



National Park Service Fire Ecology Annual Report Calendar Year 2004

Summary

The fire effects crew read a total of 32 plots in two parks (WACA, SAGU) during the 2004 field season including 12 yr-01 reads, 10 yr-02 reads, 4 yr-05 reads and 6 postburn reads. An additional thirty-one plots that were scheduled to be read this year were not due to budget constraints. Seventeen of those plots were grassland plots, five were brush plots and nine were forest plots. The grassland and brush plots were yr-02 reads at Wupatki N.M. and Sunset Crater N.M. and the forest plots were yr-02 reads at Saguaro N.P.

Two crew members also participated in the Devil's Bathtub Prescribed Burn as fire effects monitors and one as an EMT. The burn was an out of season (fall) burn, typical for prescribed burns at SAGU. Hopefully with our new FMP and BA in place we will be able to begin to burn in season (summer- predominantly June-July). We were able to safely collect first order fire effects data from two of the six plots that burned. The overall severity for this burn was 3.9 (scorched). One crew member assisted the Saguaro Fire Use Module in Wenatchee National Forest in Washington with a WFURB detail. There he conducted fire behavior and fire effects data collection and weather observations. Two crew members also conducted IA activities on two wildfires at SAGU.

Aside from these duties, the SAGU crew field and office tested our new FEAT software, which made for a slower and sometimes painful field season. As with any new program (or child for that matter) patience and a sense of humor were essential virtues in our endeavor. We did gain some valuable insight into FEAT and have passed along some six pages of recommendation to our regional liaison. It will be interesting to see what shape the final program takes.

Table 1. Fire Effects Plot Workload 2004/2005

The numbers not in bold represent total reads to date for the program. Bold numbers indicate number of plots read in 2004/the number to be read in 2004. 2005 are those projected to be read in the ensuing season.

Park	Monitoring Unit	Type of Plot (FMH, photo point, other – describe)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plot
Saguaro National Park 70 plots	Ponderosa Pine Forest PIPO 09 122.321	28 FMH Forest Plot	76	54 2004: 4	111 2004: 12/20 2005: 4	70
	Madrean Evergreen Woodland- Encinal	10 FMH Forest Plot	10	10	30	

Saguaro National Park 70 Plots	Woodland QUAR 06 123.31					
	Pine-Oak Forest QUAR 09123.32	12 FMH Forest Plot	12	0	0	
	Douglas Fir-Mixed Conifer Forest PSME 10 122.312	10 FMH Forest Plot	30	10	10 2004: 10 2005: 10	
	Oak Stringer within Pine Forest 123.321 QUHY 09	3 FMH Forest Plot	6	5 2004: 2/3	10 2005: 2	
	Pine Oak Forest 123.322 PILE 04	7 FMH Forest Plot	7 2005: 7 reads & 3 installs	0 2005: 10	0	
Sunset Crater N.M. 15 Plots	Montane Meadow 142.411 BOGR 02	10 FMH Grassland Plot	10	10	10 2004: 0/10	15
	Pine Encroachment Area of Montane Meadow 142.411 PIPO 02	5 FMH Brush Plot	5	5	5 2004: 0/5	
Wupatki N.M. 16 Plots	Plains/Great Basin Grassland-short grass community HIJA/BOER 01 142.121	16 FMH Grassland Plot	9	0	7 2004: 0/7	16
Walnut Canyon N.M. 12 Plots	Ponderosa pine Forest PIPO 09 122.32	10 FMH Forest Plot	11	9	18 2004: 4 2005: 1	12
	Pinyon-Juniper Forest PIED 02 122.41	2 FMH Forest Plot	1	2	2	
Total	10 monitoring types	82 Forest 5 Brush 26 Grassland	177 2004: 0 2005: 7 & 3 install	105 2004: 6/7 2005: 10	203 2004: 26/56 2005: 17	113 2004: 32/63 2005: 34 & 3 installs

Table 2. Fire Ecology Staffing 2004

Complete or devise a staffing and personnel development table. Include fire training (e.g. S-290), Distance or on-campus college credit, technology training, nwcg taskbooks initiated or completed, conferences attended, etc.

Monitor	Starting Date	Ending Date	# of Pay Periods	Training and Development
James Leckie	1/11/04	12/31/04	25	Statistical training course
Ed Kuklinski	6/13/04	10/16/04	9	Completion of FEMO task book
Alicia Michels	6/13/04	10/16/04	9	Sponsor of 130/190
Laura Bolyard	6/13/04	10/16/04	9	Initiation of IOF3 task book/Sponsor S290

Funding was insufficient to further develop staff.

Table 3. Management Objectives and Monitoring Results 2004

All results shown are 90% confidence intervals of the mean. Fuel reduction, stand density and herbaceous cover objectives/results are mean percent reduction from preburn to time frame indicated below. An underlined number of plots indicates that the minimum sample size has been attained for that variable.

Monitoring Unit	Management Objective (Restoration)	Monitoring Results (90% confidence interval)	Objective Achieved?
SAGU-Mica Bowl Burn Unit Ponderosa Pine Forest	30-50% total fuel reduction 1-yr postburn	Total fuel reduction = 44% (<u>n=18</u> plots, 4 fires)	YES
	2-yr postburn stand reductions: reduce trees 2.5cm -15cm DBH by 15-30% reduce trees <15.1cm DBH by no more than 15%	Stand density 2-yr reduction= 2.5cm-15cm DBH trees= 13.9% (<u>n=9</u> plots, 2fires) >15.1 cm DBH trees= 6.7% (<u>n=9</u> plots, 2fires)	NO YES
SAGU-North Slope Burn Unit*	30%-50% total fuel reduction 1-yr postburn maintain 1000hr fuels at 5-7 ton/ac	1-yr total fuel reduction = 54.8% (<u>n=5</u> plots, 1 fire)	YES
Douglas Fir-Mixed Conifer Forest *Analysis of Helens II wildland fire	Stand reductions 2-yr: reduce trees 2.5cm -15cm DBH by 30%-50%	stand density 1-yr reduction= 2.5cm-15cm DBH trees= 29.8% (<u>n=5</u> plots, 1fire)	Uncertain* *It appears we will meet our objectives but to be certain we must wait for the yr 02 read.
	5-yr: reduce trees >15.1cm DBH by no more than 10%	>15.1 cm DBH trees= 9.2% (<u>n=5</u> plots, 1fire)	
SAGU-Devils Bathtub Burn Unit Ponderosa Pine	50% total fuel reduction 1-yr postburn	Postburn analysis total fuel reduction = 36.3% (<u>n=4</u> plots, 2 fires)	Uncertain* * It appears we will not meet our objectives but to be certain we must wait for yr 01 read. Minimum sample size not achieved

Monitoring Unit	Management Objective (Restoration)	Monitoring Results (90% confidence interval)	Objective Achieved?
Devils Bathtub Burn Unit Ponderosa Pine	2-yr postburn stand reductions: reduce trees 2.5cm -15cm DBH by 15-30% reduce trees >15.1cm DBH by no more than 15%	Postburn analysis Stand density reduction 2.5cm-15cm DBH trees = 5.3% >15cm DBH trees = 2.5% (<i>n=4 plots, 2 fires</i>)	Uncertain* It appears we will not meet our objectives but to be certain we must wait for yr 02 read. Minimum sample size not achieved.
SAGU- Devil's Bathtub Burn Unit Silverleaf Oak stringer Association	30%-50% total fuel reduction 1-yr postburn	Postburn Analysis Total fuel reduction = 9.3% (<i>n=2 plots, 1 fire</i>)	Uncertain* *It appears that we will not meet our objective but to be certain we must wait for the yr 01 read. Minimum sample size not achieved
	2-yr stand density: reduce 2.5cm-15cm tree densities by 15%-30%	Postburn Analysis 2.5cm-15cm DBH stand reduction = 5.3% (<i>n=2 plots, 1 fire</i>)	Uncertain* It appears that we will not achieve our objective but to be certain we must wait for yr 02 reads.
WACA- Pictograph Burn Unit Ponderosa Pine Forest	50% total fuel reduction 1-yr postburn	1-yr total fuel reduction = 58.1% (<i>n=4 plots, 1 fire</i>)	Uncertain* *minimum sample size not achieved
	5-yr herbaceous objectives: maintain or increase diversity and cover	5-yr herbaceous diversity increase = 95% cover increase = 39.7% (<i>n=4 plots, 1 fire</i>)	YES* *minimum sample size not achieved
	2-yr postburn stand reductions: reduce trees 2.5cm -15cm DBH by 50% reduce trees <15.1cm DBH by no more than 15%	2-yr stand density reduction 2.5cm-15cm DBH trees = 42.8% >15cm DBH trees = 12.3% (<i>n=4 plots, 1 fire</i>)	NO* *minimum sample size not achieved

Additional Information

This year GRCA fire effects came down to aid us in our plot endeavors. We attacked the North Slope plots for year 01 reads after the Helen's II wildfire. Initial progress was slow as no current member of the team had read herb lines on the North Slope. Once we had the species under control things picked up substantially. By the end of the six day hitch we had read nine of the ten plots I was hoping to read, quite an accomplishment. On the tenth plot I made a safety call not to enter the area. Winds had been picking up all afternoon as I entered a severely burned area. The overstory and poles on the plot had been reduced to charred snags. During my assessment I witnessed large branches of two trees come down and decided not to subject the crew to the hazard. During their visit we also had a small wildfire in the Park which the IC affectionately deemed the Canyon Fire in GRCA's honor. Two of the crew, one GRCA and one SAGU responded as lookouts. An interesting and potentially controversial video exploring an individual's response to the rigors solitude can exert on one in the backcountry was created during our time with GRCA. At this time it is uncertain if it will be released to the public.

It is recommended that we continue to install plots in order to reduce our deficiencies in regards to minimum sample size for monitoring types at WACA and SAGU.