



National Park Service
Fire Ecology Annual Report
Calendar Year 2010
Northern Great Lake Area Parks (VOYA, SACN, GRPO, ISRO, APIS)
 Fire Ecologist, Scott Weyenberg

A. Summary

During the spring of 2010 three prescribed fires were implemented at SACN, all in prairie units. The prescribed fire program at SACN has been successful over the past three years thanks to the participation of SACN, VOYA and Wildland Fire Module staff.

The dry spring was followed by an exceptionally wet summer throughout the Upper Midwest. As a result, no other prescribed fires were accomplished at any of the other Upper Great Lakes Parks.

The ecologist spent a fair amount of time travelling throughout the summer to the various parks he services. Additionally, he participated in teaching part of a Monitoring Workshop put on by Minnesota interagency partners.

Table 1. Fire Effects Plot Workload (2010) and Total Plots Installed

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plots
Voyageurs	Red/White Pine	FMH forest plot			3	34
Voyageurs	Mixedwood	FMH forest plot				13
Voyageurs	Jack Pine	FMH forest plot			2	12
Voyageurs	Red/White Pine	Other			45	77
Voyageurs	Mixedwood	Other				15
Voyageurs	Aspen/Birch	Other				8
Voyageurs	Sedge Meadow	Other				6
Voyageurs	Oak Savanna	Other				3
Voyageurs	Red/White Pine	Photo Points			12	12
Voyageurs	Jack Pine	Photo Points				1
Voyageurs	Mixedwood	Photo Points				6
Voyageurs	Oak Barrens	Photo Points				1
Voyageurs	Sedge Meadow	Photo Points				1
St. Croix NSR	Tallgrass Prairie	Other		4	11	15
St. Croix NSR	Oak Savanna	Other			6	6
Total				4	79	210

Table 2. Fire Ecology Staffing 2010

Ecologist and Monitors	Starting Date	Ending Date	# of Pay Periods	READ Qualified (Yes or No)	Training and Development
Scott Weyenberg	2004	NA	26	No	PC ORD training, Firing Boss task book initiated, GIS training, Western Great Lakes Research Conference.
Dominic Ruis	5/3/10	8/17/10	22	No	

Table 3. Management Objectives and Monitoring Results

Fuel reduction objectives/results are mean percent reduction from pre-burn to immediate post-burn. Woody stem density objectives/results are for 2-5 year post-burn mean density. Herbaceous objectives for the SACN units are long term 20+ year objectives.

Burn or Monitoring Unit	Management Objective (Restoration)	Monitoring Results (90% confidence interval)	Objective Achieved?	Year Last Analysis Completed
VOYA				
Whispering Pines II (n = 20)	Reduce fuel load by 30-80%	1-100 hr fuels -21 to +55% (p = 0.47) 1000 hr fuels -53 to +26% (p = 0.56)	No	2010
	Reduce litter depth by 90%.	Litter depth -45 to -77% (p = 0.0000)	No	2010
	Reduce ABBA density by 30%.	ABBA density -22 to -98% (p=0.007)	Yes	2010
Gagnon	Reduce brush cover by 50%	12-58% reduction by 01yr03 (n = 4).	Yes	2010
	Reduce duff depth.	77% reduction (n=1)	Yes	2007
Mica Bay area (n = 3)	Maintain overstory current density $\pm 10\%$.	Basal area 170 -180 ft ² /ac. No change.	Yes	2010
	Decrease sapling density by 30%.	60 - 100% reduction.	Yes	2010
	Reduce litter & duff loading by 60 – 80%.	75 – 100% reduction.	Yes	2010
	Exposed mineral soil on >20% of site.	25% mineral soil exposure immediate post burn.	Yes	2010
	Reduce CW fuels 30-80%	1-100hr fuels +160%. 1000hr fuels +276%.	No	2010
Tar Point (n = 6)	Reduce CW fuels by 30 - 80%. Reduce litter by 90%.	1-100hr fuels -37% (p = 0.25) 1000hr fuels -6% (p = 0.28)	No	2009
Mica Island & Squab Island	30-80% Reduction in fuels.	0-3" fuels: Mica: +46 to +176%, (n=6) (p=0.02). Squab: +38 to -115% (n=6) (p=0.19).	No – Mica Isl. No – Squab Isl.	2007
		3"+ fuels: Mica: +19 to -131% (n=6) (p = 0.19) Squab: -31 to -102% (n=6) (p = 0.01)	No – Mica Isl. Yes – Squab Isl.	2007
	Reduce ABBA density to <200 tpa (Mica Isl.).	ABBA density: 21 to 278 tpa. n=10 plots. (p = 0.24)	No – Mica Isl.	2010

Burn or Monitoring Unit	Management Objective (Restoration)	Monitoring Results (90% confidence interval)	Objective Achieved?	Year Last Analysis Completed
Red pine – White pine forest (n=14 plots, 8 fires)	60-90% Reduction in 0-1” fuels.	0-1” fuels - 67% reduction; to a 200% increase.	No	2004
	50-70% Reduction in 1-3” fuels.	1-3” fuels: 56% decrease to a 43% increase.	No	2004
	50-70% Mortality in pole sized balsam fir.	Pole sized ABBA: 39-100% mortality.	Yes	2004
	Regenerate white pine seedlings.	Seedling counts 5 years post: increased 27-400%, (decreases found on two sites).	Yes	2004
SACN				
Sterling Prairie (n = 4)	Target cover: Native grass 50-80% Non-native grass<10% Native forbs.....25-50% Non-native forbs..... <2%	Current conditions: Native grass 56% Non-native grass 59% Native forbs.....9% Non-native forbs.....5%	Not yet	2010
Sunrise Prairie (n = 4)	Target cover: Native grass 40-70% Non-native grass<10% Native forbs.....20-35% Non-native forbs..... <2%	Current conditions: Native grass 45% Non-native grass 30% Native forbs.....19% Non-native forbs.....4%	Not yet	2010
Peaslee Island (n = 4)	Proposed target cover: Native grass 20-80% Non-native grass<10% Native forbs.....25-50% Non-native forbs..... <10%	Current conditions: Native grass 2 - 45% Non-native grass 2 - 32% Native forbs.....4 - 10% Non-native forbs.....2 - 20%	Not yet	2010
Olson’s Prairie (n = 4)	Proposed target cover: Native grass 40-70% Non-native grass<5% Native forbs.....15-30% Non-native forbs..... <1%	Current conditions: Native grass 14% Non-native grass 15% Native forbs.....2% Non-native forbs.....<1%	Not yet	2010

B. Fire ecologist accomplishments and areas of focus

Table 4. Fire Ecologist Accomplishments/Focus Areas

Category	Percent Time	Accomplishments and/or areas of activities
Planning	20%	INDU Fire Effects Program Review. LIBO site visit: prescribed fire and monitoring reveiw, research on the Indiana bat and oak regeneration.
Presentations	15%	Rx 310 (interagency). Monitoring workshop; protocol design and sampling (interagency).
NPS Meetings/ task groups	2%	INDU annual fire meeting (phone conference). Soil scoping session (VOYA).
Interagency work	1%	MN Interagency Prescribed Fire Working Group meetings.
Wildfire assignments	0	None
Prescribed fire projects	20%	Prescribed fire planning/prep (SACN). Burns: SACN: Olson Pr., Barker's Farm, Arcola; PIPE. Line preparation. Severity staffing.
Non-fire fuels projects	0%	
Research	2%	Collaboration on JFSP IFT-DSS Western Great Lake Prescribed Fire Consortium. Miller Woods mosaic pattern restoration proposal submitted. Fuels biomass succession literature review.
Data collection	10%	Sampled all plots at VOYA and SACN Assisted with some sampling at INDU and LIBO
Data entry	5%	VOYA and SACN data entry and error checking.
Data analysis	15%	Sec. 33, Mica Bay, Whispering Pines II, Mnoke Pr. Olson's Pr., Sterling Pr., Sunrise Pr., Pealsee Isl.
Supervision/Admin	10%	Hiring, supervision, payroll, travel authorization/vouchers, purchasing, etc.
Training	5%	PC ORD training. Fire refresher. NPS required trainings.
Travel	(25%)	Travel to INDU, LIBO and VOYA as well as for presentations and meetings. (This total is encompassed in the above categories but is mentioned here for your information.)
Miscellaneous	5%	Database management. Misc. assistance with resource management projects.

C. Fire effects crew accomplishments and areas of focus

Table 5. Fire Effects Crew Accomplishments/Focus Areas

Category	Percent Time	Notes
FMH plots	10%	Estimated amount of time spent collecting plot data; includes any preparation time.
WUI plots		
CBI plots		
Other plot work	25%	Fire effects monitoring – non-FMH plots. Seedling age/height relationship project.
Wildfire assignments	0%	Identify types of assignments; include READ (Resource Advisor) activities
Prescribed fire projects	<1%	Estimated amount of time spent assisting with prescribed fire projects; include project preparation, fire assignments (e.g. FEMO, FFT1) and READ activities
Non-fire fuels projects	25%	Assisted resource management with various projects. Time was paid for by resource management.
Data entry	25%	Estimated amount of time spent entering data from paper to PC
Data analysis	0%	This is expected to be very low number or zero for fire effects crew/lead monitor
Supervision/Admin	10%	Payroll, travel authorization/voucher, etc.
Training	5%	Fire refresher. Misc. required NPS training.
Miscellaneous		

D. Additional Information

Table 6. Data Entry and Projects Monitored in 2010

Park	% 2010 Data Entered	% 2010 Data Quality Checked	# Prescribed Fires Monitored*	# Non-fire Fuels Treatments Monitored*	# Wildfires Monitored*	# BAER Treatments Monitored*
Voyageurs National Park	20%	0%	0	0	0	0
St. Croix Riverway	80%	0%	2	0	0	0

* Number of treatment units with treatment effects monitoring conducted. Include pre-burn and post-burn monitoring but not burn-day monitoring.

E. Optional Information

VOYA

The rather dry spring was followed by an exceedingly wet summer at Voyageurs. As a result, no fires were conducted. Monitoring of post burn effects went forward as usual. The sole fire effects monitor left earlier than expected and much of the 2010 data remains to be entered and

checked. The ecologist spent two weeks at VOYA in late April staffing for fire severity and another two weeks assisting with plot sampling in June.

SACN

Three burns were conducted in the spring. This was followed by torrential rains during the summer. All the post burn sampling was completed, however pre-burn monitoring plots were not installed in several units where needed. The fire effects monitor traveled to SACN for two weeks to assist with sampling.

Biomass removal fuel treatments are being considered to help restore some of the savannas at the Riverway. The ecologist is assisting with that effort.

INSTRUCTIONS FOR UPLOADING 2010 ANNUAL REPORT

1. Save your report as a PDF file using the following file naming convention "2010 *Park/Network Name* Annual Report.pdf".
2. Go to the NPS Fire Ecology Sharepoint site (<http://npsfamshare.nps.doi.net/wildlandfire/firescience/fireecology/default.aspx>). In Fire Ecology Documents, upload your report to the 2010 Park and Network Fire Ecology Program Annual Reports folder.
3. Please e-mail your regional ecologist, Nate Benson, and MaryBeth Keifer to let us know when you get your report uploaded.

Call MaryBeth Keifer (603-795-2333) or Nate Benson (208-387-5219) if you have any questions or problems.