

REVISING FOREST PLANS and MONITORING & EVALUATION REPORT

Land and Resource Management Plan Chippewa National Forest Fiscal Year 1997

APPROVAL AND DECLARATION OF INTENT

I have reviewed the FY 97 Monitoring and Evaluation Report for the Chippewa National Forest that was prepared by an interdisciplinary team in July 1998. The Monitoring and Evaluation Report meets the intent of both the Forest Plan (Chapter V) as well as the regulations contained in 36 CFR 219.

This report is approved:

/s/ Steven T. Eubanks

STEVEN T. EUBANKS
Forest Supervisor

September 18, 1998

Date

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EXECUTIVE SUMMARY

REVISING FOREST PLANS and FY 1997 MONITORING & EVALUATION REPORT

Chippewa National Forest

We have been monitoring and evaluating Land and Resource Management Plan (Forest Plan) implementation since its approval in 1986. Our Monitoring and Evaluation plan is described in chapter V of the Forest Plan. We've monitored actual outputs against predicted outputs, how well we implemented standards and guidelines, how well those standards and guidelines protect forest resources, and whether or not our actions are moving the Forest toward the long-term desired future conditions described in chapter IV of the Forest Plan. Monitoring plays a crucial role in surfacing irregularities or areas that may require change.

Forest Plan Revision

The Chippewa and Superior National Forests are working together to revise their Forest Plans. A separate Forest Plan will be prepared for each National Forest. We are concentrating our efforts on those parts of the existing (1986) Forest Plans that need to be changed. The two National Forests are working closely with tribal, state, and county governments throughout the process. Public participation is important in developing revised Forest Plans that are valid, reasonable, implementable and have public support. Revised Forest Plans will guide management of the Chippewa and Superior National Forests for the 10 to 15 year period following their approval.

A Notice of Intent (NOI) to revise the Forest Plans for the National Forests in Minnesota was published in the Federal Register on August 29, 1997. It was mailed to 2,200 individuals and posted on the Internet. The NOI details the 1) need for Forest Plan revision, 2) planning criteria for developing revised Forest Plans, 3) a proposal for revising Forest Plans, and 4) and invitation to the public to become involved in the revision process by sending us written or oral comments on the proposal.

The 1998 Monitoring and Evaluation Report will contain a more detailed description of the results of content analysis of the NOI comments and activities associated with generating alternative courses of action.

During 1998, Forest Plan Revision efforts will focus on preparing background information and conducting public workshops where we will ask the public to help us develop alternative courses of action for making changes to the Forest Plans. Once alternatives are developed, their environmental, social, and economic impacts will be disclosed to the public in a single Draft Environmental Impact Statement (DEIS) for both National Forests in Minnesota.

Annual Monitoring Summary

During 1997, we completed an evaluation of the Portage Creek Bridge. The purpose of the evaluation was to determine the nature and significance of the site and whether or not it is eligible for listing on the National Register of Historic Places. It was determined to be eligible to be listed. Over the period 1986-1996 (11 years), we sold 84 percent of the acres of timber we scheduled to sell in the Forest Plan and 88 percent of the timber volume we predicted would be harvested from those acres. Our fisheries program has become more active in monitoring. Sixty-two stream crossings on Forest roads were evaluated for erosion problems. Three of the 11 crossings with extreme erosion will be reconstructed in fiscal years 1998-1999. We monitored other activities and accomplishments related to wildlife habitat, threatened and endangered species, fish habitat, heritage resources, recreation, unique and cultural area use, soil and water quality, road construction, timber, land exchange, and special uses program. We have suspended comprehensive Forestwide field level monitoring in order to focus on Forest Plan Revision.

Our monitoring results and evaluations indicate that we are implementing the Forest Plan adequately and, in some cases, better than adequately. Soil and water quality were not adversely impacted, and all of our programs are managed within Forest Plan direction and within the limits of funding received from the United States Congress. We continue to publish the Chippewa Quarterly, a schedule of proposed actions and decisions that implement the Forest Plan. We encourage the public to become part of our management process by participating in the Forest Plan Revision effort as well as commenting on project proposals through the NEPA process. Information about planning can be found on the Internet at www.fs.fed.us/r9/chippewa.

**REVISING FOREST PLANS and
1997 MONITORING & EVALUATION REPORT**

TABLE OF CONTENTS

	<i>Page</i>
APPROVAL AND DECLARATION OF INTENT	i
EXECUTIVE SUMMARY	ii
TABLE OF CONTENTS	iv
INTRODUCTION	v
I. FOREST PLAN REVISION	1
II. AMENDMENTS TO THE FOREST PLAN, 1997	2
III. PROJECT FUNDING, 1997	2
IV. MONITORING RESULTS AND EVALUATION	3
APPENDIX: List of Preparers	

REVISING FOREST PLANS and MONITORING & EVALUATION REPORT

INTRODUCTION

The Chippewa National Forest Land and Resource Management Plan (Forest Plan) was approved in June 1986, and implementation began that same year. The National Forest Management Act Planning regulations specify that, "at intervals established in the Forest Plan, implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied. Based on this evaluation, the interdisciplinary team shall recommend to the Forest Supervisor such changes in management direction, revisions, or amendments to the Forest Plan as are deemed necessary." This report documents what topics will be addressed in our Forest Plan Revision effort and evaluates the results of monitoring Forest Plan implementation in fiscal year 1997.

I. FOREST PLANS AND FOREST PLAN REVISIONS

The Chippewa and Superior National Forests are working together to revise their Forest Plans. A separate Forest Plan will be prepared for each National Forest. We are concentrating our efforts on those parts of the existing (1986) Forest Plans that need to be changed. The two National Forests are working closely with tribal, state, and county governments throughout the process. Public participation is important in developing revised Forest Plans that are valid, reasonable, implementable and have public support. Revised Forest Plans will guide management of the Chippewa and Superior National Forests for the 10 to 15 year period following their approval.

A Notice of Intent (NOI) to revise the Forest Plans for the National Forests in Minnesota was published in the Federal Register on August 29, 1997. It was mailed to 2,200 individuals and posted on the Internet. The NOI details the 1) need for Forest Plan revision, 2) planning criteria for developing revised Forest Plans, 3) a proposal for revising Forest Plans, and 4) and invitation to the public to become involved in the revision process by sending us written or oral comments on the proposal.

Nearly 500 individuals, groups, and government agencies provided us with comments and or attended one of the 14 open houses we held in and around the Forests and in St. Paul, Minnesota. The comment period was three months long, ending on November 28, 1997. Comments to the NOI were analyzed in a Content Analysis Report and used to identify issues that will ultimately generate alternative courses of action for making changes to the Forest Plans. The Content Analysis Report or Summary can be obtained from either the Chippewa or Superior National Forest Supervisor's Office. We are not beginning at ground zero to revise our Forest Plans. We engaged the public to help us limit our scope and these are the topics of management we intend to focus on in revision:

Biological Diversity	Silvicultural Prescriptions
Habitat Fragmentation	Fire Management
Ecosystem Health	Riparian Management
Forest Age-class Distribution	Fish Habitat Management
Old Growth Forests	Allowable Sale Quantity of Timber
Rare Natural Resources	Wildlife Habitat Management

The 1998 Monitoring and Evaluation Report will contain a more detailed description of the results of content analysis of the NOI comments and activities associated with generating alternative courses of action.

During 1998, Forest Plan Revision efforts will focus on preparing background information and conducting public workshops where we will ask the public to help us develop alternative courses of action for making changes to the Forest Plans. Once alternatives are developed, their environmental, social, and economic impacts will be disclosed to the public in a single Draft Environmental Impact Statement (DEIS) for both National Forests in Minnesota. The DEIS and a Draft Revised Forest Plan for the Chippewa and for the Superior will be mailed to the public for review and comment. After the public has had ample time to review and comment on our drafts, we will use their comments to finalize the Environmental Impact Statement. The Eastern Regional Forester will select a preferred alternative. We will prepare two Revised Forest Plans. Throughout the Revision process, the public will have received four formal requests to become involved in our process: 1) Pre-NOI or Need for Change, 2) Notice of Intent to revise Forest Plans and request for comments, 3) Alternative development workshops, and 4) Draft Environmental Impact Statement and Draft revised Forest Plans request for comments. We also dialogue informally throughout the process at the convenience of the public interested in management of the National Forests in Minnesota.

If you would like to be involved in our Revision effort or would like to be placed on our Revision mailing list, please contact Brian Sandberg at the Chippewa National Forest Supervisor's Office, 218-335-8623, or mail in your request to Forest Plan Revision, Route 3 Box 244, Cass Lake, MN 56633.

II. AMENDMENTS TO THE FOREST PLAN, 1997

There were no amendments approved in 1997.

III. PROJECT FUNDING, 1997

Budgets are allocated annually by Congress in amounts and mixes that reflect Congressional priorities and expectations. Administration objectives and Forest Service national and regional priorities further influence Forest budgets.

Our fiscal year 1997 budget was slightly greater than the 1996 allocation.

<u>FY</u>	<u>Total Budget (M\$)#</u>
93	\$ 9,111
94	\$ 9,387
95	\$ 8,810
96	\$ 8,139
97	\$ 8,295

Total regular Forest Service allocated.

During fiscal year 1998, only National Forests that issued a Notice of Intent prior to fiscal year 1998 to revise their Forest Plans will be permitted to continue work on revision. The Chippewa and Superior National Forests will continue their revision efforts.

Results:

We continue to rely on partnerships with other public and private organizations and volunteers to assist in conducting monitoring of Forest Plan implementation and meeting the Forest Service mission. Employing partnerships and volunteers benefits us in two ways; it leverages the funding we receive from Congress and promotes public involvement in National Forest management.

IV. MONITORING RESULTS AND EVALUATION

Purpose of Report --- Monitoring and evaluation of Forest Plan implementation is required by the National Forest Management Act (NFMA) Planning Regulations. The purpose of this report is to document the results of the Chippewa National Forest's monitoring and evaluation efforts for fiscal year 1997. Specifically, the report provides a summary of the results of monitoring followed by the ID team's evaluation of these results. These evaluations are the basis for determining:

- A. How closely management activities on the Forest conformed to the Forest Plan,
- B. Whether the Forest Plan needs to be revised,
- C. Whether amendments to the Forest Plan are needed,
- D. Whether amendments approved during the previous years are appropriate and have been adequately documented, and
- E. What types of follow-up actions need to be taken immediately and in the future.

In addition, the monitoring results and evaluation report will be used to provide updated information for future planning efforts.

Forest Plan Monitoring Direction --- Direction for the Chippewa National Forest's monitoring and evaluation effort is contained in Chapter IV of the Forest Plan. This direction is expanded into a monitoring plan which is included in Chapter V of the Forest Plan.

Monitoring Data and Evaluation

This section displays monitoring results and evaluation of outputs and accomplishments, compliance with standards and guidelines, NFMA requirements, measured effects of implementation, management indicator species, and candidate sensitive species. Rationale for proposed changes to the Forest Plan and research needs may also be discussed within this section.

WILDLIFE

Structural and Nonstructural Accomplishments

Wildlife Population Monitoring

Other Wildlife Monitoring

FISHERIES

RECREATION

HERITAGE RESOURCES

INTERPRETATION OF NATURAL AND HISTORIC AREAS

TIMBER

Sell, Harvest, Reforestation and TSI

TSPIRS

NFMA Requirements

- Land Suitability for Timber Production
- Maximum Size Limits for Harvest Acres
- Restocking of Land
- Insect and Disease Control

ROADS

SOIL

WATER - LAKES AND STREAMS

LANDS

SPECIAL USES

BIRD ABUNDANCES

GOBLIN FERN ADMINISTRATIVE STUDY

GOBLIN FERN VIABILITY ASSESSMENT

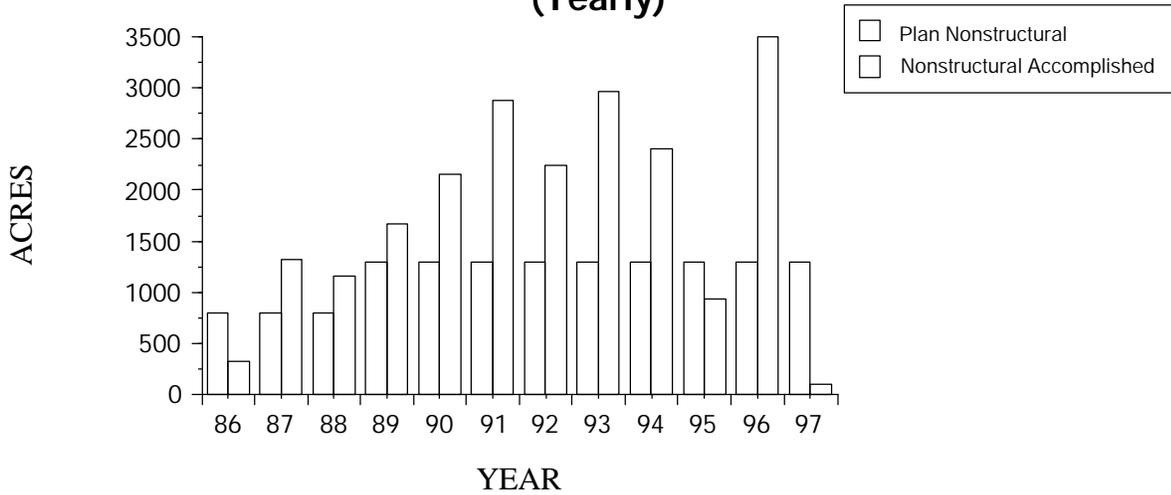
SUSTAINABLE FOREST

OFF-HIGHWAY VEHICLE MANAGEMENT

VEGETATION COMPOSITION

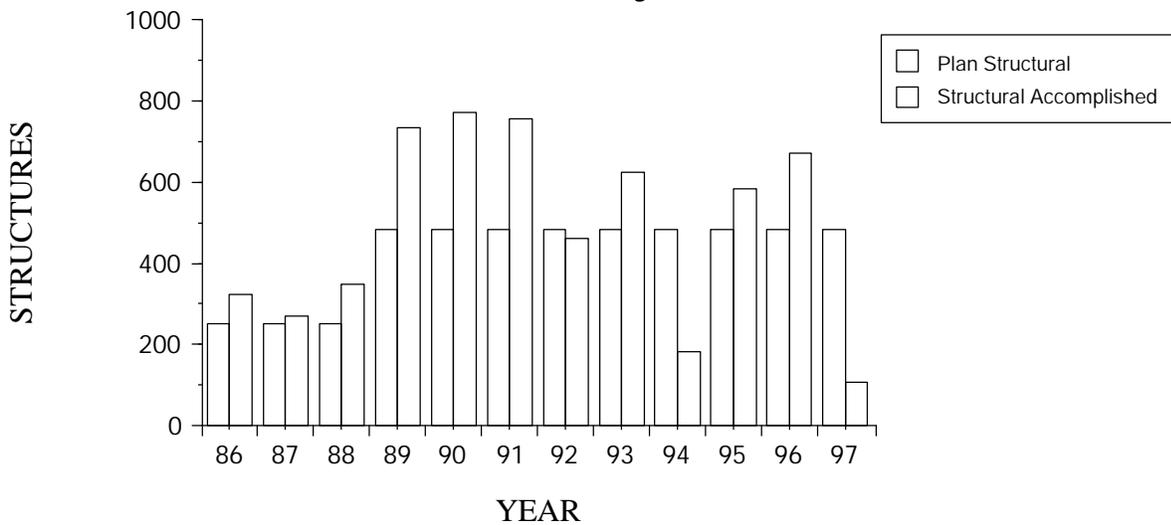
WILDLIFE

NONSTRUCTURAL HABITAT IMPROVEMENT (Yearly)



Chippewa National Forest

STRUCTURAL HABITAT IMPROVEMENT (Yearly)



Chippewa National Forest

Results:**Structural and Nonstructural Accomplishments**

There are two methods employed for habitat improvement for wildlife, including threatened and endangered species: nonstructural habitat enhancement or restoration (acres) and structural habitat improvement (structures). The items included in nonstructural are seeding, planting, deer habitat improvement, permanent opening construction, and prescribed burning. The structural category includes nesting islands and boxes. All funding categories are included: O&M, KV, and Challenge Cost Share. In fiscal year 1997, we produced relatively few acres and structures that improve wildlife habitat. Our funding was very limited and we relied on our past accomplishments of exceeding Forest Plan goals to get through a lean financial year.

Summary of Wildlife Population Monitoring

This category monitors and evaluates population trends of selected wildlife species to analyze the potential effects of management practices on wildlife habitats and populations.

MANAGEMENT INDICATOR SPECIES

Activity, Effect, Practice or Output	Unit of Measure	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY96	FY97
American woodcock	Singing males per route	4	3	5.1	5.4	5.7	4.0	2.8	4.2	N/S	2.6
Bald eagle	Active breeding pairs	135	144	154	160	175	186	88	174	189	166
	Successful breeding pairs	91	98	101	99	101	108	119	97	97	ND
	Young per active nest	1.08	1.13	1.03	1.00	0.80	0.92	0.99	0.93	0.76	ND
Barred owl	Owls per stop	0.21	0.40	0.50	0.40	0.30	0.40	0.30	0.50	N/S	0.26
Common loon	Active breeding pairs per lake	0.83	0.94	0.78	0.74	1.15	0.67	0.83	0.80	N/S	ND
	Average brood size at fledging	0.66	0.41	0.61	0.38	0.49	0.33	0.30	0.31	N/S	ND
Parula warbler	No. of pairs			30182	<i>a</i> 6332	3048	4815	4500	ND	ND	3800
Pileated woodpecker	Calls per stop	0.32	0.46	0.42	0.37	0.24	0.22	0.41	0.32	N/S	0.63
Ring-necked duck	Ducklings/acre of wetland	0.23	0.19	0.20	0.16	0.15	0.12	0.16	ND	N/S	ND
	Pairs per acre	0.08	0.06	0.07	0.05	0.05	0.04	0.05		N/S	ND
Ruffed grouse	Drums/stops	1.6	2.2	1.6	1.5	0.8	0.6	0.7	0.7	N/S	2.0
Blackburnian warbler	No. of pairs	N/S	20,311	25,407	<i>a</i> 7,693	5,758	4,381	3,639	ND	ND	9,400
Pine warbler	No. of pairs	N/S	34,751	42,616	<i>a</i> 3,139	3,699	5,193	4,207	ND	ND	2,830
Gray wolf	No. of wolves	N/S	N/S		80 to 90	100	N/S	N/S	N/S	N/S	N/S
White-tailed deer	Deer per sq.mi.	12.4	12.2	14.7	16.3	18.1	17.8	18.6	18.0	ND	11.0
Walleye	Pounds/acre	N/S	ND	ND	ND	ND	ND	ND	ND	ND	ND

a In 1991, the method used for monitoring changed, so were unable to compare with previous years.

N/S Not Scheduled.

ND No Data

Results:

Population targets or base line populations were established in the Forest Plan for breeding bald eagles (150 pair), gray wolves (40-50 individuals), and white-tailed deer (25-30 per square mile).

The American woodcock populations on the Chippewa National Forest appear to have declined to levels estimated in 1994. However, the ten years of monitoring data collected on this species does not indicate a downward population trend.

The number of active bald eagle breeding pairs appears to be leveling off on the Chippewa. While the increasing competition among breeding pairs at higher nesting densities is thought to be the primary factor in breeding success declines, there may be a need for further analysis of this aspect of eagle population dynamics. This may result in a somewhat different monitoring strategy geared toward more focused population sampling in portions of the Forest with varying eagle nesting densities.

The number of barred owls recorded per stop along established survey routes declined over that recorded for 1995. According to the data collected over the past several years, barred owl numbers appear to fluctuate up and down from year to year without drastic variations. No definite trend in barred owl populations can be established at this time.

The pileated woodpecker population appears to have increased substantially from that estimated in 1995. The calls per stop recorded in 1997 are the highest recorded during the previous seven years.

The number of male ruffed grouse drumming per stop on surveys conducted in 1997 was up from that recorded for 1995. The ruffed grouse population appears to be increasing in the cyclic manner characteristic of their population dynamics.

FISHERIES

Results:

The fisheries habitat management program is composed of activities ranging from coordination of fisheries habitat needs with other forest management activities, angler education, aquatic habitat inventory, and restoration and enhancement of lake and stream habitats. Lake and stream restoration and enhancements include structural and non-structural habitat improvements which address environmental features limiting the productive capability of lake and stream fish populations.

In fiscal year 1997, the fisheries habitat management program and its partners restored or enhanced 359 acres of lake habitat and 17 miles of stream. In addition, 5,730 acres of lake was inventoried and 62 stream crossings on Forest roads were evaluated. Angler education efforts were focused on National Fishing Week activities, which included 3 fishing events for children. Over 250 children attended these events.

Evaluation:

The Forest surveyed fish habitat in one mile of stream and 5,730 acres of lakes within the Forest boundary in cooperation with the Minnesota Department of Natural Resources (DNR), using DNR survey procedures. The information is used to assess aquatic habitats in lakes and their tributaries and to develop restoration and enhancement activities. Sixty-two stream crossings on Forest roads were evaluated. Of the sites monitored, 11 were considered to have extreme erosion problems, 18 had moderate erosion, 11 had minor erosion, and no erosion was observed at 22 crossings. Extreme erosion is characterized by erosion around the culvert or bridge structure, culvert outlet erosion and pool formation at the culvert outlet, shoulder and ditch erosion, or heavy sediment loading in the stream, as a result of run-off off the road surface or erosion of the crossing structure. Three of the 11 crossings with extreme erosion will be reconstructed in fiscal years 1998-1999.

The Forest stabilized 900 feet of shoreline in the Richard's Townsite area of Lake Winnibigoshish through a partnership with the Natural Resources Conservation Service, Cass County Soil and Water Conservation District (SWCD), Forevergreen, and Minnesota DNR. A 10-year monitoring plan has been developed to monitor the success of the two stabilization and revegetation treatments. A similar partnership with Itasca SWCD and summer home permittees in the PlugHat Point area of Lake Winnibigoshish resulted in the stabilization of 1,420 feet of shoreline.

A Forest Service effort to monitor soil erosion on County Road 83 at the Shingobee River crossing led to a partnership project with Cass and Hubbard County Highway Departments, the Tri-County Leech Lake Watershed Project, Forevergreen,

the Minnesota DNR, and the Cass County SWCD. The partnership resulted in the reconstruction and paving of 2,200 feet of roadway near the Shingobee River.

Other fiscal year 1997 fisheries habitat improvement projects included 15 acres of tree planting along the shoreline of lakes and streams and pulling beaver dams in spring in the Dunbar, Popple, and Third Rivers to allow walleyes to migrate to spawning areas. Monitoring walleye movement and spawning, through the use of night spotlighting and scap-netting, helps us pinpoint areas of spawning activity.

We continued field data collection for an ecological classification of streams at 90 sites. We monitored water temperatures by placing HOBOTemp data recorders in 90 stream reaches and monitored conductivity, color, and width throughout the summer. In addition to the water monitoring, we set minnow traps and seined 25 stream reaches. These data will be used to further refine the ecological classification. Fish data will also be used in an Index of Biotic Integrity, which is bioassessment/biomonitoring technique that allows attributes of fish communities to be used to assess biotic integrity and environmental quality of streams and rivers.

RECREATION

Results:

Recreation use on the Chippewa was 1,707,319 recreation visitor days (rvds) in 1997. Of this use, 18 percent was camping, picnicking, and swimming; 25 percent mechanized travel and viewing scenery; 5 percent hiking, horseback riding, and canoeing; 1 percent cross-country skiing and sledding; 10 percent cabins and resorts; 8 percent hunting; 26 percent fishing; and 7 percent was other activities.

Evaluation:

Peak use on the Chippewa occurs at fishing season opener, opening of deer hunting season, summer holidays, and prime snowmobiling season. Quality of data summarized for use reporting is highly variable.

HERITAGE RESOURCES

Results:

Compliance with various laws and regulations requires that the Chippewa National Forest collect information about the location of heritage resources (usually archaeological and historic sites). This must be accomplished prior to any activity which may damage or destroy the site. The Forest conducts reconnaissance field surveys to search for heritage resources in all proposed project areas which might involve earth disturbance.

A total of 22,041 acres were surveyed in 1997 in support of 109 proposed projects. Projects which required surveys included timber sales, permanent openings, prescribed burns, utilities installations, gravel pit development, land transfers, special use permit activities, and recreation facility development and maintenance. The surveys resulted in the identification of 69 previously unknown heritage sites and relocation of 17 previously recorded sites, which can now be protected from adverse affects. 171 no-effect reviews were also documented. These are projects which were planned in areas which had already been surveyed in a previous year, or which did not require survey for another reason (such as prior disturbance).

Evaluation of the Portage Creek Bridge site was completed in 1997. The purpose of the evaluation was to determine the nature and significance of the site and whether or not it is eligible for listing on the National Register of Historic Places. The site was found eligible and submitted as a recommendation to Leech Lake Historic Preservation Office.

One request for repatriation of artifacts under the Native American Graves Protection and Repatriation Act (NAGPRA) was received from Leech Lake Reservation. A "Notice of Intent to Repatriate" for publication in the *Federal Register* is in preparation.

Numerous public interpretation and education activities were conducted by heritage staff. These included presentations to local schools, tourists, and community groups, as well as formal training sessions in partnership with other agencies. The

largest effort was an archeological excavation of the South Pike Bay site. A crew of 32 volunteers contributed 1,260 hours to examination of the site during the Passport in Time program.

Plans are being prepared for the restoration of the education building at Rabideau CCC Camp. The restoration is being accomplished through partnerships with private organizations and an ISTE A grant. Following restoration, the facility will be used for public interpretation of the CCC-era.

Leech Lake Reservation has expressed increased interest in identification and management of traditional resources. Chippewa National Forest has initiated a program to identify and record traditional resource areas. The information gathered will be used in project planning, assessment, and implementation as it becomes available.

INTERPRETATION OF NATURAL AND HISTORIC AREAS

Results:

No formal monitoring of use occurred in 1997. An amendment or revision to the Forest Plan removing some sites from interpretive development is still recommended.

TIMBER

Results:

59.2 million board feet (MMBF) of timber was offered for sale in 1997; 7.2 MMBF of timber did not sell in 1997.

52.1 MMBF of timber was harvested in 1997. This is the lowest harvest level since we began implementing the Forest Plan in 1986.

The Forest Plan scheduled 81,072 acres to be sold with regeneration prescriptions over the period 1986-1997 (12 years). The Chippewa actually sold 68,178 acres or 84 percent of those scheduled. The Forest Plan scheduled 15,264 acres to be sold with intermediate harvest prescriptions over the period 1986-1997 (12 years). The Forest sold 16,141 acres or 106 percent. Average overall accomplishment of acres sold for regeneration and intermediate harvests was 88 percent.

The Forest Plan predicted that volume from conifer timber stands for the period 1986-1997 (12 years) would be 220.8 MMBF. We actually sold 211.6 MMBF or 96 percent of predicted. The Forest Plan predicted that volume from hardwood timber stands for the period 1986-1997 (12 years) would be 714 MMBF. We actually sold 610.0 MMBF or 85 percent. Average overall accomplishment of conifer and hardwood volume was 88 percent.

The Chippewa National Forest Timber Sale Program Information Reporting System (TSPIRS) report has been completed each year since 1987. The accounting system was developed jointly by the Forest Service and the General Accounting Office (GAO). The reports serve as a source of timber financial information and a means of monitoring the Forest Plan with regard to the timber program. The report is divided into three major areas: Revenue and Expense Account, Economic Account, and Employment Income and Program Level Account. Copies of the 1997 report are available from the Chippewa National Forest and through the Internet.

The Statement of Timber Sale Revenues and Expenses displays the costs and revenues associated with the Forest's annual timber sale program. Fiscal year 1997 revenues were \$3,546,836, expenses \$2,882,213, for a net gain of \$664,623 before payment to the state. National Forest revenues, including timber sale revenues, are paid to the state and distributed to the counties where Forests are located to be used for roads and schools. FY 97 payment to the state from timber revenue was \$830,536.

The Economic Account compares the costs and benefits occurring on harvested lands with the cost and benefits on those same lands had there been no harvest. Present net value of the Economic Account for FY97 was \$1,424,839.

The Employment, Income, and Program Level Account focuses on the economic importance and social relationships between the Forest's timber sale program and the local economy, as expressed by indicators such as employment, income, and 25 percent fund payments to state and local government, and federal income tax paid on income to the community.

For fiscal year 1997, Chippewa timber sales generated 423 jobs, \$27.6 million income to the local community, and \$4.1 million in federal income taxes paid on income to the community.

Evaluation:

The increased emphasis on implementing ecosystem management has caused a relative increase in the amount of intermediate harvest on the Forest. For the six-year period of 1986-1991, intermediate harvest accounted for an average of 13 percent of the total acres harvested. For the six-year period of 1992-1997, intermediate harvest accounted for an average of 27 percent of the total acres harvested. This also explains in part why sold acres of intermediate harvest have increased to 106 percent of planned, and regeneration acres sold have decreased to 84 percent of planned.

Despite the fact that 7.2 MMBF of timber offered did not sell in fiscal year 1997, demand for Chippewa National Forest timber remained strong.

Average stumpage prices paid for National Forest timber decreased by 2.5 percent from 1996.

The Chippewa timber sale program was viable, cost-effective, and a significant part of the local economy in fiscal year 1997.

Sold, Harvest, Reforestation, and TSI Accomplishments

FOREST PLAN PERIOD (1986-1997)

Volume in million cubic feet (MMCF)

Activity, Effect, Practice or Output	Forest Plan Output*	FY 1986 Actual	FY 1987 Actual	FY 1988 Actual	FY 1989 Actual	FY 1990 Actual	FY 1991 Actual	FY 1992 Actual	FY 1993 Actual	FY 1994 Actual	FY 1995 Actual	FY 1996 Actual	FY 1997 Actual
Timber Offered													
Total	12.3	10.7	10.7	12.0	13.4	12.6	12.9	11.7	10.8	9.5	9.1	10.0	9.4
Aspen	8.2	7.9	7.9	8.3	8.9	7.7	7.6	6.9	7.3	5.2	4.7	5.3	5.0
Conifers	2.9	1.8	2.2	3.1	3.3	3.6	3.3	3.1	1.8	2.6	2.9	3.4	3.1
Hardwoods	1.2	0.9	0.6	0.6	1.2	1.3	2.0	1.7	1.7	1.7	1.5	1.3	1.3
Timber Sold													
Total	12.3	10.7	10.9	12.0	13.4	12.6	12.9	11.7	10.8	9.5	8.5	8.8	8.2
Aspen	8.2	7.9	8.0	8.3	8.9	7.7	7.6	6.9	7.3	5.2	4.5	5.0	4.5
Conifers	2.9	1.8	2.3	3.1	3.3	3.6	3.3	3.1	1.8	2.6	2.6	3.0	3.0
Hardwoods	1.2	0.9	0.6	0.6	1.2	1.3	2.0	1.7	1.7	1.7	1.4	0.8	0.7
Timber Cut													
Total	**	12.1	14.6	11.3	11.1	14.4	13.0	14.5	15.8	13.8	11.0	9.8	8.2
Aspen		6.7	8.5	7.5	7.3	9.5	9.2	9.9	10.6	8.3	6.3	6.0	4.4
Conifers		3.6	4.2	2.7	2.9	3.5	2.6	3.3	3.5	3.8	3.0	2.2	2.8
Hardwoods		1.8	1.9	1.1	0.9	1.4	1.2	1.3	1.7	1.7	1.7	1.6	1.0
Regen. Harvest (acres)	6,756	5,804	6,257	6,250	8,248	7,180	6,354	5,525	5,272	5,391	4,215	4,338	3,344
Intermed. Harvest (acres)	1,272	1,076	985	416	738	1,204	1,555	1,611	1,271	1,462	1,319	2,174	2,330
Reforestation (acres)	6,508	6,470	5,977	5,870	6,863	7,496	7,888	7,069	7,276	7,558	6,323	4,618	3,787
Timber Stand Imp (acres)	1,475	3,424	2,960	2,590	1,751	1,871	2,140	2,142	1,971	1,822	2,100	1,932	1,751

* Annual average Forest Plan outputs projected for the period 1986-2000.

** No objective for timber volume or acres cut.

Sold, Harvest, Accomplishments

FOREST PLAN PERIOD (1986-1997)

Volume in million board feet (MMBF)

Activity, Effect, Practice or Output	Forest Plan Output*	FY 1986 Actual	FY 1987 Actual	FY 1988 Actual	FY 1989 Actual	FY 1990 Actual	FY 1991 Actual	FY 1992 Actual	FY 1993 Actual	FY 1994 Actual	FY 1995 Actual	FY 1996 Actual	FY 1997 Actual
Timber Offered													
Total	77.9	67.4	67.7	76.2	84.8	79.6	81.4	73.7	68.1	60.0	57.8	63.4	59.2
Aspen	51.9	50.2	50.0	52.5	56.3	48.9	47.9	43.8	46.1	32.8	29.7	33.6	31.3
Conifers	18.4	11.7	13.9	19.6	20.9	22.6	20.9	19.4	11.3	16.3	18.2	21.5	19.5
Hardwoods	7.6	5.3	3.8	4.1	7.6	8.0	12.6	10.5	10.7	10.9	9.9	8.3	8.4
Timber Sold													
Total	77.9	67.4	69.1	75.9	84.8	79.6	81.4	73.7	68.1	60.0	54.1	55.9	52.0
Aspen	51.9	50.2	50.3	52.5	56.3	48.9	47.9	43.8	46.1	32.8	28.7	31.5	29.0
Conifers	18.4	11.7	14.8	19.6	20.9	22.6	20.9	19.4	11.3	16.3	16.4	19.0	18.7
Hardwoods	7.6	5.3	3.9	3.8	7.6	8.0	12.6	10.5	10.7	10.9	9.0	5.4	4.3
Timber Cut													
Total	**	76.4	92.4	71.5	70.3	91.0	82.4	91.6	100.0	87.3	69.3	62.3	52.1
Aspen		42.4	53.8	47.5	46.2	60.5	57.9	62.6	67.1	52.5	39.5	38.4	27.8
Conifers		22.6	26.6	17.1	18.4	21.9	16.6	20.9	22.1	24.1	19.1	14.1	17.6
Hardwoods		11.4	12.0	7.0	5.7	8.6	7.8	8.1	10.8	10.7	10.7	9.8	6.7

* Annual average allowable sale quantity.

** No objective for cut.

NATIONAL FOREST MANAGEMENT ACT (NFMA) REQUIREMENTS

Land suitability for timber production and maximum size for harvest areas were not monitored in fiscal years 1995 and 1996. Those activities will be conducted as part of the revision process.

Restocking of Land

NFMA regulations require that cutover lands be adequately restocked within five years. Lands are certified as regenerated based upon the results of surveys one, three, or five years after a regeneration activity takes place.

Results:

In 1997, 5,898 acres were reported as adequately stocked.

Evaluation:

Restocking of harvested lands was satisfactory in 1997.

Insect and Disease Control

Gypsy Moth : In cooperation with State and Private Forestry, the Chippewa placed monitoring traps at high use recreation areas in 1997. Recreation vehicles are likely carriers of gypsy moths from infected areas to the Chippewa.

Results:

No moths were captured in 1997.

Evaluation:

The Chippewa had no known gypsy moth population in 1997.

Spruce Budworm : Spruce budworm has become an important pest on the Chippewa, beginning in 1993. The last record of this insect causing any significant damage on the Chippewa was 1954. This outbreak is unique in that it is concentrated in 20 to 40 year old white spruce plantations, rather than in balsam fir stands as is normally the case.

Results:

In 1995, approximately 3,000 acres were defoliated, 2,492 acres in 1996. In 1997, budworm activity declined, but we will continue to monitor the activity and take action as directed by the Forest Plan if necessary.

Evaluation:

The Forest will continue to monitor the outbreak through 1998 and beyond.

ROADS

Activity, Effect, Practice or Output	Unit of Measure (Annual)	Forest Plan	FY 1988	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997
Construction	Miles	19.25	42.6	25.6	14.4	12.2	6.3	2.2	4.7	0.8	2.4	0.0
Collector	Miles	0.25	0.0	2.0	0	0	0	0	0	0.0	0.0	0.0
Local	Miles	19.0	42.6	23.6	14.4	12.2	6.3	2.2	4.7	0.8	2.4	0.0
Open - Local Roads	Miles	* 1,562.0	1,366.7	1,421.0	1,427.6	1,411.0	1,438.1	1,440.0	1,441.0	1,441.8	1,443.6	1,372.0
Closed - Local Roads	Miles	* 162.0	200.9	206.0	214.3	248.0	240.9	241.2	244.9	244.9	245.5	429.0

* This value is the total that would exist in the year 2000.

Results:

There was no road construction in fiscal year 1997. There was approximately 2.8 miles planned, but because the timber sales were deferred until fiscal year 1998, there was no local road construction in fiscal year 1997.

Evaluation:

Since 1989, road construction (collector and local) has dropped below the average annual projected amount. The reasons for this decline is probably due to the fact that the system road needed to support resource management is substantially in place. There will be some local road construction in the foreseeable future, but at a significantly lower level than was projected in the Forest Plan.

SOIL

Results:

As part of a national long-term soil productivity study, soil porosity and organic matter are being experimentally manipulated on large plots to determine the impacts of such manipulation on growth and species diversity of aspen stands on the Chippewa National Forest. Sampling five years after treatments occurred on the Ottawa National Forest in upper Michigan in 1996 and on the Huron-Manistee, lower Michigan, in 1997.

Preliminary findings on test plots indicate that disturbance treatments decreased 5-year growth of potential crop trees and delayed early stand development. Four test plots were prepared to determine the effects of soil compaction and organic matter removal on soil properties and growth of aspen suckers, associated species and herbaceous vegetation on stand development. The study involved winter harvest of 70-year-old aspen growing on loamy sand with site index of 65.

The following treatments were applied to the sites: 1) whole tree harvest (trees lifted off the site with little or no ground disturbance from machinery); 2) soil compaction; 3) forest floor removal; and 4) soil compaction and forest floor removal. After five growing seasons, numbers of suckers was extremely limited on the soil compaction areas. Mean diameter and height of regeneration was greatest on the whole tree harvest area. The treatment areas of soil compaction, forest floor removal or both all resulted in reduced biomass of foliage, stems, and total suckers to about one half of that produced on the whole tree harvest treatment. And, after five years, there was an abundance of saplings (>1 inch dbh) on the whole tree harvest area but few on the other treatment areas. Five-year sampling will occur during the 1998 field season on the Chippewa National Forest. A preliminary (unpublished) report should be available in 1999, summarizing the results of this study on these three Lake States Forests.

Evaluation:

For the past several years, the Chippewa National Forest has been monitoring the effects of exotic earthworm (European in origin) invasion on the soil resource. Drastic changes in the distribution of soil organic matter (litter and humus layers) caused by the invasion of earthworms has been documented along with shifts in the plant community species composition. Funding sources and partnerships are being sought for monitoring the effect of earthworm invasion on site productivity.

Ecological Classification and Inventory Project (Terrestrial EC&I)

Initiated in 1992, the Chippewa National Forest Demonstration Project is a cooperative project between the Chippewa National Forest and the Minnesota Department of Natural Resources. The purpose of the project is to demonstrate the methodology used in Ecological Classification and Inventory and to demonstrate how ecological land units may be used to address land management issues. Map unit identification and field data collection continued through 1997. Landtype associations, landtypes, and landtype phases are three ecological units being delineated and inventoried.

Evaluation:

EC&I project is expected to continue, but may shift emphasis to support Forest Plan revision.

WATER - LAKES AND STREAMS

Lakes

The Forest maintains a representative set of 10 lakes that are sampled at regular intervals to determine if there is a change in water quality over time. The Forest Plan states that a significant reduction in water quality occurs when the Carlson Trophic State Index (a measure of the productivity of a lake) declines by more than 15 percent from pre-1980 index values. Beaver, Adele, Caribou, Mable, Webster, Lake Thirteen, and Little Cutfoot have been sampled since the mid-1970s. Big Rice, Round, and Lower Sucker were added to the monitoring plan in 1989. Lakes are sampled three times during the open water season on a rotating basis. Big Rice, Round, Lower Sucker, Mable, Webster, Thirteen, and Little Cutfoot Lakes were sampled in 1997. None of these lakes show a significant reduction in water quality at this time.

Streams

Compliance with NFMA and the Forest Plan standards for stream water quality require long-term monitoring. Six streams are currently enrolled in the long-term trend monitoring project. Simpson Creek, Fletcher Creek, and the Rice River have been monitored since the mid-1970's. In 1990, the Mississippi, Big Fork, and Turtle Rivers were added to the monitoring plan.

Water quality data is used to determine a Forest stream water quality index value for each stream. The index values range from 0 - 100, with a index score of 100 representing the highest quality streams for fisheries and recreational uses and 0 representing very poor quality streams for fisheries and recreational uses. Index values represent an arbitrary scale based on weighted parameter inputs and are useful for comparing water quality between streams and in the same stream over time (trends) when enough data is available. Monitoring consist of collecting water quality samples and flow data three times per site during the open water season on a rotating basis. All of the streams were sampled in 1997.

Results:

Stream Name	Pre 1980	3-Yr Avg	1992	1994	1995	1996	1997
Mississippi River	*	*	65.3	62.7	76.2	76.6	75.6
Turtle River	*	*	61.0	53.7	72.6	71.3	70.5
Simpson Creek	71.3	72.7	*	*	*	*	70.9
Fletcher Creek	64.0	73.7	*	*	*	*	78.7
Rice River	79.9	73.8	*	*	*	*	74.1
Big Fork River	*	*	*	74.3	*	*	75.6

* Not sampled.

Evaluation:

Neither of these streams demonstrates a trend toward increasing or decreasing water quality at this time. Changes in rates of precipitation and evaporation, surficial runoff, groundwater inputs, and storage capacity throughout the stream's watershed result in natural year to year variability. The above data represents the beginning of a historical data base for these sites. As more data is collected, trend analysis will be used to assess long-term changes in water quality for these streams.

Water Quantity

Water quantity is being measured on the Turtle and North Turtle Rivers. Discharge from these two streams constitute a large percentage of hydraulic budget or total water input for the Cass Lake watershed. Average daily flows and precipitation data are used to develop computer simulations of lake response based on a variety of management scenarios for the Knutsen Dam.

Pesticides - Groundwater

Pesticides have not been used on the Forest since prior to 1990. Groundwater was not monitored for pesticides in 1997.

Designated Water Uses

Eleven designated swimming areas were sampled during 1997. Fecal coliform levels were in compliance with the standard at all sites. No swimming areas were posted or closed in either of these years.

Drinking Water Supplies

Monitoring of drinking water supplies consists of collecting and analyzing well water samples from all drinking water systems operated by the National Forest. Monitoring plans for individual wells call for monitoring on an annual, quarterly, or monthly basis depending on the parameter tested and the use season.

Bacteriological Quality

Forty-seven drinking water wells were sampled for bacteria in 1997. Of these wells, four did not meet state standards for bacterial concentrations. All wells that exceed the state standard for bacteria are closed then disinfected. Wells are re-sampled and do not re-open until sampling shows that they are in compliance with state regulations. No wells were permanently closed.

Inorganic Constituent Quality

Forty-six stations were sampled for nitrate and nitrite nitrogen (inorganic nitrogen) in 1997. All were in compliance with the Forest standard set at a maximum of 10mg/L. Eight stations were below the detection limit of 0.05 mg/L. Four stations were between 0.05 and 0.94 mg/L.

LANDS

Results:

In fiscal year 1997, 48.99 acres consisting of two cases were acquired using Land and Water Conservation Fund (LWCF) emergency acquisition funds. No land for land exchanges were completed. The Forest did not receive a line item appropriation for land acquisition in fiscal year 1997.

Evaluation:

The outlook is for the Forest to continue to receive very limited funding, usually only emergency funds for high priority properties and on a limited basis. Land exchange continues to become more costly to do; in most cases, the cost per acre to do exchanges outweighs the value of the land exchange. Differing views regarding whether any Federal land should be available for disposal also complicates the process. The Forest will continue to evaluate land exchange proposals on a case-by-case basis.

SPECIAL USES

Results:

There were 305 permits authorized for various recreation special uses activities including resorts, recreation residences, organization camps, and marinas. There were 340 non-recreation special use permits valid in 1997 covering uses such as utility lines, pipelines, roads driveways and communication sites. In addition, appraisals were completed on typical lots representing 286 recreation residence sites during the summer of 1997.

Evaluation:

There is consistent demand for use of Federal land for a variety of purposes. At the same time, funding to administer existing permits has been decreased and the Forest is unable to meet inspection schedules for various types of permits as prescribed in the Forest Service Manual. A priority system for inspection has been implemented with those uses having greatest potential to affect public health and safety are given the highest priority for administration. A cost collection system has been successfully implemented. This system provides the means to analyze new requests for uses of Federal lands as well as major changes which might be proposed for existing permits.

BIRD ABUNDANCES

A habitat specific bird monitoring program was established on the Chippewa and Superior National Forests in 1991 and the Chequamegon National Forest in 1992. This project is being conducted by the Natural Resources Research Institute, a research branch of the University of Minnesota. The program is designed to assess relative differences in bird relative abundances and to eventually distinguish between larger-scale trends and small scale shifts in abundance. Data collected through 1996 have provided information on annual variation and trends over time for individual species and community parameters and relative abundance within representative cover types on the Forest.

Results:

Across all study areas (all Forests), 57 species had significant linear trends: 31 species (54 percent) increased, 16 species (28 percent) decreased, and 10 species (18 percent) increased in one and decreased in others. Eleven species had increasing trends in two or more study areas including the yellow-bellied sapsucker, red-breasted nuthatch, winter wren, solitary vireo, red-eyed vireo, chestnut-sided warbler, magnolia warbler, yellow-rumped warbler, Blackburnian warbler, American redstart, and chipping sparrow. Six species had decreasing trends in two or more study areas including the Downy woodpecker, golden-crowned kinglet, black-and-white warbler, Indigo bunting, brown-headed cowbird, and purple finch. Many of these species had similar significant regional trends. In comparison, most (82 percent) Minnesota breeding bird study species trends indicated no change in abundance from 1980 to 1996. In the Chippewa National Forest, 15 species (75 percent) increased and five species (25 percent) decreased from 1991 to 1997.

Evaluation:

This bird monitoring project is on-going. The results from this monitoring can be used to aid forest managers by providing information on bird/habitat associations with forest cover types. Breeding bird habitat associations and forest landscape pattern analyses will be used during the Forest Plan Revisions for the National Forests in Minnesota.

GOBLIN FERN (*BOTRYCHIUM MORMO*) ADMINISTRATIVE STUDY

One of the information needs identified in the Goblin Fern (*Botrychium mormo*) Conservation Strategy Action Plan, approved in 1994, was to investigate the response of this species to changes in overstory vegetation and ground disturbances as would occur in some typical forest management practices. The document recommends that one of the known colonies of goblin fern on the Forest be chosen for experimental treatments on the vegetation and soil.

The site selected for this study is south of Lower Sucker Lake (Township 144 North, Range 30 West, Section 3), where goblin fern colonies occur on either side of Forest Road 2135. The colony on the west side of the road (14 acres) was chosen as a control and the east side (17 acres) was chosen for treatment of a typical hardwood management practice.

During 1995, both sites were extensively searched for goblin ferns and each plant location was marked.

Plot data was taken in 1995 through 1997. Data collection will continue through 1999 when it will be analyzed to determine if the data set is adequate for detecting treatment response. If the data set is considered adequate, treatment of the eastern site will occur and post treatment plot data would be collected for a number of years, depending on the extent of the response and confidence in the results.

GOBLIN FERN (*BOTRYCHIUM MORMO*) VIABILITY ASSESSMENT

The tiny Goblin Fern (*Botrychium mormo*) is on the Forest Service Eastern Region Sensitive Species list due to its global ranking of "G3" by the Nature Conservancy. In its review of Forest Sensitive Species, the Chippewa National Forest identified the Goblin Fern as a species with potential resource conflicts. As a result, the Forest issued a Goblin Fern Conservation Strategy in 1994. The Conservation Strategy proposed reserving landtype phases when Goblin Ferns are found.

The Blackduck Ranger District on the Chippewa applied the measures outlined in the Conservation Strategy in its Rolling Hills Environmental Assessment, which was appealed in December 1996. The Regional Office affirmed the District decision, but asked that the Forest complete a range-wide viability assessment before it would back any further decisions based on the Goblin Fern Conservation Strategy.

In October 1997, the Chippewa National Forest, the Minnesota Department of Natural Resources, and the University of Minnesota co-sponsored a Population Habitat Viability Assessment (PHVA) Workshop lead by the Conservation Breeding Specialist Group. Twenty-six individuals from across the fern's range of Minnesota, Wisconsin, and Michigan participated in the workshop. Four working groups were formed including: life history and viability, threats and risks, management and social and distribution. A final report was issued in January 1998, which made recommendations from each working group.

The Chippewa National Forest intends to use the information gained in the PHVA along with predictive modeling survey work to be completed in the summer of 1998 to work with partners to pursue a range-wide Conservation Strategy in 1998-1999.

SUSTAINABLE FOREST

Statewide Effort:

In 1995, the Minnesota State Legislature passed the Sustainable Forest Resources Act. This law established a framework to enable long-range forest planning and landscape coordination across all forested regions and all ownerships within the State of Minnesota.

It established a Forest Resources Council made up of individuals representing a diverse array of interests in forest management. The law also provides for establishment of a Forest Resources Partnership made up of forest landowners in the State. The Council has appointed technical teams to develop guidelines for managing riparian resources, heritage resources, soil resources, and wildlife resources in forested areas. These voluntary forest management guidelines are expected to be completed and approved by the end of 1998.

Forest Effort:

The Chippewa National Forest is a full participant in activities resulting from the 1995 State law. We are a voting member of the Forest Resources Council. We are also represented on the Forest Resources Partnership with voting membership and through membership financial contribution. We teamed up with the Superior National Forest by having either a Superior or Chippewa National Forest representative on each technical team. We are committed to working with other forest landowners and stakeholders to ensure sustainability of all forest resources in Minnesota.

In order to promote sustainable forests within the Forest boundary, the Chippewa National Forest established an interdisciplinary team of experts to complete landscape assessments at the subwatershed level. There are 17 subwatersheds represented on the Chippewa. During fiscal year 1997, the team completed four watershed assessments. The findings of the assessments are used in project level planning.

OFF-HIGHWAY VEHICLE MANAGEMENT

The current Forest Plan direction guiding the use of off-road vehicles on the Chippewa National Forest is as follows"

In Management Areas where motorized vehicles are permitted, the following regulations shall apply:

1. Off-road vehicles (ORVs) are permitted on Forest roads and trails unless posted closed.
2. ORV cross-country travel is prohibited off of roads or trails. Roads may be posted closed to motorized use as necessary to protect specific resources or to serve as hunter/walking trails during the hunting season. Construction of new ORV trails by the Forest Service will generally be limited to semiprimitive motorized areas (there are only two areas identified on the Chippewa totaling approximately 8,000 acres).

In the past two years, the Forest Service has been working in partnership with the Minnesota Department of Natural Resources and counties to address off-highway vehicle management. The use of off-highway vehicles (OHVs) has increased dramatically over the past five years in Minnesota. There are three groups of OHVs: All Terrain Vehicles (ATVs), Off-highway Motorcycles (OHMs), and four-wheel drive trucks/off-road vehicles (ORVs). With increased use comes increased levels of user conflicts, environmental damage, and a need for clear, consistent guidelines for OHV management.

The Minnesota Department of Natural Resources (DNR) has the following objectives and goals:

- Develop a systematic approach with other partners/land managers for the management of OHV use across ownership boundaries.
- Identification of motorized and nonmotorized opportunities.
- Adoption of common policies, roles, signage (where practical) for the benefit of forest land users.

While the Forest Service is not required to have the same rules and regulations regarding OHV use as does the State of Minnesota, it is beneficial to OHV users and other forest land users to have policies, rules, and regulations that are as

consistent as possible. Users of forest land in northern Minnesota typically do not distinguish between National Forest, State, or County lands. To the user, these are all public lands.

The Chippewa National Forest policy basically says that the Forest is closed to OHVs except on roads and trails that are open for their use. Currently, we have no designated trail systems identified and managed for OHVs. It is our intent to work with the DNR to identify areas that will be closed to OHV use (there are a number of semiprimitive nonmotorized areas and hunter/walking trail areas on the Chippewa National Forest where OHV use is currently not permitted on any of the roads or trails), and also to identify areas where OHV trails can be developed and managed for the OHV user. It is our objective to identify the best opportunities, irrespective of which public entity manages the land, where trail riding opportunities will have the least impact on the environment, and avoid conflict with the other user groups.

The Forest will participate with other public land management entities, private land owners, industry, user groups (both motorized and nonmotorized) to assess and conduct area-wide planning to determine the amount and location of OHV trail riding opportunities. Upon completion of these systems planning efforts, the Forest Plan would be amended to provide for this use on the Forest.

Off-highway vehicle system planning is not an issue being addressed in the current Forest Plan Revision process and changes to current Forest Plan direction will be handled through Forest Plan amendment.

VEGETATION COMPOSITION

Vegetative composition can be expressed by forest timber types or working groups as a percent of all forested lands. The following table illustrates working group vegetative composition in 1986 and 1997 and the desired future condition in the years 2000 and 2130 (150 years in the future). A shift of one percent equals approximately 5,600 acres.

Year	Short Rotation Conifer	Long Rotation Conifer	Lowland Conifer	Hardwoods	Aspen
1986	7%	14%	11%	26%	42%
1997	5%	16%	14%	24%	41%
2000 (DFC)	7%	14.5%	11%	24.5%	43%
2130 (DFC)	10%	15%	11%	19%	45%

In addition to active management working toward a desired future condition, possible reasons for percentage changes in all working groups:

- Land exchanges or acquisitions where the timber types exchanged were different.
- Retyping during field inventory.

The following aspen age class distribution table compares Forest Plan projected age class distribution in year 2000 with actually exist in year 1997. Aspen acreage comprises the greatest percentage of the forested land on the Forest.

Age Class	Projected Year 2000	Actual Year 1997
0 - 9	22	23
10 - 19	24	19
20 - 29	16	16
30 - 39	13	6
40 - 49	71	3
50 - 59	0	5
60 - 69	17	15
70 +	7	12

The comparison reveals that the Forest is moving toward the projected goal of more aspen in the younger age classes and less in the older age classes.

APPENDIX

Preparers

The following people collected, evaluated, or compiled data for the fiscal year 1997 Monitoring Report:

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