



National Park Service Fire Ecology Annual Report Calendar Year 2012

Northern Great Lakes Area Parks (VOYA, SACN, GRPO, ISRO, APIS)

Fire Ecologist, Scott Weyenberg

A. Summary

Fire activity among the Northern Area parks was low in 2012. Among the parks, two prescribed burn were conducted, one each at GRPO and SACN. The Buffalo FUM assisted in the 140 acre burn at SACN and the Fire Ecologist served as Firing Boss Trainee. The site was seeded in July with prairie species. The combination of fire and seeding will hopefully bring about a successful restoration.

Two members of the INDU Fire Effects crew assisted with monitoring at VOYA. This was fortunate, since the Fire Ecologist got hurt after the first week and was on light duty the rest of the summer.

The VOYA fire program managed a late season fire in a sugar maple forest at ISRO. The Area and Regional Fire Ecologists monitored the fire for a few days while it was still only a few acres. The fire was uneventful to say the least; however, it grew to just over 40 acres after leaf off.



Table 1. Fire Effects Plot Workload (2012) and Total Plots Installed

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Annual Total	Total Plots
Voyageurs	Red/White Pine	FMH forest plot			11	11	34
Voyageurs	Mixedwood	FMH forest plot					13
Voyageurs	Jack Pine	FMH forest plot					12
Voyageurs	Red/White Pine	Herbs/woody stems *			37	37	77
Voyageurs	Mixedwood	Herbs/woody stems *					15
Voyageurs	Aspen/Birch	Herbs/woody stems *					8
Voyageurs	Sedge Meadow	Herbs/woody stems *					6
Voyageurs	Oak Savanna	Herbs/woody stems *					3
Voyageurs	Red/White Pine	Photo Points			12	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	Herbs/woody stems *			12	12	25
St. Croix NSR	Jack Pine Barrens	Herbs/woody stems *					10
St. Croix NSR	Pine/Oak Forest	Herbs/woody stems *					6
St. Croix NSR	Oak Savanna	Herbs/woody stems *			5	5	6
Total			0	0	77	77	236

* Protocols include point intercept, frequency frames, fixed & variable radius plots.

Table 2. Fire Ecology Staffing 2012

Ecologist and Monitors	Starting Date	Ending Date	# of Pay Periods	READ Qualified (Yes or No)	Training and Development
Scott Weyenberg	2004	-	26	No	FIRB training assignment.
Lisa Raetz	5/20/12	8/25/12	7	No	Fire academy

Table 3. 2012 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				
Red & white pine	Prepare seedbeds, increase herbaceous layer diversity. Analysis compared spring to summer fires.	Discovered suite of generalist species present after all burns and suite of species specific to summer burns only. Manuscript prepared for publication.	Yes	2012 (1997-2012)
Mixedwood	Increase diversity in all canopy strata and in stand age. Analysis compared spring to summer fires.	Discovered suite of generalist species present after all burns and suite of species specific to summer burns only. See attached report.	Yes	2011 (1990-2010)

Burn or Monitoring Unit	Management Objective (Restoration)	Monitoring Results (90% confidence interval)	Objective Achieved?	Year Last Analysis Completed
Section 33 (n = 29)	Monitored "fire use" fire.		NA	2011 (2004-2009)
Whispering Pines II (n = 20)	Reduce fuel load by 30-80% Reduce litter depth by 90%. Reduce ABBA density by 30%.	1-100 hr fuels -21 to +55% (p = 0.47) 1000 hr fuels -53 to +26% (p = 0.56) Litter depth -45 to -77% (p = 0.0000) ABBA density -22 to -98% (p=0.007)	No No Yes	2010 (200)
Gagnon (n = 4)	Reduce brush cover by 50% Reduce duff depth.	12-58% reduction by 01yr03 (n = 4). 77% reduction (n=1)	Yes Yes	2010 (2007-2010) (2007)
Mica Bay area (n = 3)	Maintain overstory current density $\pm 10\%$. Decrease sapling density by 30%. Reduce litter & duff loading by 60 – 80%. Exposed mineral soil on >20% of site. Reduce CW fuels 30-80%	Basal area 170 -180 ft ² /ac. No change. 60 - 100% reduction. 75 – 100% reduction. 25% mineral soil exposure immediate post burn. 1-100hr fuels +160%. 1000hr fuels +276%.	Yes Yes Yes Yes No	2010 (2007-2010)
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 (2008-2009)
Mica Island & Squab Island	30-80% Reduction in fuels. Reduce ABBA density to <200 tpa (Mica Isl.).	0-3" fuels: Mica: +46 to +176%, (n=6) (p=0.02). Squab: +38 to -115% (n=6) (p=0.19). 3"+ fuels: Mica: +19 to -131% (n=6) (p = 0.19) Squab: -31 to -102% (n=6) (p = 0.01) ABBA density: 21 to 278 tpa. n=10 plots. (p = 0.24)	No – Mica Isl. No – Squab Isl. No – Mica Isl. Yes – Squab Isl. No – Mica Isl.	2007 (2007) 2010 (2007-2010)
Red pine – White pine forest (n=14 plots, 8 fires)	60-90% Reduction in 0-1" fuels. 50-70% Reduction in 1-3" fuels. 50-70% Mortality in pole sized balsam fir. Regenerate white pine seedlings.	0-1" fuels - 67% reduction; to a 200% increase. 1-3" fuels: 56% decrease to a 43% increase. Pole sized ABBA: 39-100% mortality. Seedling counts 5 years post: increased 27-400%, (decreases found on two sites).	No No Yes Yes	2004 (1989 – 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 (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 (2010)

Burn or Monitoring Unit	Management Objective (Restoration)	Monitoring Results (90% confidence interval)	Objective Achieved?	Year Last Analysis Completed
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 (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 (2009)

B. Fire ecologist accomplishments and areas of focus

Table 4. Fire Ecologist 2012 Accomplishments/Focus Areas

Category	Percent Time	Accomplishments and/or areas of activities
Planning	10	* Prescribed fire planning, compliance and implementation. * Revised 4 burn plans. * Budget planning, NFPORS.
Presentations	7	* Presented webinar on underburning in red pine. * Submitted story to Fire Effects newsletter. * Presentation to INDU fire crew on fire effects/results of burns. * Put on 2 day chainsaw training for SACN employees.
NPS Meetings/ task groups	<1	* INDU annual fire meetings (phone conference).
Interagency work	3	* MN Interagency Prescribed Fire Working Group meetings. * Advisory board member of Lake States Fire Science Consortium.
Wildfire assignments	7	* Minong Fire, FEMO * Step-up at SACN
Prescribed fire projects	5	* Line Prep. * FIRB Trainee. * Tool maintenance. * Burned 1 unit.
Non-fire projects	0	*
Research	8	* Received preliminary data from contractor on VOYA fire history. * Reviewed 2 manuscripts. * Requested money for LiDAR data from GIS funds.
Data collection	10	* Sampling at VOYA and SACN.
Data entry	2	* Data entry for VOYA and SACN. * Data clean-up and management.
Data analysis	25	* Finished manuscript on spring/summer fire treatment comparison. * Analysis for Mnoke, Miller Woods Summary report and Fuel Moisture / CFDRS correlation. * Review of INDU fuels reports.
Supervision/Admin	5	* Hiring, supervision, payroll, travel authorization/vouchers, purchasing.
Training	5	* FIRB training on SACN Rx fire. * Weather spotter training. * CRP, First Aid.

		* OSHA, operational leadership. * Misc. required training.
Travel out-of-park for plot or project work	2	* Travel to VOYA and CUVA for sampling. * Travel to INDU for site visits.
Miscellaneous	10	* Ecology program management: • Protocol updates. • File maintenance. • Sampling schedules.

C. Fire effects crew accomplishments and areas of focus

Table 5. Fire Effects Monitor 2012 Accomplishments/Focus Areas

Category	Percent Time	Notes
FMH plots	12	Sampled 11 plots.
WUI plots		
CBI plots		
Other plot work	13	Project level monitoring. Duff bulk density sampling.
Wildfire assignments	25	FFT2 on 2 week detail to MO. Assisted with fire suppression and staffing at VOYA.
Prescribed fire projects		
Non-fire fuels projects		
Travel out-of-park for plot or project work	2	Travel to SACN.
Data entry	27	Data entry, error checking and scanning all SACN files and compiling on a CD.
Data analysis		
Supervision/Admin	3	Payroll, travel authorization/voucher, etc.
Training	10	Fire academy to obtain red card.
Miscellaneous	8	Required training (FISSA, No Fear Act), installation of software (FFI), and acquisition of equipment.

D. Additional Program Information

Only parks with an active fire program are included. See Southern Great Lakes Annual Report for INDU, CUVA and LIBO.

Table 6. Planning - 2012

Park	Does Park have written DFCs? (yes or no)	Date Park-level Monitoring Plan completed (or revised)	Total # of Project- or Community-level Monitoring Plans (not just 2012)	Assisted with how many BAER plans in 2012?
Voyageurs National Park	yes	2010	27	0
Grand Portage NM	don't know	No	0	0
St. Croix NSR	Yes	No	10	0

Table 7. Monitoring - 2012

Park	% 2012 Data Entered	% 2012 Data Quality Checked	# Prescribed Fires Monitored*	# Non-fire Fuels Treatments Monitored*	# Wildfires Monitored*	# BAER Treatments Monitored*
Voyageurs National Park	90%	0%	5	0	1	0
Grand Portage NM	na	na	0	0	0	0
St. Croix NSR	100%	0%	4	0	0	0
Isle Royale	na	na	0	0	0	0

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

Table 8. Communicating Results - 2012

Park	# of Project Monitoring Reports completed in 2011	# of Annual meeting(s) with Park staff	# of Formal presentations of results	Do you use Minitab?*
Voyageurs National Park	1	0	0	No
Grand Portage NM	na	0	0	
St. Croix NSR	0	0	0	

* This information will help to assess Minitab multi-user license needs.

Table 9. Research - 2012

Park	Are research needs identified in FMP or Monitoring Plan? (yes or no)	# of Proposals Submitted in 2012	# of Proposals Funded in 2012	# of Research Projects Supported in 2012*	Additional Comments
Voyageurs National Park	yes	0	1	1	I am collaborating with researchers from the U of MN to complete an ongoing fire history project
Grand Portage NM	Yes	0	0	0	
St. Croix NSR	yes	0	0	0	

*Number of funded research projects, new or ongoing, supported by the fire ecology program including logistical info or support, staffing, etc.

E. 2013 Direction

The focus will continue to be producing publishable reports either in peer reviewed journals or Resource Briefs. The Ecologist hopes to complete his FIRB task book, which will require a fire assignment. It will be a challenge for the fire program to complete any burns at SACN or VOYA given the limited funding and lack of personnel. Attempts at SACN will be made to collaborate with VFD's and the USFWS.

F. Optional Information

VOYA:

The Ecologist continues to collaborate with researchers at the U of MN. Several fire scars and tree cores have been analyzed by the university. Additional data collection with assistance for the researcher will take place this summer.

SACN:

Burns are planned for the spring and the Ecologist hopes to begin a fall burn program. Lack of resources is always an obstacle in the fall (even more so than in the spring). The park is planning a joint burn with a private land conservation organization to restore a remnant prairie. The Ecologist will assist with planning and organization for this burn.

INSTRUCTIONS FOR UPLOADING 2012 ANNUAL REPORT

1. Save your report as a PDF file using the following file naming convention "2012 *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 2012 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.