



**National Park Service
Fire Ecology Annual Report
Calendar Year 2012**

**Colorado Front Range &
Northwest Colorado
Park Clusters**



Fern Lake wildfire (Forest Canyon), Rocky Mountain National Park (December 2, 2012)

A. Summary

The 2012 fire season was a long one in Colorado. Despite the demands of a busy fire season, the Rocky Mountain National Park (ROMO) -based fire effects monitoring crew was able to complete the 2012 monitoring workload. Sam Coffin returned to ROMO for his fourth season as a fire effects monitor after a season with the USFWS in Texas. Sam started in April prior to the rest of the crew to assist cleaning up the fire occurrence records at Colorado National Monument (COLM), Black Canyon of the Gunnison National Park (BLCA), and Curecanti National Recreation Area (CURE). Matt Mueller returned in May for a second season as the fire effects crew lead. Kevin Terlep, a graduate student at Northern Arizona University, was hired under the STEP program and also started in May. The crew conducted monitoring at Dinosaur National Monument (DINO), COLM, Mesa Verde National Park (MEVE), as well as at their host park (ROMO).

Plot work

COLM 2 Post-burn plot visits

Post burn data were collected on 2 monitoring transects within the Red Canyon prescribed burn unit.

DINO 10 Year 04 plot visits
 16 Year 07 plot visits
 18 Year 12 plot visits
 9 Year 30 plot visits

The fire effects monitoring crew resampled monitoring plots associated with the Big Horn Basin, Pot Creek, Ruple Ranch, Slaugh Wall, and Success prescribed burn units as well as the Peterson wildfire. All monitoring follows existing non-FMH protocols developed by DINO resource management personnel. Although all historical hardcopy plot data has been entered into Excel, additional editing is still required to allow conversion of this electronic data into a format suitable for FFI.

MEVE 1 Post-thin plot visit
 3 Year 01 plot visits
 5 Pre-burn plot installations

The fire effects monitoring crew resampled monitoring plots in the Bobcat and Farview treatment units. Pre-treatment data was collected within the Upper Navajo treatment unit.

ROMO 5 Pre-burn plot visits
 6 Year 05 plot visits
 5 Year 10 plot visits

Pre-burn plot visits conducted in the Ponderosa Savanna type (FPIPS1T02) and Lower Montane Mixed Conifer type (FPICM1T08) in anticipation of future burns in the Horseshoe Park and Beaver Brook areas. Year 05 plot visits were conducted in 5 Lower Montane Mixed Conifer plots and 1 Front Range Ponderosa Pine (FPIPO1T09) plot. These plots were burned in the Horseshoe prescribed burn in the fall of 2007. Five Year 10 plot visits were conducted in the Eastside Lodgepole Pine – Manual Treatment type (FPICE1T08) within the Emerald Mountain mechanical thinning treatment. See Table 3 for management objectives and monitoring results.



Fern Lake wildfire (Cub Lake), Rocky Mountain National Park (December 14, 2012)

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

Park	Monitoring Unit	Type of Plot	Pre-treatment	Immediate Post	Post-treatment (1+ yrs)	Annual Total	Total Plots
Black Canyon of the Gunnison	Green Grizzly	Transect					14
		Total	0	0	0	0	14

Park	Monitoring Unit	Type of Plot	Pre-treatment	Immediate Post	Post-treatment (1+ yrs)	Annual Total	Total Plots
Colorado	Liberty Cap	Transect					7
	Monument Mesa	Transect					2
	Red Canyon	Transect			2	2	4
	Ute Mesa	Transect					15
		Total	0	0	2	2	28

Park	Monitoring Unit	Type of Plot	Pre-treatment	Immediate Post	Post-treatment (1+ yrs)	Annual Total	Total Plots
Curecanti	Soap Creek	FMH Forest plot					1
		Photo-point					6
		Total	0	0	0	0	7



Prescribed fire, Arthur R. Marshall Loxahatchee National Wildlife Refuge

Park	Monitoring Unit	Type of Plot	Pre-treatment	Immediate Post	Post-treatment (1+ yrs)	Annual Total	Total Plots
Dinosaur	Bear Fire	Transect					6
	Bighorn Basin Rx	Transect			10	10	10
	Buster Flats	Transect					10
	Chew Basin	Transect					15
	Disappointment Draw	Transect					10
	Dry Woman	Transect					10
	East Cactus	Transect					10
	Green Mountain Slope	Transect					9
	HQ Housing Area	Modified Daubenmire					5
	Iron Mine Draw	Transect					5
	Iron Springs Bench	Transect					11
	Lower Disaster Falls	Transect					10
	Pearl Park Rx	Transect					10
	Peterson	Transect			6	6	6
	Pot Creek	Transect			10	10	10
	Ruple Ranch	Transect			8	8	8
	Slaugh Wall Rx	Transect			10	10	10
	Split Mountain	Age analysis					20
	Success	Transect			9	9	9
	Thanksgiving	Transect					8
	Triple C	Transect					9
	West Cactus I	Transect					10
	West Cactus II	Transect					10
	Zenobia Basin	Transect					8
		Total	0	0	53	53	229



Dinosaur National Monument

Park	Monitoring Unit	Type of Plot	Pre-treatment	Immediate Post	Post-treatment (1+ yrs)	Annual Total	Total Plots
Florissant Fossil Beds	Mixed Conifer - Manual Treatment	FMH Forest plot					4
	Mixed Conifer - Manual Treatment	Photo point					70
	Ponderosa Pine	FMH Forest plot					2
	Ponderosa Pine - Manual Treatment	FMH Forest plot					3
	Ponderosa Savanna	FMH Forest plot					3
Total			0	0	0	0	82

Park	Monitoring Unit	Type of Plot	Pre-treatment	Immediate Post	Post-treatment (1+ yrs)	Annual Total	Total Plots
Great Sand Dunes	Medano WF	CBI					26
	Pinyon Flats HFR	Photo point					7
	San Luis Valley Ponderosa Savanna	FMH Forest plot					6
	San Luis Valley Rabbitbrush Prairie	FMH Brush Plot					19
	San Luis Valley Rabbitbrush Prairie	FMH Forest plot					2
Total			0	0	0	0	60

Park	Monitoring Unit	Type of Plot	Pre-treatment	Immediate Post	Post-treatment (1+ yrs)	Annual Total	Total Plots
Mesa Verde	Farview	FMH Brush plot		3		3	3
	Bobcat Canyon	FMH Forest plot		1		1	1
	Upper Navajo	FMH Brush plot	5			5	5
Total			5	4	0	9	9

Park	Monitoring Unit	Type of Plot	Pre-treatment	Immediate Post	Post-treatment (1+ yrs)	Annual Total	Total Plots
Rocky Mountain	Cow Creek WF	CBI					18
	Front Range Ponderosa Pine	FMH Forest plot			1	1	19
	Ponderosa Savanna	FMH Forest plot	2			2	14
	Eastside Lodgepole Pine – Manual Treatment	FMH Forest plot			5	5	6
		Photo point					73
	Big/Common Sagebrush	FMH Forest plot					8
	Lower Montane Mixed Conifer	FMH Forest plot	3		5	8	21
		Photo point					3
	Grand Lake HFR	Rapid Assessment					8
	Lodgepole Pine – West Slope	FMH Forest plot					14
	Deer Mtn HFR	Rapid Assessment					12
Total			5	0	11	16	196

			Pre-treatment	Immediate Post	Post-treatment (1+ yrs)	Annual Total	Total Plots
Total all Parks			10	4	66	80	625



Prescribed fire, Ford's Farm, GA

Table 2. Fire Ecology Staffing 2012

Ecologist and Monitors	Starting Date	Ending Date	# of Pay Periods	READ Qualified	Training and Development
Matt Mueller (lead)	5/7/2012	9/28/2012	10.5*	No	S-211 (Pumps); B-3 (Aviation Safety); Defensive Driving; Fire Extinguisher Use; Bloodborne Pathogens; Hearing Conservation; OTJ Training: RAWs maintenance, Monitoring techniques, Fuel Moisture Sampling; Fire Assignments as ICT5 trainee.
Sam Coffin	4/9/2012	9/6/2012	11	No	B-3 (Aviation Safety); Defensive Driving; Fire Extinguisher Use; Bloodborne Pathogens; Hearing Conservation; OTJ Training: WFMI, RAWs maintenance, Monitoring techniques, Fuel Moisture Sampling; Fire Assignments as ICT5 trainee.
Kevin Terlep	5/14/2012	8/9/2012	6.5	No	B-3 (Aviation Safety); Defensive Driving; Fire Extinguisher Use; Bloodborne Pathogens; Hearing Conservation; OTJ Training: Monitoring techniques, Fuel Moisture Sampling.
Nate Williamson	1/1/2012	12/31/2012	26	Yes	21-day detail with PFTC; ICS-300 (Intermediate Incident Command System for Expanding Incidents); First Aid/CPR; Defensive Driving; Fire Extinguisher Use; Bloodborne Pathogens; Hearing Conservation; Fire Assignments as FIRB trainee, SCKN trainee, DOCL trainee, LTAN mentee.

**Matt finished out his 1039 hours with the ROMO Fuels Module*



Sam, Rocky Mountain National Park BioBlitz



Kevin, Rocky Mountain National Park



Matt, Woodland Heights wildfire

Table 3. 2012 Management Objectives and Monitoring Results

Monitoring Unit	Management Objective	Monitoring Results ($\alpha = 80\%$)	Objective Achieved?	Year Last Analysis Completed
Pearl Park Rx (DINO)	60-100% reduction in sagebrush cover	100% reduction in sagebrush cover (<i>n=5; 1 burn</i>)	YES <i>see Appendix A for more detail</i>	2011
	Increase cover of native grasses to 30% within 2 years post-burn	85% cover of native grasses 2 years post-burn (<i>n=5; 1 burn</i>)	YES <i>see Appendix A for more detail</i>	2011

Monitoring Unit	Management Objective	Monitoring Results ($\alpha = 80\%$)	Objective Achieved?	Year Last Analysis Completed
Front Range Ponderosa Pine (ROMO)	40-80% total fuel reduction	32.5% reduction in total fuel load ($n=9$; 5 burns)	NO <i>Note: when considering woody fuels only, fuels reduction is 31.9%</i>	2012
	Limit overstory PIPO mortality to 5% within 5 years post-burn	13.4% reduction in overstory PIPO ($n=6$; 4 burns)	NO , but mountain pine beetle mortality a factor	2012
	generate 5-35% mortality in pole-sized trees within 5 years post-burn	63.7% reduction in pole-sized trees ($n=6$; 4 burns)	NO , but mountain pine beetle mortality a factor	2012
Ponderosa Savanna (ROMO)	40-80% total fuel reduction	1.3% reduction in total fuel load ($n=10$; 4 burns)	NO (results not significant)	2011
	Limit overstory PIPO mortality to 5% within 5 years post-burn	0% reduction in overstory PIPO ($n=5$; 3 burns)	YES	2011
	generate 5-30% mortality in pole-sized trees within 5 years post-burn	30.0% reduction in pole-sized trees ($n=5$; 3 burns)	YES	2011
Lodgepole Forest Westside (ROMO)	40-80% total fuel reduction	62.1% reduction in total fuel load ($n=4$; 2 burns)	YES (results not significant)	2011
	generate 10-45% mortality in overstory trees within 5 years post-burn	0.9% increase in overstory trees ($n=3$; 1 burn)	NO	2011
Eastside Lodgepole Pine Manual Treatment (ROMO)	80-100% woody fuel reduction	12.7% reduction in woody fuel load ($n=5$; 1 treatment)	NO (results not significant) <i>Note: when considering woody fuels > 1", fuels reduction is 63.8%</i>	2011
		33.6% reduction in overstory trees ($n=5$; 1 treatment)	N/A (objectives not specifically tied to overstory density)	2011
		70.2% reduction in pole-sized trees ($n=5$; 1 treatment)	N/A (objectives not specifically tied to pole-sized tree density)	2011
Lower Montane Mixed Conifer (ROMO)	40-80% total fuel reduction	50.5% reduction in total fuel load ($n=8$; 2 burns)	YES	2012
	generate 10-25% mortality in overstory trees within 5 years post-burn	61.9% reduction in overstory trees ($n=7$; 2 burns)	NO , but mountain pine beetle mortality a factor	2012
	generate 10-25% mortality in pole-sized trees within 5 years post-burn	48.2% reduction in pole-sized trees ($n=7$; 2 burns)	NO , but mountain pine beetle mortality a factor	2012

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	30%	- Completed EA, BA, and FONSI for ROMO FMP - Provided assistance to MEVE staff in early stages of FMP development - Development of ROMO Fire/Fuels Treatment Monitoring Plan - Plans Section Chief (PSC) for ROMO BioBlitz
Presentations	<5%	NPS Fire management planning presentation for Estes Valley Fire Protection District: Estes Park, CO
NPS Meetings/ task groups	<5%	- IMR RAWS Coordinator duties - NPS Fire Weather Committee - MEVE FMP meeting - IDT member for ROMO Exotic Plant Management EA planning process - ROMO New Technology Committee member
Interagency work	<5%	Assisted in data development/entry/analysis of interagency FPA data
Wildfire assignments	30%	- LTAN mentee on RM IMT2A (4 assignments) - Participated in Fern Lake wildfire in a variety of planning-related functions (decision support, PSC) - GSAN decision support assignments for wildfires in WY (YELL) and SD (Black Hills NF) - Local Initial Attack (in park and adjacent State/USFS) as ICT5, FFT1, and FFT2
Prescribed fire projects	5%	21-day detail with PFTC conducting prescribed burns in SC, GA, and FL
Non-fire fuels projects	0%	
Research	5%	- Collaborated with Colorado State University researchers with several proposals for ROMO and GRSA projects - ATR (Agreements Technical Representative) for several projects at ROMO and GRSA
Data collection	<5%	Monitors completed bulk of data collection
Data entry	<5%	Monitors completed bulk of data entry
Data analysis	10%	Completed annual report, continuing analyses of previous season's data
Supervision/Admin	15%	- Hired, supervised, trained monitoring crew, completed evaluations - Developed work schedule, priorities - Travel and time paperwork
Training	5%	21-day detail with PFTC - I-300 - First Aid/CPR
Travel out-of-park for plot or project work	0%	
Miscellaneous	<5%	- DINO RAWS maintenance, first responder duties - GRSA RAWS maintenance, first responder duties - Acting FMO duties

C. Fire effects crew accomplishments and areas of focus

Table 5. Fire Effects Crew 2012 Accomplishments/Focus Areas

Category	Percent Time	Notes
FMH plots	20%	• ROMO, MEVE
WUI plots	<5%	
CBI plots	0%	
Other plot work	20%	• DINO, COLM, fire effects plots (non-FMH)
Wildfire assignments	20%	• FFT1 trainee, FFT2 assignments
Prescribed fire projects	<5%	
Non-fire fuels projects	<5%	
Travel out-of-park for plot or project work	10%	
Data entry	25%	• Estimated amount of time spent entering data from paper to PC
Data analysis	<5%	
Supervision/Admin	<5%	• Payroll, travel authorization/voucher, etc.
Training	5%	• Refresher • CPR • B-3 • ROMO Backcountry Travel Training
Miscellaneous	<5%	• ROMO Junior Firefighter Program, ROMO BioBlitz

D. Additional Program Information

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?
Rocky Mountain National Park	Yes (process based)	2012 (in prep)	0	1
Great Sand Dunes National Park and Preserve	No	2005	0	0
Florissant Fossil Beds National Monument	No	2002	0	0
Dinosaur National Monument	Yes	2005	0	0
Colorado National Monument	Yes	2005	0	0
Black Canyon of the Gunnison National Park	Yes	2006	0	0
Curecanti National Recreation Area	Yes	2006	0	0
Mesa Verde National Park	No	2010 (update of 2003 plan)	0	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*
Rocky Mountain National Park	100%	100%	5	1	0	0
Great Sand Dunes National Park and Preserve	N/A	N/A	0	0	0	0
Florissant Fossil Beds National Monument	N/A	N/A	0	0	0	0
Dinosaur National Monument	100%	100%	5	0	1	0
Colorado National Monument	100%	100%	1	0	0	0
Black Canyon of the Gunnison National Park	N/A	N/A	0	0	0	0
Curecanti National Recreation Area	N/A	N/A	0	0	0	0
Mesa Verde National Park	50%	100%	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.

Table 8. Communicating Results - 2012

Park	# of Project Monitoring Reports completed in 2012	# of Annual meeting(s) with Park staff	# of Formal presentations of results	Do you use Minitab?*
Rocky Mountain National Park	0	1	0	Yes
Great Sand Dunes National Park and Preserve	0	0	0	
Florissant Fossil Beds National Monument	0	0	0	
Dinosaur National Monument	1	0	0	
Colorado National Monument	0	0	0	
Black Canyon of the Gunnison National Park	0	0	0	
Curecanti National Recreation Area	0	0	0	
Mesa Verde National Park	0	0	0	

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

Additional project monitoring reports are currently in preparation and will be completed throughout the winter and spring.

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
Rocky Mountain National Park	Yes	0	2	2	
Great Sand Dunes National Park and Preserve	Yes	0	1	1	
Florissant Fossil Beds National Monument	Yes	0	0	0	
Dinosaur National Monument	No	0	0	0	
Colorado National Monument	No	0	0	0	
Black Canyon of the Gunnison National Park	Yes	0	0	0	
Curecanti National Recreation Area	Yes	0	0	0	
Mesa Verde National Park	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

Management of the Fern Lake fire from October to the present has unfortunately precluded detailed analyses of field data. Direction for 2013 will include continued analysis of data and presentations/discussion with fire and resource management staff regarding the implications of those analyses. As time allows, the fire ecologist will seek out opportunities to share/present data to a variety of audiences (e.g. park staff, school groups, scientific community, etc.).

The fire ecologist will continue to pursue opportunities to complete Firing Boss (FIRB) qualification through prescribed fire and wildfire assignments. This will allow the pursuit of a longer term goal of becoming a fully qualified Long-Term Analyst (LTAN). The fire ecologist will also remain on the Rocky Mountain Area Type 2 Incident Management Team A as an LTAN mentee to gain additional experience in this position. Additionally, the fire ecologist will pursue opportunities to work towards Resource Unit Leader (RESL) in wildland fire as well as Planning Section Chief (PSC) on the ROMO All Hazards Type 3 Incident Management Team.

Pending approval to hire seasonal fire effects monitoring staff, the fire effects monitoring field season will begin in May with monitoring visits currently scheduled for CURE, DINO, FLFO, GRSA, MEVE, and ROMO.