



**National Park Service
Fire Ecology Annual Report
Calendar Year 2005
Voyageurs National Park
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, 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- Pictured Rocks NL (PIRO), Keweenaw NHP (KEWE).

In terms of fire activity, this was a fairly inactive year for Voyageurs. There were a total of 5 fires in the park, 3 lightning caused and 2 human caused. One fire was managed as a fire use fire. Collectively they burned less than one half an acre. Voyageurs FMO, Dave Soleim, accepted the FMO position at Glacier N. P. in early August. To date, the Voyageurs FMO position has not been filled.

The VOYA resource management staff and I have been active in the Border Lakes Group. This is a regional group of state/provincial (MN/Ontario), federal (USFS, Superior) and private (TNS, NCC) agencies dedicated to landscape level planning in the Border Lakes region. In that regard, we will share pertinent resource information among the agencies.

Various monitoring continues at VOYA. CBI ground-truthing was completed for the Sec. 33 Fire Use fire (2004), and permanent research plots were also re-measured for the Year 1 post burn assessment. Burn unit level monitoring plots were installed in two burn units. A deer exclosure was funded with year end money and will be installed within one of the burn units. This will be a great help in determining what effect the deer are having on pine restoration efforts. Additionally, I collaborated with researchers from the University of Minnesota on a proposal, submitted to Joint Fire Sciences, to research stand age, fire history and island biogeography at VOYA.

St. Croix NSR successfully conducted their first prescribed fires, in an effort to restore tallgrass prairie. Approximately 40 acres were burned in 2005 and 5 more burns are scheduled for 2006.

My first (annual?) circle tour of the parks in the Great Lakes region concluded in early September. Seeing the parks first-hand and visiting with the managers was definitely helpful to me and hopefully to them as well.

Isle Royale had one Fire Use fire this season; however most of the fire was extinguished when the tree fell in the lake. Apostle Islands suppressed two lightning starts. Monitoring is not actively being done at either park.

Table 1. Management Objectives and Monitoring Results 2005

Paired T-tests were used to determine if changes were significant across all plots and whether the objective was achieved. Monitoring results are stated were analyzed by site. All results shown are within a 95% confidence interval of the mean.

Monitoring Unit	Management Objective (Restoration/Fuels reduction)	Monitoring Results (Analyzed by site)	Objective Achieved? ($p < 0.05$)
Red pine – White pine forest	60-90% Reduction in 0-1" fuels.	0-1" fuels - 67% reduction; to a 200% increase.	NO
	50-70% Reduction in 1-3" fuels.	1-3" fuels: 56% decrease to a 43% increase.	NO
	50-70% Mortality in pole sized balsam fir.	Pole sized ABBA: 39-100% mortality.	YES
	Regenerate white pine seedlings.	Seedling counts 5 years post: increased 27-400%, (decreases found on two sites).	YES
		($n=14$ plots, 8 fires)	

Table 2. Fire Effects Plot Workload 2005

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Sum of Reads	¹ Total plots
Voyageurs	Red/White Pine	FMH forest plot	3		3	6	34
Voyageurs	Mixedwood	FMH forest plot	1			1	13
Voyageurs	Jack Pine	FMH forest plot	2		1	3	12
Voyageurs	Red/White Pine	Burn level	12			12	12
Voyageurs	Red/White Pine	Other, Sec 33			6	6	6
Voyageurs	Mixedwood	Other, Sec 33			15	15	15
Voyageurs	Aspen/Birch	Other, Sec 33			8	8	8
Voyageurs	Sedge Meadow	Other, Sec 33			6	6	6
Voyageurs	Mixedwood	CBI			7	7	na
Voyageurs	Oak Barrens	CBI			1	1	na
Voyageurs	Sedge Meadow	CBI			1	1	na
St. Croix NSR	Tallgrass Prairie	Other, nested freq.	34	18	16	68	68
Totals			18^{VOYA} 34^{SACN}	0^{VOYA} 18^{SACN}	48^{VOYA} 16^{SACN}	66^{VOYA} 68^{SACN}	106^{VOYA} 68^{SACN}

¹ This is the total number of plots per monitoring type. CBI plots are not permanent and therefore were not counted in the total.

Table 3. Fire Ecology Staffing 2005

At Voyageurs, fire effects funding provides 13 payperiods of GS-5 seasonals. The park uses this funding to add to the payperiods of the firecrew, who conduct the fire effects monitoring. The park thus obtains a larger field crew by supplementing the salaries of 3 GS-4 firefighters and 1 GS-5. This table shows the pay periods of fire effects funding compared to the total number of payperiods of total funding. Monitoring at Saint Croix is conducted by Robin Maercklein, Resource Management Specialist.

Monitor	Starting Date	Ending Date	# of Monitoring Funded Payperiods	Training and Development	# of Pay Periods Worked
Scott Weyenberg (GS11)	8/8/04	Permanent	26	RX-310, Stats training, Western Great Lakes Research Conference.	26
Kurt Fogelberg (GS7)	4/90	NA	1		26
Greg Carlson (GS5)	5/11/05	8/21/05	4	S-211	7.25
Travis Doeden (GS4)	5/16/05	8/21/05	3		7
Owen Johnson (GS4)	5/16/05	8/21/05	2		7
Troy Anderson (GS4)	4/25/05	9/30/05	4		11.5

Table 4. Fire Ecologist Accomplishments/Focus Area

Category	Percent Time	Accomplishments/Focus Areas
General Planning	0%	
Monitoring Plans	15%	 Literature review for INDU FEMP  Site visit to Cedar Creek NHA savanna restoration project.  Continue to revise draft INDU FEMP.  Development of new protocols for VOYA, SACN, SLBE, and INDU
Presentations	2%	 Presentation at the Western Great Lakes Research Conference.  Presentation to public on fire ecology.
NPS Meetings/ Task Groups	3%	 FEAT protocol builder beta test.  VOYA strategic planning.
Interagency Work	2%	 Provided technical support to FVS-Fuels extension.  Borderlakes Working Group annual meeting.  Interagency landscape level vegetation planning meeting.
Fire Assignments and Fuels Projects	2%	 Assisted MN DNR with Rx fire (5 shifts).
Research	5%	 Assisted in proposal to digitize 1927 aerial photos.  Pre-sampling for fire history/stand age study.  Wrote proposal to JFSP for fire history in VOYA.  Reviewed manuscript on crown fire modeling for Forest Science.  Designed and purchased deer exclosure.  Assisted in practical application of VOYA Digital Vegetation Map for publication.
Monitoring Field Work	15%	 Sampled FMH, burn level, CBI and other plots
Data Entry	5%	 Most of the VOYA FMH data was entered 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.  SACN monitoring data has not been entered to date.
Data Management and Conversion	25%	 VOYA data conversion, management is done by the fire ecologist.  All INDU and LIBO data is managed by the INDU monitoring crew.
Data Analysis	5%	 Data for VOYA has been analyzed, but not in depth.
Supervision/Admin	0%	 Hiring and supervision of the VOYA monitoring crew is done by the lead fire technician and the FMO.  Hiring and supervision of the INDU monitoring crew is done by the lead monitor.
Training & Professional Development	10%	 Rx 310.  Western Great Lakes Research Conference.  Fire Ecology Statistics Workshop.  Canadian Fire Weather Index training.  CPR, 1 st aid & Blood Borne Pathogen training.  Boat drivers training.  Fire refresher.
Park Visits	10%	 Circle tour of the Great Lakes parks.  Visits to SANC to set up monitoring program.

Table 5. Fire Effect Crew Accomplishments

The fire crew spent approximately 20% of their time measuring plots and entering data . Another 20% of the time was spent on fuel projects and fire assignments, and 2% of the time was spent on training. The remainder of the time was spent on other fire-related tasks. Approximately 74 person days were spent by the crew (excluding the fire ecologist) conducting plot work and data entry. This equates to approximately 57% of the fire effects funding being spent directly to this effort (74 out of a total of 130 person days).

Category	Percent Time	Notes
FMH plots	15%	Re-measured 10 forest plots (58 shifts).
CBI plots	1%	One crewmember assisted CBI ground-truthing (2 shifts).
Other plot work	2%	Two crew members assisted in collecting vegetation data for Sec 33 and two burn units (7 shifts).
Fire Assignments and Fuels Projects	20%	 Crew assisted on 1 prescribed fire (total of 9 shifts)  Two crewmembers participated in a 3 days fire suppression assignment (6 shifts)  Four crew members conducted hazardous fuels reduction near historical buildings. (40 shifts)
Data Entry	2%	Completed data entry of all plot data for 2005 (7 shifts).
Data Management and Conversion	0%	Not part of crews assigned duties.
Data Analysis	0%	Not part of crews assigned duties.
Supervision/Admin	0%	Not part of crews assigned duties.
Training & Professional Development	2%	Each crew member had refresher training.  CPR, 1 st aid & Blood Borne Pathogen training (8 shifts)  Boat drivers training (5 shifts).
Miscellaneous	58%	Crew members participated in in-house fire related duties as assigned.

Other Information: Alternative monitoring activities are taking place at VOYA, SACN and INDU. Protocols were specifically designed to address specific questions at the burn level. Two protocols at INDU were simple modifications to existing research plots that the crew has now absorbed.

The prescribed fire program at SACN is becoming firmly established. Currently, Robin Maercklein and his resource crew conduct the sampling, however within the next year monitoring activities will likely require more time than they have available, given their other duties. A monitor position will need to be filled that can assist them with their increasing workload.

I am currently assisting in vegetation planning at VOYA and with its collaborators (USFS & Quetico) to institute landscape scale planning. To acquire data needed for planning, researchers at the University of Minnesota and I have submitted a proposal to conduct a fire history and stand age study at VOYA.

The fire ecologist intends to spend the winter finishing the INDU FEMP and analyzing their monitoring data (4 months). During the spring and early summer, I will assist in burning and monitoring at SACN and VOYA (3 months). I hope to also get the VOYA data into some semblance of order - quality checking, put all alternate protocols in FEAT, etc.