Badlands National Park
Pinnacles Prescribed Fire Monitoring Report

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Introduction

The Pinnacles Prescribed Fire is an 848 acre unit comprised on both native and non-native grassland communities. The Pinnacles prescribed burn unit is located in the north central portion of Badlands National Park. It is bounded on the North by the Park Boundary. The Eastern Boundary consists of Brule and Sharps formations (unvegetated). The south Boundary consists of the Brule formation immediately south of and parallel to the Sage Creek and Badlands Loop Roads. The western boundary runs from the Hay Butte Overlook due north to the park boundary following the section line. Private property lies to the west of this unit boundary. The unit is bisected by the Badlands Loop Road leading out of the park past the Pinnacles Ranger Station and on to the community of Wall. The portion to the west of the entrance station will be considered Segment 1, while the portion to the east will be referred to as Segment 2. Segment 1 was treated with a backing and flanking prescribed fire in April of 2000. Ignition occurred during three operational periods. Blacklining occurred on April 30th. Ignition of Segment 2 occurred on May 4th and ignition of Segment 1 occurred on May 9th.

Objectives

SPECIFIC OBJECTIVES

- Burn 80-100% of the burnable project area
- Reduce relative cover of non-native grasses by at least 30% 1-yr. post burn.
- Increase relative cover of native grasses by at least 10% 1-yr. post burn.
- Increase relative cover of native forbs by at least 10% 1-yr. post burn.
- Maintain 30% reduction of non-native grass relative cover 5-yrs. post burn.
- Maintain increase of relative cover of native grass and forbs 5-yrs. Post burn

Summary of Events

Prior to the day of the burn, the fire crew from Badlands National Park prepared for the burn with a mow line along the northern fenceline. The mowline excluded a riparian feature on the west side of the unit.

Three long-term fire effects monitoring plots were installed at random within the burn unit prior to the burn. Biomass and soil moisture samples were collected near the monitoring plots. A briefing of all personnel occurred on site before each of the operational periods.

Weather Observations

4/30/02	Temperature		Dew		Wind		
Time	Dry	Wet	Point	RH	Speed	Direction	Comments
0800	50	44	38	63	1-3	SW	FDFM 13%
0900	54	46	38	55	3-6	NW/W	FDFM 13%
1000	51	45	38	59	3-6	N	
1100	53	46	39	60	5-9 G 11	NE to ENE	
1230	52	44	39	59	3-6	N to NE	

5/4/02	Temperature		Dew		Wind		
Time	Dry	Wet	Point	RH	Speed	Direction	Comments
0900	42	36	28	57	4-6	N/NE	FDFM 12%
940	44	37	29	52	4-5	N/E	12%
1020	46	37	24	42	4-5 G 8	E – SE	10%
1100	49	40	26	40	5-6	SW	10%
1200	53	42	29	39	4-6	S	7%
1300	55	43	29	36	1-3 G 6	SE	7%
1400	55	43	29	36	5-9 G 10	SE	7%
1500	60	47	15	33	5-7 G 10	SE	6%
1600	64	48	31	29	6 -12	SW – S	5%
1700	63	48	33	32	5-7 G 9	SE	8%
1800	62	48	34	35	3-6	SE	11%

5/9/02	Temperature		Dew		Wind		
Time	Dry	Wet	Point	RH	Speed	Direction	Comments
1000	46	35	16	30	14 – 18	NW	FDFM 8%
1015	-	-	-	-	15 G 21	NW	-
1040	51	39	22	32	15 G 20	NW	6%
1130	50	38	20	30	15 G 22	NW	6%
1300	51	37	15	27	9 -16	NW	6%
1345	53	40	22	29	5-6	NW	6%
1500	54	40	20	26	8 – 15	NW	6%
1600	58	45	24	26	6 - 11	S/SW	7%

Fire Behavior

Date	Time	Location	Fire Type	ROS	FL	Comments
5/4/02	1100	-	B	½ ch/hr	8”-16”	
5/4/02	1300	-	B	½ ch/hr	4”-6”	
5/4/02	1340	-	F	½ ch/hr	6”-8”	Agsm
5/4/02	1600	-	F	½ ch/hr	Up to 2’	Agsm
5/4/02	1630	GPOPR1D0103	F/H	6 ch/hr	1’	
5/9/02	1400	Start Point	B	½ ch/hr	Up to 1’	
5/9/02	1515	GPOPR1D0101	F	3 ch/hr	1’ – 18”	
5/9/02	1530	GPOPR1D0101	F/B	¾ ch/hr	1’ – 18”	
5/9/02	1535	GPOPR1D0101	B	½ ch/hr	1’ – 18”	
5/9/02	1545	GPOPR1D0101	B	½ ch/hr	1’ – 18”	
5/9/02	1550	GPOPR1D0101	B	½ ch/hr	1’ – 18”	

Biomass and Soil Moistures

The average biomass for the three FMH plots within the burn unit was 3.60 tons/A.
The average soil moisture for the three FMH plots was 38%.

Conclusions

The long-term health of ecosystems is the focus of the prescribed burning program here in the Northern Great Plains and at Badlands National Park, therefore certain criteria need to be assessed.

Some objectives are immediately measurable such as fuel loading reduction immediate post-burn. Other quantifiable specific objectives need to be viewed over the course of several years before results can be determined. With a long term ecological monitoring program in place, a quantifiable assessment of prescribed fires specific objectives can be made.