

Badlands National Park
Conata II Prescribed Fire Monitoring Report
Prepared by Leah H. Mitchell



Burn Unit Summary

The Conata II burn was completed in one operational period on October 3, 2007. It is a 2000 acre prescribed fire within the greater Conata Basin. The Conata II prescribed burn unit is located in the north central portion of Badlands National Park. The entire burn unit lies within the Conata Unit of the Badlands Wilderness Area except the area above the rim of Wall, south of Loop Road. The Park boundary bounds it on the south. The north and east boundaries consist of unvegetated badlands. The west boundary consists of unvegetated Brule Formation. Buffalo Gap National Grassland lies to the south of the unit boundary. There is a low-density prairie dog town in the middle of the unit. This project is being implemented to promote native species growth to sustain the prairie dog town.

Date: 10/3/2007

Size: 2000 Acres

Vegetation type: The primary vegetation type within the Conata II Prescribed fire unit is a mixed grass prairie dominated by western wheatgrass

Personnel:

Burn Boss: Eric Allen, Zach Suhr (trainee)

Firing Boss: Jim McMahill

Holding Specialist: Ken Thompson

Fire Monitors: Andrea Holmquist, Leah Mitchell (T)

Holding Resources: TFLD Thad Marcoe

5 Type 6 Engines:

1 Squad

3 ATV's

Objectives

The goals of the Conata II prescribed fire are to increase native grass and forbs cover, reduce the occurrence of non-native perennial grasses, decrease fuel loading, and reduce hazardous fuels adjacent to the park boundary. Restoration of the natural role of fire in the ecosystem has been an ongoing resource management goal at Badlands National Park and is specified in the park's Fire Management Plan. Fire behavior and effects will be closely monitored using NPS fire monitoring protocols.

SPECIFIC OBJECTIVES

- Provide for firefighter and public safety during the implementation of this plan.
- Increase relative cover of native grasses by 10 to 25% 1-yr. post burn.
- Enhance active prairies dog colony size by 20%, 1- year post-burn.
- Burn 65-80% of the burnable project area.

Weather Observations

[Date] Time	Temperature		Dew Point	RH	Wind		Comments
	Dry	Wet			Speed	Direction	
0945	66	54	43	43	8-10, gusts 15	S, SW	PIG: 40 U, 20 S Fdfm: 8/11
1055	75	55	39	27	8-10, gusts 13	SW	PIG: 60 U, 40 S Fdfm: 6/8
1150	79	56	37	22	12-16, gusts 26	W	PIG: 70 U, 50 S Fdfm: 4/7
1257	84	57	34	17	10-12, gusts 20	W	PIG: 90 U, 60 S Fdfm: 3/6

Fdfm= fine dead fuel moisture

PIG= Probability of Ignition; U= unshaded, S= shaded

Fire Behavior Observations

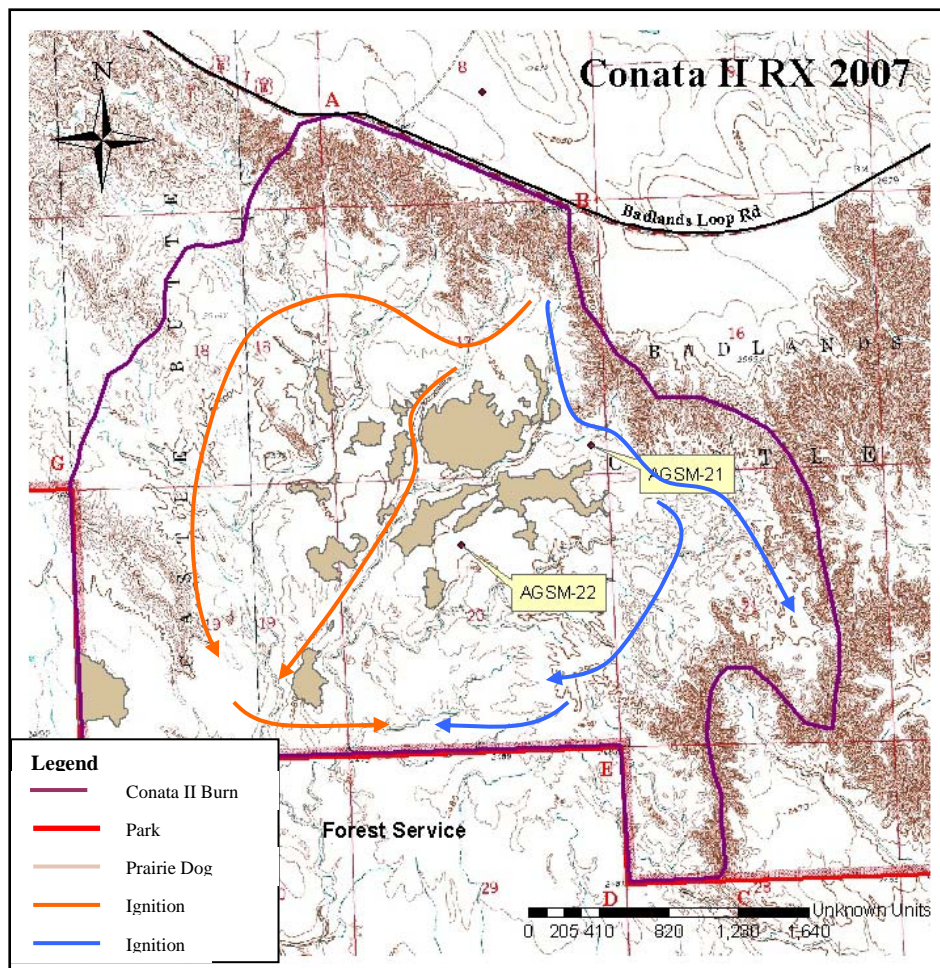
Fire activity was limited to areas of immediate ignition. Minimal activity was witnessed due to relatively sparse and discontinuous fuel loading.

Time	Location	Fire Type	ROS*	FL	Comments
1115	East Boundary	B	> 1 c/hr	6-12"	Max flame length 2 ½ feet
1125	East Boundary	H/B	2 c/hr	4-12"	Fire making short runs then extinguishing due to lack of fuel
1205	NW of pt. E	B	.5 c/hr	4-12"	Active perimeters limited to areas of ignition
1220	Center of unit	B/F	3 c/hr	6-18"	Activity isolated in drainage with increased fuel loading

* ROS (rate of spread) in chains per hour

Fire Progression

Ignition for test burn began at 1000 a.m. on northeast corner of unit, map point 'B'. At 1040 a.m., two igniting teams (3 members each) were utilized to carry the test fire westward from 'B' to 'A', and southward from 'B' to 'C'. Fire was discontinuous due to minimal fuel loading from drought and established prairie dog towns (areas of decreased vegetation). Ignition team 1 moved west to 'A' and then southward along western boundary toward 'F'. One strip was laid in the drainage east of the western



boundary to ensure central area of unit burned. Afterward, west Ignition team proceeded south to region between 'F' and 'E', where they tied black line into rocky area by approximately 1200. Meanwhile, east Ignition carried ignitions moved south along eastern boundary toward 'E' before working westward to tie black into rocks by 1200. Region between two ignition teams (central to 'E' and 'F') was too sparse in fuel to carry fire, however area just east of point 'F' was mopped up by crew and central southern boundary did not necessitate additional attention or black-lining.

Biomass and Soil Moisture Sampling

Plot	Sample size	Fuel Loading (ton/acre)	Average Fuel Loading	Soil Moisture	Average Soil Moisture
AGSM 21	3	1.0	0.9	5.8	5.5
AGSM 22	3	0.8		5.2	

Note: AGSM = Western Wheatgrass

Fire Monitoring

Fire monitoring plots 21 and 22 were evaluated periodically between the hours of 1100 and 1200. Both plots were sampled for fuel moisture and loading previous to burn, as well as assessed for post-burn severity on October 11, 2007. Immediate post-burn assessment showed approximately 90% of plot 21 vegetation layer was moderately burned with 5% lightly burned and 5% unburned. 90% of the substrate layer of 21 was lightly burned, while 5% was scorched, and 5% was left unburned. In general, fire behavior was low with minor activity, mostly immediate to ignition areas. Plot 22 did not burn at all within the transect boundaries.

Smoke Monitoring

Smoke observations were recorded once per hour from the time of ignition (1000 hrs). Monitors evaluated the perimeter of the fire while moving in a clockwise direction from the location of the test burn, to the southeast corner of the burn unit. Light gray smoke was witnessed with moderate dispersal at 1100 hrs, progressing into good dispersal at 1200 hrs. Column of smoke was lifting and winds aloft carried smoke into higher altitudes. At 1100 hrs, smoke was recorded at 2540 feet in elevation, with wind speeds at 8-10 mph with gusts of 13mph. Approximate altitude of smoke layer above ground was estimated at 400 feet. At 1200 hrs, wind speeds increased to 12-15mph with gusts of 26mph, thus increasing above ground smoke altitude to approximately 1000 feet. Visibility remained good throughout ignition period.

Conclusions

Based upon post-burn observations and fuel load assessments, the following project-specific objectives were evaluated immediately post-fire.

- Approximately 35% of the designated acreage within the prescribed unit was burned.
- The plots within Conata II unit; AGSM 21 and AGSM 22 will be read at 1, 2, and 5 year increments following fire for vegetative assessment.
- Minimal fire activity was observed in the Prairie Dog town



Conata II prescribed fire backing through Western wheatgrass