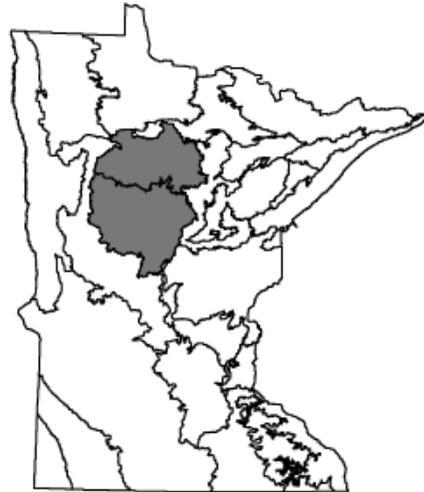# Minnesota Department of Natural Resources

Subsection Forest Resources Management Planning

Chippewa Plains and
Pine Moraines-Outwash Plains SFRMP

2012 Monitoring Report

Minnesota Department of Natural Resources

Division of Forestry Planning Document

Printed July 2015

This report and additional information about the DNR Subsection Forest Resources Management Planning process can be found on the internet at http://www.dnr.state.mn.us/forestry/subsection/index.html

This information is available in alternate formats upon request.

Contents

Planning Area Description

The planning area covers 4,656,749 acres; 682,986 acres of that area (about 14 percent) is administered by the Forestry and Wildlife Divisions of Minnesota Department of Natural Resources (DNR). Two Ecological Classification System (ECS) Subsections are included in this plan: The Chippewa Plains Subsection (1,948,789 acres) and the Pine Moraines and Outwash Plains Subsection (2,707,960 acres).

Chippewa Plains

Level to gently rolling lake plains and till plains characterize this subsection. Three large, heavily used lakes are found here: Leech Lake, Lake Winnibigoshish, and Cass Lake. Conifers dominated the sandier portions of the subsection before settlement. Aspen-birch, sugar maple, basswood, northern red oak, and bur oak were common components on more productive sites. Present day land use is recreation and forestry.

Pine Moraines and Outwash Plains

This subsection is a mix of end moraines, outwash plains, till plains, and drumlin fields. White and red pine dominated the majority of forest communities on end moraines and till plains. Jack pine barrens and jack pine woodlands were found on well-drained sites on outwash plains. Black spruce, tamarack, white cedar, and black ash were prominent tree species in poorly to very poorly drained soils. Lakes are very common on the end moraines and some of the Outwash plains. Current land uses include tourism, forestry, and some agriculture.

Forestry Areas included in these subsections are: Little Falls, Park Rapids/Detroit Lakes, Bemidji/Blackduck, Deer River, Backus.

Status of the Chippewa Plains and Pine Moraines-Outwash Plains SFRMP

The Chippewa Plains and Pine Moraines-Outwash Plains SFRMP recommends vegetation management for the state fiscal years 2009 – 2018. Assembling available monitoring information through FY2012 provides an approximate mid-point review of plan implementation.

The Monitoring Process

Following internal guidance (http://files-intranet.dnr.state.mn.us/user_files/2535/sfrmp_monitoringplan_appendices.pdf) developed for monitoring SFRMP implementation, the Chippewa Plains and Pine Moraines-Outwash Plains SFRMP Core Team (consisting of the regional forest planner, regional timber forester, regional ecologist, and regional forest wildlife coordinator) convened early in 2012 to review accomplishment data for the Chippewa Plains and Pine Moraines-Outwash Plains subsection. They reviewed accomplishment data for the subsection and compared those data with the goals identified in the CP-PMOP SFRMP. The monitoring report will help ensure that progress toward the goals and desired future forest conditions in the CP-PMOP plan continues; it will be attached as an appendix to the extended plan:

> *"Each subsection team's Core 4 will analyze and summarize monitoring results following collection of the data.*
> *A written report, summarizing results of the annual efforts, will be prepared mid-term and at the end of the*
> *plan's time frame."*

A Note Regarding Data Limitations

The region Core 4 team reached its conclusions based on a summary of available data; these may or may not be consistent with reality. Data sources (e.g., recording of management objectives) varied significantly in the extent to which management objectives accurately represented work that was actually done. Some reports the team needed are not yet able to be summarized by the desired variable (e.g., cover type). In some cases the team used other data sources that are available but are not ideal for the analysis conducted (e.g. before/after FIM comparisons as an indicator of progress on cover type change goals).

Information Sources, Data, and Data Analysis

A detailed list of information and data sources used in this monitoring review can be found below, along with a list of data comparisons made to determine trends and make summary observations that led to the recommended actions listed in this report. Detailed data used to develop these recommendations will be provided to the forestry and wildlife areas for their perusal upon request.

Information Sources

1. Final CP-PMOP SFRMP
2. FY2009 - FY2013 Annual Stand Exam Lists (ASEL) for the CP-PMOP
3. Timber Sales Report System – reports of timber volumes sold FY09-FY11
4. SRM Reports:
   - Planned and Actual Actions by Forestry RAN and SFRMP for FY09 – FY11.
   - Planned and Actual On-Site-Visits by Cover Type and Age Class by Forestry RAN and SFRMP for FY09-FY11
   - Management Objectives by RAN by SFRMP for FY09-FY11SRM SFRMP Stand Exam Summary for FY09-FY11

General Trends and Observations:

- The average acres by cover type on ASELs (i.e., FY09-FY13) has been slightly lower (i.e., 659 acres/year or 7% lower) compared to what was included in the final plan. The most significant differences (as a % of planned acres) were:
  - Aspen/BG (308 acres/year or 10% lower than planned)
  - Jack pine (120 acres/year or 27% higher than planned; field visits and even-aged preliminary prescriptions)
  - Tamarack (66 acres/year or 8% higher; mostly field visits)
  - Birch (120 acres/year or 30% lower than planned)
  - Northern hardwoods (98 acres/year or 16% lower than planned)
  - White spruce (58 acres/year or 15% lower than planned; mostly thinning)
  - Red pine (122 acres/year or 6% lower than planned; thinning lower, field visits higher)

- Based on FY09-FY11 SRM data, approximately 67% of the acres visited resulted in a timber appraisal (22% were altered; and 11% were deferred).

- Annual Plan Additions were 18% of average annual ASEL acres from FY09-FY11 (SRM data).

- Compared to the final plan stand list, the average acres on the ASEL has been about 26% lower (i.e., 630 acres/year) for the Backus Area, and 16% lower (i.e., 300 acres/year) for the Bemidji Area. Detroit Lakes and Little Falls Areas were 90% and 60% higher respectively, but the total acres involved are very small (240 and 50 acres/year respectively). Park Rapids and Deer River were 1-2% higher (i.e., 37 and 32 acres/year respectively).

- The average age-class distribution of stands from the FY09-FY13 ASEL suggests some possible over- or under- emphasis in some age-classes for some types. Examples include:
  - Aspen-BG: over-selected in the 71-80 and 81-90 age classes, but under-selected in younger age-classes, possibly a function of emphasizing older stands first.
  - Birch: on track with stand list for 81-90 and 91-100 age classes, but very under-selected in younger age classes. Again, this is possibly a function of visiting older stands first.
  - Jack pine: substantial over-selection in the 61-70 and 71-80 age classes, possibly a result of the pine initiative.
  - Oak: over-selected in the 81-90 and 91-100 age classes, but substantially under-selected in the 71-80 age class.
  - Tamarack: over-selected in the 111-120 and 121-130 age classes, but substantially under-selected in the 101-110 age class.

- The average volume sold from CP-PMOP subsections from FY09-FY11 was substantially higher than estimated in the final plan (164,000 cords vs. 120,000 plan estimate mid-point, roughly 35% higher).

- Some observations from management objective reporting (i.e., FY09-FY11):
  - Cover types for which efforts appear to be falling short of plan conversion goals: tamarack (0 acres reported), jack pine, and white spruce.
  - Cover types for which efforts appear to be on track or exceeding plan conversion goals: northern hardwoods, white-cedar, red pine, and white pine.
  - Efforts to increase certain species were focused on the following species (in order by number of acres): white pine, red pine, tamarack, jack pine and white spruce.

General (Subsection-Wide) Recommended Actions:

- Remind field staff (e.g., via annual coordination meetings, memo, etc.) of conversion goals for desired cover types. Share FY09-11 results. Even if funding is not apparently available, continue to identify potential conversion sites and submit projects.
- Emphasize importance of recording management objectives in SRM. More than one objective per site is okay and is actually encouraged.

- Explore reasons for lower ASEL acres in Bemidji and Backus (i.e., backlog or compensated by APAs . . . borrowing from future ASEL years). Ensure that all stands identified as PLAN=YES are given a stand exam year.
- Explore reasons for higher volumes sold than projected in plan (e.g., APA levels vs. percent appraised, reoffer volume).
- Explore effect of pine initiative on results for pine species (e.g., avg. ASEL numbers for red and jack pine).
- May expect to see a shift to younger age classes in ASELs for the remainder of the plan for cover types that appeared to focus on older age-classes during this monitoring period.
- Utilize the APA process as necessary, but limit the amount of unplanned additions as fit. Keep in mind age class balance and SFRMP long term goals in planning.
- Review definitions of appraised, altered, and deferred to ensure your area is reporting accurately.

Current and Desired Future Forest Composition

The 2007 SFRMP established 10-year and 50-year cover type change (i.e., conversion) goals for the two subsections that were then allocated among the Forestry Administrative Areas within the ecological region. Table 1 shows the 10-year conversion goals for each Area.

Table 1: Chippewa Plains and Pine Moraines-Outwash Plains 10-year Conversion Goals (Acres) by Cover Type and Forestry Administrative Area

Convert to:	Bemidji	Blackduck	Brainerd	Park Rapids	Detroit Lakes	Deer River	Little Falls
Ash/Lowland Hardwoods	-143	-75	-56	-51	-18	-258	0
Aspen/BG	-279	-250	-410	-1,725	-39	-97	0
N. Hardwoods	-122	-50	-23	-12	-23	-16	-4
Oak	-18	0	-675	-56	0	0	-1
White pine	124	12	70	214	17	14	0
Red pine	-77	5	18	64	0	4	0
Jack pine	1,573	55	1,191	2,486	95	99	1
White spruce	-134	263	-38	-110	-50	14	4
Balsam fir	-33	-30	-33	-89	0	-14	0
Tamarack	225	107	63	77	20	305	3
White cedar	73	63	26	11	0	127	0

Table 2 provides an overview of the total balance of acres by cover type at the midpoint of this SFRMP (2012) after conversions, increases, and decreases were accounted for. It should be noted, however, that actual conversions may take years to be recognized in FIM, and the "intent" to convert cover types should be captured by recording management objectives for each stand in SEL (formerly SRM).

The table provides further explanation of the general trends noted above. In 2012, the jack pine cover type was furthest from reaching the 2017 goal, having actually significantly decreased in acreage rather than increased. This may be explained by several factors: 1) the jack pine cover type in the region is aging, causing loss of reproductive ability in individual trees, as well as takeover by underbrush which can stifle regeneration; 2) clearcut mixed jack pine/aspen stands often come back as aspen without intensive site prep; 3) pressure from deer browse; 4) dipolodia infection of nursery stock; 5) development of sod quickly after site prep, if seedling regeneration does not happen quickly enough (making regeneration even more difficult).

Balsam fir and birch also experienced significant decreases, when they were meant to only decrease slightly or be maintained at 2007 levels, respectively. White pine was on track to meet the 2017 goal to increase 23%, while tamarack and cedar had already exceeded 2017 goals to increase 2%. Red pine and black spruce experienced small deviations from maintaining 2007 baselines. Aspen/balm of Gilead and northern hardwoods increased slightly rather than decreasing, while oak increased fairly significantly instead of decreasing. Ash/lowland hardwoods were approximately on target, having only slightly exceeded the goal to decrease by 3.6% by 2017.

Table 2: 2012 acreage estimates compared to 2007 baseline and ten/fifty-year goals for the region.

Cover Types	Baseline 2007 Acres	FIM Data May 2012* 2012 acres	Percent change 2007-2012	Percent change needed to reach 2017 goal (based on 2012 numbers)	DFFC 2017 Total Acres	Percent Change	DFFC 2057 Total Acres	Percent Change
Jack Pine	14,419	13,158	-8.7%	+51.4%	19,919	+38.1%	26,588	+84%
White Pine	2,002	2,293	+14.5%	+6.9%	2,452	+22.5%	4,252	+112%
Tamarack	44,269	45,993	+3.9%	-2.0%	45,069	+1.8%	46,669	+5%
Cedar	12,578	13,498	+7.3%	-4.6%	12,878	+2.4%	13,239	+5%
Red Pine	35,144	35,892	+2.1%	-2.1%	35,144	maintain	41,159	+17%
BSL	27,678	25,861	-6.6%	+7.0%	27,678	maintain	27,678	maintain
Birch	9,645	7,716	-20.0%	+25.0%	9,645	maintain	9,145	-5%
White Spruce	7,088	6,700	-5.5%	+5.0%	7,038	-0.7%	7,233	+2%
Aspen/Balm of Gilead	182,745	183,143	+0.2%	-1.7%	179,945	-1.5%	168,376	-8%
Northern Hardwoods	16,141	16,308	+1.0%	-2.6%	15,891	-1.5%	14,391	-11%
Balsam Fir	7,750	5,988	-22.7%	+26.1%	7,550	-2.6%	7,494	-3%
Ash LL Hardwoods	16,856	16,195	-3.9%	+0.4%	16,256	-3.6%	15,056	-11%
Oak	16,058	17,578	+9.5%	-12.9%	15,308	-4.7%	14,308	-11%

*Data for 2012 acres was from May 2012 historical FIM shapefile. An effort was made to closely approximate the area involved, but because of land administration changes, dataset variation, etc, landbase boundaries did not exactly match 2007 boundaries (<1% difference between total acreages).