing it in some way, such as by kiln drying, planing, finishing, making a product, etc. This type of industry is particularly desirable because value is added to relatively low-value lumber while it is still in the local area, increasing economic benefits.

Certain secondary industries could reduce the substantial transportation costs incurred through bringing products from the Baudette area to markets in the southern part of the state. Kiln dried planed lumber, for example, weighs much less and includes less waste than rough green lumber, so a truck can haul more volume and value per load. The resultant savings in transportation costs should justify the investment of establishing a drying and planing facility locally.

Christmas trees, cut from stagnant spruce swamps, have recently been test marketed. Ten to twenty years ago, they were a steady, although seasonal, product in the area. If the market tests are successful, this industry might see some increased activity.

Specific Proposals:

1. Complete a detailed analysis of forest resources in the vicinity of the Baudette Area, to identify opportunities for increased use of surplus resources.
2. Identify opportunities for developing value-added industry.
3. Research treated wood market and supply relationships, and identify expansion opportunities.
4. Continue to provide marketing, technical, and business management assistance to key wood products companies, in an effort to retain existing industries.
5. Identify resources and residues available for energy use.
6. Promote feasible applications of wood energy, and manage potential conflicts between commercial and energy wood users.

FIRE MANAGEMENT PROGRAM

The goal of the fire management program is to provide effective wildfire control while promoting the safe and effective use of fire as a resource management tool.

The major components of wildfire control are fire prevention, presuppression, and suppression. The aim of the prevention program is to reduce the number of wildfires by informing the public of the dangers and potential losses that can result from careless use of fire. Presuppression focuses on the need to adequately prepare and maintain fire suppression forces so that wildfires can be suppressed. Presuppression is done through extensive planning, training, rural fire department assistance, fire detection, and interagency cooperation. Suppression activities involve the efficient control and extinguishment of wildfires without loss of life, and minimal property and natural resource damage.

Baudette Area Fire History

Minnesota has a history of large and destructive forest fires. The Baudette and surrounding communities will not forget about the many destructive forest fires which occurred in the early 1900s. In the fall of 1910, a terrible fire wiped out the towns of Baudette and Spooner (see Figure 9).

Following this fire, public sentiment demanded a better fire control system and as a result the legislature of 1911 appropriated funds and passed laws setting up a system of rangers and ranger districts throughout the forested area of the state.

Even with the changes in land use and development which occurred over the last century, the potential for losses of life and property from wildfire exists.

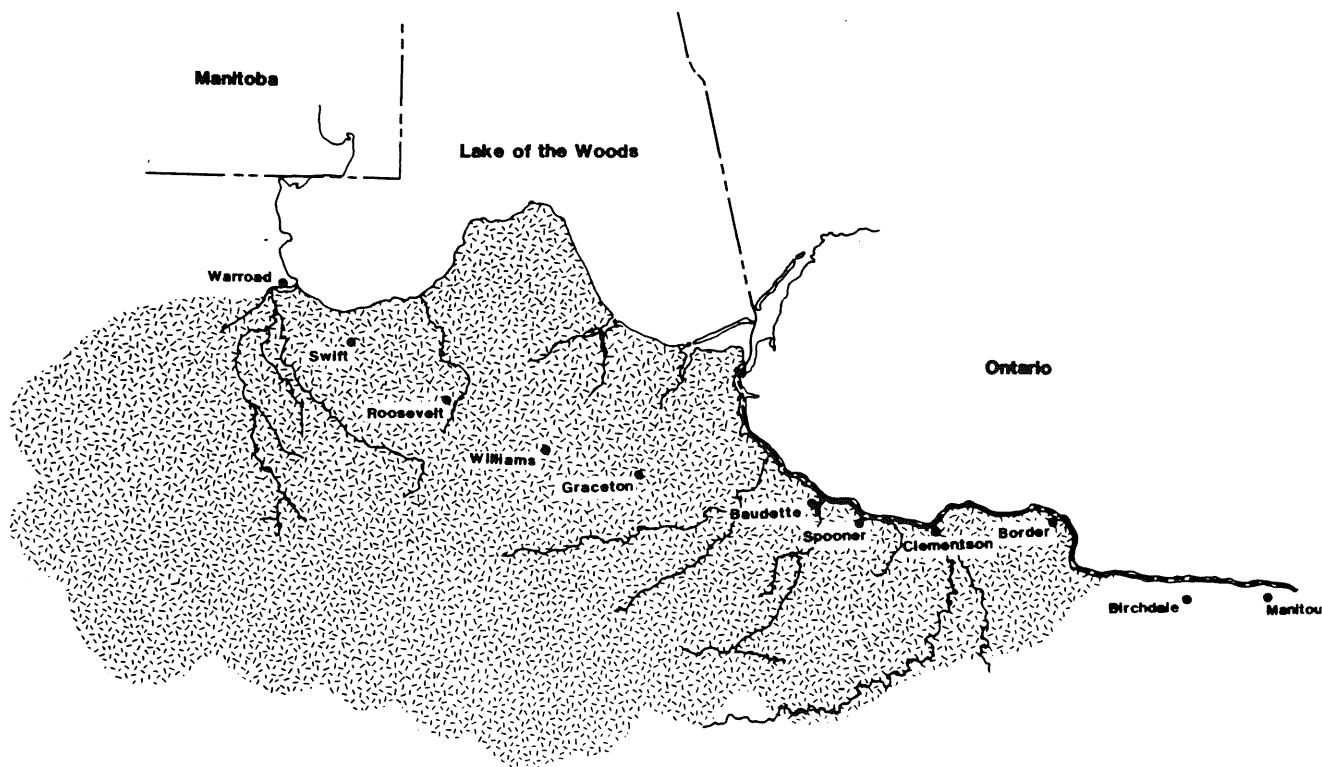


Figure 10

Baudette averages about 35 fires each year during spring and fall fire seasons. About 42% of the wild fires are incendiary and another 40% are caused by residents burning debris. Most fires are running grass fires. Historically, the large catastrophic fires in Baudette have been in late summer or early fall. Peat and crown fires are fewer in number but are more difficult to control, contain and extinguish.

The major effort for this planning period will be in the area of fire prevention. A more intensive program of education and the continued enforcement of burning laws will reduce the number of fires and the potential for loss.

Presuppression activities will include equipment upgrading, fine tuning the manning guide, and continued training of pertinent and casual fire fighters. The use of towers versus aircraft detection will also be evaluated in terms of cost effective detection.

Resource Management Units

RMU 1

RMU 1 is a critical fire protection area. Most residents and agricultural areas are located in this RMU. Volunteer township fire wardens serve an important role by issuing burning permits.

Cooperation and assistance from volunteer rural fire departments are used when structure are involved and where large volumes of water are required for short periods of time. Distinct areas of fire hazard occur along highways 11 and 72 and near the communities of Carp, Pitt, Graceton, Williams, and the resort area along Highway 172.

RMU 2

Although the causes of wild fires in RMU 2 are similar to RMU 1, including debris burning and incendiarism, the occurrence is much less. A high hazard area in this unit is in the large pine types south of Williams where fire occurrence is low but a possibility of large uncontrollable crown fires exist.

RMU 3

RMU 3 is traditionally a low fire occurrence area due to its inaccessibility. Nearly all fire occurrences are along Highway 72 south of Baudette.