

2020 TRAIL CREEK CAMPGROUND FIRE ASSESSMENT
BIGHORN CANYON NATIONAL RECREATION AREA

Burn Ignition Date: 10 October 2020

The riparian area along the Trail Creek RV Campground in Bighorn Canyon National Recreation Area (BICA) was heavily impacted by a wildfire that burned a total of 3.6 acres comprised of cottonwood (*Populus* sp.) and juniper (*Juniperus* sp.) forest habitat, and grassland containing Indian Rice Grass (*Achnatherum hymenoides*), Blue Bunch Wheat Grass (*Pseudoroegneria spicata*), and Rubber Rabbit Brush (*Ericameria nauseosa*).

It is estimated that at least 65 cottonwoods and 40 junipers in this area were severely scorched or destroyed by the fire. Because of the steep terrain and loss of grass cover, there is the potential for severe erosion, particularly in the Trail Creek drainage area leading to Bighorn Reservoir. It is imperative that mitigation measures be quickly undertaken to reduce major resource damage due to soil loss and prevent introduction of invasive species which would negatively impact the habitat.

Because this area is considered a major birding area in the park, currently supporting over 135 bird species (approximately 56% of total species recorded for BICA), it is assumed the fire impacted habitat critical for resident and breeding birds, as well as migratory species, with the potential to cause a serious reduction in species diversity. Additionally, this is prime habitat for a portion of the park's bighorn sheep (*Ovis canadensis canadensis*) and mule deer (*Odocoileus hemionus*) herds, that utilize the area for both forage and water access.

Site Assessment:

The fire (human-caused) started on the evening of October 10, 2020, in an unattended fire pit, then ignited a camper located in same campsite at the Trail Creek Campground. The fire quickly spread to nearby terrain aided by wind gusts between 35-50 miles per hour. The fire was suppressed by 1:00am, October 11, 2020, then monitored throughout the night until declared contained the afternoon of October 11, 2020. Visual assessments were completed immediately post burn (October 11, 2020), on October 14, 2020, and on October 19, 2020. Assessments were conducted by Ryan Felkins, Bioscience Technician and IPM coordinator, and Virginia DuBow, Chief of Resources at Bighorn Canyon National Recreation Area. The area was mapped using ArcGIS and GoogleEarth Pro.



Fig. 1. Area showing extent of burn. Red dot indicates ignition site.

Approximately 3.6 acres of park resources were negatively impacted by this fire (Fig. 1), consisting of riparian habitat containing cottonwoods-juniper and grassland (see Figs. 2 & 3). The burned area includes very steep terrain along the drainage of Trail Creek into Bighorn Reservoir. The fire damaged or destroyed approximately 65 cottonwood trees and approximately 40

junipers. Overall health of any surviving trees will have to be monitored over the winter to assess viability and regrowth in the spring.



Fig. 2. Burned cottonwoods.



Fig. 3. Burned grassland area in Trail Creek drainage.

Potential loss or detrimental change to vegetation type will dramatically impact this riparian area, seriously decreasing the habitat value for wildlife. Any serious influx of non-native species in this area will significantly inhibit natural recovery efforts.

Suppression activities minimally contributed to resource impacts in the burn area, as most equipment was able to stage on the paved and gravel roads and developed campground area.

Cultural Resources:

A post-burn assessment of the area has not yet been conducted. The area was surveyed during 2012 when improvements were done on the Trail Creek Campground sites. It was determined at that time that modern camping and impacts from park service installations had removed the possibility of finding any intact subsurface deposits within the first couple meters of the Area of Potential Effect (APE) within the campground area, and no cultural materials were recorded.

Further investigation of the Trail Creek drainage area (Fig. 3) is warranted to determine presence or absence of cultural materials.

2020 TRAIL CREEK CAMPGROUND BURN RESTORATION/RECOVERY

Burn Ignition Date: October 10, 2020

Site Description:

The Trail Creek Campground Area is a prime example of a cottonwood riparian system in the Bighorn Canyon National Recreation Area (BICA), providing excellent wildlife habitat. Because this area is considered a major birding area in the park, currently supporting over 135 bird species (approximately 56% of total species recorded for BICA), a destructive fire creates a serious impact to habitat critical for resident and breeding birds, as well as migratory species, having the potential to cause a serious reduction in species diversity. Additionally, this is prime habitat for a portion of the park's bighorn sheep and mule deer herds, utilizing the area for both forage and water access. Any cottonwoods and grassland areas lost to fire or other causes may be replaced with invasives such as cheatgrass (*Bromus tectorum*), negatively impacting the value of the area for wildlife.

Since the area is a popular year-round camping site, the loss of the shade and tranquil setting has negatively impacted the visitor experience at BICA. Damage to the campsites has caused the closure of one site, and affected capacity and revenue of the campground. These impacts will continue to cause detrimental effects if not repaired in an expedient manner.



Fig. 4. Erosion in Trail Creek drainage.

Restoration/Recovery:

Because of the steep terrain and proximity of the Trail Creek drainage into Bighorn Reservoir, erosion prevention will be a primary recovery treatment. Monitoring of erosion will continue during winter months to gauge the intensity of any spring runoff. Seeding of native species will be implemented over the 3.6-acre to supplement the natural recovery of shrubs, forbs and grasses as soon as weather permits in Spring 2021. Both native and non-native invasive weed control will be included in the recovery treatment and begin as early as weather permits in Spring 2021 to forestall early emergence of invasives. One to three visits/year will be required for the next 2-3 years depending on precipitation and natural recovery. Applications of herbicide treatments will be conducted by park staff using UTV and backpack sprayers.

Cottonwood pole planting will also be implemented in Fall 2021 to replace approximately 65 cottonwoods lost or damaged in the fire. These activities will be accomplished under supervision of the BICA GS-7 Bioscience Technician, employing one seasonal GS-5 Bioscience Technician to perform the native seed application, pole planting, and follow-up herbicide treatments.

Additionally, because the area has now been exposed through burn-off of the ground cover, a more thorough archaeological survey will be conducted under the auspices of the BICA GS-9 archaeologist.

Monitoring of all restoration/recovery actions will need to be conducted over the next 2-3 years to determine the effectiveness of invasive species control, natural recovery, and re-seeding/pole planting efforts.

Materials and labor will also be required to replace or rehabilitate the damaged campsite timbers, guardrail, and picnic tables (Figs. 5 and 6) to reduce further impacts to visitor experience in the park.



Fig. 5. Damaged campsite timbers.



Fig. 6. Damaged picnic table.

This work will be conducted (if weather permits) in Fall/Winter 2020, or as early in 2021 as possible. This repair is required to reduce the safety risks posed by the burnt timbers and damaged campsites and needs to be completed prior to the resumption of collecting fee revenue in mid-April/early May 2021.

The following budget tables detail the costs associated with the Trail Creek Campground fire for proposed restoration and recovery activities. Labor costs are based on park staff salaries. Costs for materials, invasive species control, equipment use, and planting of cottonwoods and native seed are derived from similar projects conducted at BICA over the last 5 years.

Fund Source	Treatment/Activity	FY21	FY22	Total
ES	Seeding	\$2,392		\$2,392
ES	Invasive Species Treatment	\$3,203		\$3,203
BAR	Campsite Rehabilitation	\$14,811		\$14,811
BAR	Cottonwood Planting		\$3,416	\$3,416
	Total	\$20,406	\$3,416	\$23,822

Erosion Mitigation/Restoration Labor Spring 2021				Total Hours	Unit Cost (per hour)	Total Cost
GS-7/7 Biosci Tech (Felkins)	(Seeding/IPM)			40	\$ 39.81	\$ 1,592.40
GS-05/2 Biosci Tech (Scheffler)	(Seeding/IPM)			40	\$ 24.79	\$ 991.60
WG-9/3 Maintenance Worker	(Campsite Repair)			80	\$ 43.75	\$ 3,500.00
WG-7/2 Maintenance Worker	(Campsite Repair)			80	\$ 31.11	\$ 2,488.80
Erosion Mitigation/Restoration Labor Fall 2021						
GS-7/7 Biosci Tech (Felkins)	(Tree Planting)			40	\$ 39.81	\$ 1,592.40
GS-05/2 Biosci Tech (Scheffler)	(Tree Planting)			40	\$ 24.79	\$ 991.60
Total Restoration Personnel						\$11,156.80
Restoration Materials Spring 2021						
Revegetation	Acres Burned	Acres Planted	Unit Cost	Units/acre	(per acre)	
Native seed (lbs)	3.6	3.6	\$10.00/lb	25	\$ 250.00	\$ 900.00
Restoration Materials Fall 2021						
Cottonwoods (poles)	3.6	3.6	\$8.00/pole	15	\$ 120.00	\$ 432.00
Total Restoration Materials						\$ 1,332.00
Weed Management Spring 2021		Acres Treated	Application Rate	No. of Treatments	(per acre)	
Pesticide Application	3.6	7 oz/acre	2		\$ 21.00	\$ 151.20
Total Application						\$ 151.20
Materials Spring 2021		Amount Purchased			(per unit)	
Pesticides (Milestone) (gals.)	5				\$ 312.00	\$ 1,560.00
Campsite border timbers	48				\$ 92.00	\$ 4,416.00
Guardrail (linear feet)	54				\$ 39.00	\$ 2,106.00
Picnic tables	2				\$ 750.00	\$ 1,500.00
Total Materials						\$ 9,582.00
Equipment Use/Maintenance		Hours Used			(per hour)	
(fuel, oil, normal wear & tear)	80				\$ 20.00	\$ 1,600.00
Total Equipment Use/Maintenance						\$ 1,600.00
TOTAL						\$23,822.00