



**National Park Service
Fire Ecology Annual Report
Calendar Year 2007
Voyageurs National Park & Border Waters Parks
Scott Weyenberg, Fire Ecologist**

Summary

This annual report summarizes the activities of the Voyageurs Fire Ecologist, and fire effects program for the Border Waters parks. These parks include Voyageurs NP (VOYA), Isle Royale NP (ISRO), Saint Croix NSR (SACN), Grand Portage NM (GRPO) and Apostle Islands NL (APIS). The fire ecologist also provides support for the Indiana Dunes fire effects program, which includes Indiana Dunes NL (INDU), Sleeping Bear Dunes NL (SLBE) and Lincoln Boyhood NM, and several other park units - Mississippi NRRRA (MNRRA), Pictured Rocks NL (PIRO), Keweenaw NHP (KEWE), Cuyahoga Valley (CUYA).

The summer of 2007 was quite dry with about a dozen fires being suppressed at Voyageurs and a handful between Isle Royale, St Croix, and Apostle Islands. One fire was managed for Fire Use but it only managed to burn 7 acres. Voyageurs had one wildfire that grew to 58 acres. It greatly improved the pine stand and also burned two FMH plots. St. Croix had an 1100 acre wildfire that burned approximately 300 acres within the Riverway boundary.

Voyageurs burned 158 acres this year via prescribed fire, burning 5 islands and 2 mainland units. This was the first time any mid-summer burns were attempted at Voyageurs. The burns were very successful in accomplishing the resource management goals. The units were allowed to burn for several weeks since there was a lengthy dry spell following the burns. Most of the units took one to two weeks to completely burn the area, though most of the burning was done in the first two days.

Monitoring at VOYA continues with the use of project level monitoring plots. The project level plots are working well, providing timely data on fire effects per an individual unit. We experimented with a new sampling method using a cover board to measure shrub density. Data continues to be collected on stand age and fire history.

St. Croix did not conduct any prescribed burns during 2007 however, 4 burns are scheduled for 2008. Monitoring is ongoing and plot protocols continue to be refined.

Grand Portage, Isle Royale and Apostle Islands are currently working out the details regarding their fire programs. Grand Portage plans to burn a small field in 2008 or 2009.

I became Vice Chair of the Minnesota Interagency Prescribed Fire Working Group in June and was promptly elevated to the Chairperson position in December (as per the revolving schedule for each agency). A great deal of time was spent working on a revision to Minnesota's Smoke Management Plan.

Also of note, my duty station was temporarily transferred to Mississippi NRRA at the end of October.

Fire Effects Plot Workload 2007

Table 1. Fire Effects Plot Workload 2007

Park	Monitoring Unit	Type of Plot	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plots*
Voyageurs	Red/White Pine	FMH forest plot		4	10	34
Voyageurs	Mixedwood	FMH forest plot	3			13
Voyageurs	Jack Pine	FMH forest plot				12
Voyageurs	Red/White Pine	Project Level	30	20		45
Voyageurs	Mixedwood	Project Level				15
Voyageurs	Aspen/Birch	Project Level				8
Voyageurs	Sedge Meadow	Project Level				6
Voyageurs	Red/White Pine	Photo Points				3
Voyageurs	Mixedwood	Photo Points				7
Voyageurs	Oak Barrens	Photo Points				1
Voyageurs	Sedge Meadow	Photo Points				1
St. Croix NSR	Oak Savanna	Project Level	1			3
St. Croix NSR	Tallgrass Prairie	Project Level				35
Totals			37_{VOYA} 1_{SACN}	28_{VOYA} 0_{SACN}	10_{VOYA} 0_{SACN}	145_{VOYA} 38_{SACN}

* This is the total number of plots in the park.

Fire Ecology Staffing 2007

At Voyageurs, fire effects funding provides 13 pay periods at the GS-5 level for fire effect monitoring. A full time monitor was hired for the first time at VOYA this year. In the past the fire crew conducted all fire effects monitoring. The fire crew continued to assist with monitoring duties in 2007 as well. Due to delays in the hiring process and other factors, the monitor started in mid June working only 8 pay periods in FY07. She also worked 1.5 pay periods in FY08.

The fire monitor at Isle Royale resigned in the spring and there are no plans to replace the position. Monitoring at Saint Croix is conducted by Robin Maercklein, Resource Management Specialist, and his resource staff.

This table shows the pay periods funded by fire effects dollars as well as the number of pay periods they worked.

Table 2. Fire Ecology Staffing 2007

Employee	Starting Date	Ending Date	# of Monitoring Funded Payperiods	Training and Development	# of Pay Periods Worked
Scott Weyenberg (GS11)	8/8/04	Permanent	26	FEMO fire use detail YELL, Crew Boss Academy	26
Allissa Corrow (GS5)	5/14/06	10/01/06	13	Boat training	8

Management Objectives and Monitoring Results 2007

Paired T-tests were used to determine if changes were significant across all plots and whether the objective was achieved. Monitoring results stated were analyzed by site. Only sites burned in 2007 were analyzed.

Table 3. Management Objectives and Monitoring Results 2007

Monitoring Unit	Management Objective (Restoration/Fuels reduction)	Monitoring Results (Analyzed by site)	Objective Achieved? ($p < 0.05$)
Red pine – White pine forest	30-80% Reduction in 0-1” fuels.	0-1” fuels - 50% reduction; to a 100% increase. $n=6$ plots, 2 fires.	No – Mica Isl. Yes – Squab Isl.
	30-80% Reduction in 1-3” fuels.	1-3” fuels: 45% decrease to a 133% increase. $n=14$ plots	No – Mica Isl. Yes – Squab Isl.
	50%+ Reduction in brush cover.	Immediate post: increased 27%. $n=4$ plots, 1 fire.	Not yet. (Incr. mortality expected post yr.1)

Fire ecologist accomplishments and area of focus

Little time was spent this year on analyzing data, though I completed two post burn reports that included some minor analyses. The most time consuming projects undertaken this year include the VOYA FEMP, writing burn plans, reviewing the Minnesota Smoke Management Plan, and updating and organizing the VOYA Fire Effects database. Happily, the INDU FEMP is finished and in the process of obtaining signatures. I went on one training assignment, Crew Boss Academy, sponsored by The Nature Conservancy (TNC). The ten day course was very well done and useful.

Table 4. Fire Ecologist Accomplishments/Focus Areas

Category	Percent Time	Accomplishments and/or areas activities
General Planning	20%	- Researched and wrote portions of the VOYA FEMP. - Assisted in the fire program review. - Assisted in planning '07 and '08 burn projects for VOYA and SACN. - Wrote burn plans for 3 SACN burn units.
Presentations	5%	- Presented Mnoké data at George Wright Conference. - Presented Fire History study to the Nett Lake Band of Ojibway. - Presented Mnoké, oak savanna and woodland data at INDU annual prescribed fire meeting.
NPS Meetings/ Task Groups	2%	Land Fire Workshop.
Interagency Work	5%	Chairperson of Minnesota Interagency Prescribed Fire Working Group and travel to quarterly meetings.
Fire Assignments and Fuels Projects	10%	- Detailed as a FEMO/Fire Ecologist at YELL. - FEMO on two prescribed burns at VOYA. - Responded to three wildfires in Voyageurs N.P.
Research	<5%	Conducted sampling for fire history/stand age study.
Monitoring Field Work	10%	- Sampled FMH, project level and other plots at VOYA. - Field crew supervision.
Data Entry	<5%	- Most VOYA FMH data was entered and checked by the monitoring crew and all non-FMH data is entered by the fire ecologist. - All INDU and LIBO data entry is done by the INDU monitoring crew.
Data Management and Conversion	10%	- VOYA data management, organization and cleanup. - Organize and combine GIS data for burn units and plot locations. - Develop Endnote Bibliographic database for fire ecology library. - SACN FFI database development. - All INDU and LIBO data is managed by the INDU monitoring crew.
Data Analysis	5%	- Analysis of post burn data at VOYA. - Miscellaneous analyses of INDU for protocol refinement. - Continue the develop and refine the protocols at VOYA, SACN & INDU.
Supervision/Admin	5%	- Hiring and supervision of the VOYA fire monitor. - Hiring and supervision of the INDU monitoring crew is done by the lead monitor.
Training & Professional Development	5%	- Crew Boss Academy. 1st aid & Blood Borne Pathogen training. - Fire refresher.
Park Visits	10%	- Visits to SACN to set up burn units (3 visits). - Visits to INDU for annual meeting and site visit (2 visits). - Visit to GRPO to determine monitoring of proposed burn unit.
Miscellaneous	10%	- Fire Program Review. - Weather station set-up. - Assist with resource management projects. - Review proposals and journal submissions.

Fire effects crew accomplishments and area of focus.

The fire monitor spent approximately 70% of her time measuring plots and entering and checking data. Another 20% of the time was spent on fire assignments and 5% assisting other resource management programs. Given the short amount of time she was employed no formalized training was given except for CPR, 1st Aid and boat training. However, good experience was gained while on the wildfire and prescribed burns. The remaining funds were used to purchase monitoring equipment or returned the Midwest Region. The fire crew assisted in field work and data entry and quality checking. This equates to approximately 70% of the fire effects funding being used directly for this effort.

Table 5. Fire Effect Monitor Accomplishments

Category	Percent Time	Notes
FMH plots	10%	Re-measured 14 forest plots.
Project Level plots	15%	Installed and re-measured 40 plots.
Other plot work and related projects	5%	Fuel moisture sampling.
Fire Assignments and Fuels Projects	20%	Responded to 3 wildfires in the park (VOYA). Assisted on 2 prescribed fires.
Data Entry	40%	Completed data entry for 2006 and some of 2007 FMH reads. Checked ~ half the data since 1990.
Data Management and Conversion	0%	Not part of assigned duties.
Data Analysis	0%	Not part of assigned duties.
Supervision/Admin	0%	Not part of assigned duties.
Training & Professional Development	5%	Fire refresher training. CPR, 1st aid & Blood Borne Pathogen training. Boat training.
Miscellaneous	5%	Assisted with resource management projects.

Optional

VOYA

Data entry and verification at VOYA is much closer to being caught up than last year at this time. Much of the backlogged data was quality checked but the new data for 2007 was not entered. We should be caught up by the end of 2008.

We tried a new protocol for monitoring brush (see attachment). It consists of photographing a cover board pre and post burn and quantifying the difference through dot counts. It worked quite well though the board is somewhat unwieldy. We also used duff pins to assess duff consumption. This also worked quite well though we need a lot more pins. The conventional method of measuring duff and litter consumption is very inaccurate as we sometimes have more duff post burn than pre burn. Assessing consumption of 1000 hour fuels is also problematic with the occurrence of newly fallen material during the burn. We will start recording the log position on the transect to track each log. Additionally, at least 20 – 30 transects are needed to assess consumption with any reasonable amount of accuracy.

SACN

No prescribed fires took place at St. Croix NSR in 2007. There is still support for the fire program and it is likely that all scheduled units will be burned in 2008. Only 1 plot was established last season. There are several others that should have been reread for the 2nd year post burn. I will need to develop a definitive schedule for this park in the spring. Monitoring is still being done by Robin and his crew. He informs me that this is not a problem. I will have to farm out the data entry to VOYA however.

2008

My plans for 2008 are to finish the VOYA FEMP and start the SACN FEMP. I also hope to get the monitor at VOYA involved with the sampling and scheduling of plot work at SACN. I will try to get an implementation plan written for a burn unit at VOYA and/or INDU. My hope is to have one for every burn unit. I would like to start tracking fuel moistures more closely at VOYA and start using 1000 hour log "fuel sticks". These are similar to a 10 hour fuel stick. I would also like to get the fire scar and core samples ready for analyses and compile that data for a short report.

Attached documents

Strawberry Isl Complex Post Burn Report.doc