

Berry Fire

BURNED AREA REHABILITATION PLAN

UNIT: Grand Teton National Park and John D. Rockefeller Parkway (National Park Service)

LOCATION: Wyoming

DATE: September 21, 2016

PREPARED BY: Diane Abendroth, Fire Ecologist, GRTE

Submitted By: _____
David Vela, Superintendent GRTE

FIRE LOCATION AND BACKGROUND INFORMATION

Fire Name	Berry Fire
Fire Number	KH4F
Agency Unit	Grand Teton National Park, John D. Rockefeller Parkway
Region	Intermountain Region
State	Wyoming
County(s)	Teton
Ignition Date/Cause	July 25, 2016 - Lightning
Date Contained	
Jurisdiction	National Park Service
Acres	20,801 (as of Sept 16, 2016)

Statement of Need

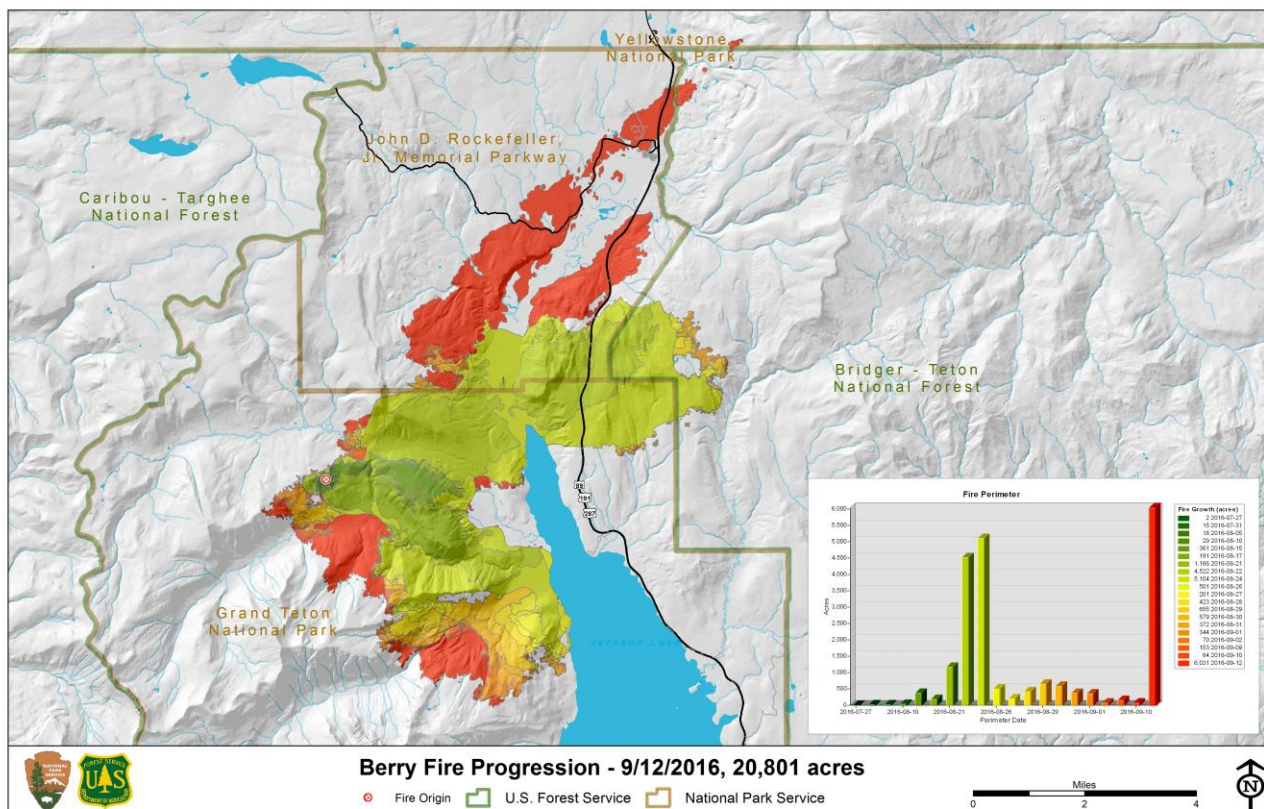
The Berry Creek Fire was caused by lightning in a remote part of Grand Teton national Park, far from roads and developments. It was managed for ecological benefits associated with fire effects, with point protection actions taken for public safety and to prevent damage to developments. The fire spread onto the John D. Rockefeller Parkway, the Bridger-Teton National Forest, and Yellowstone National Park. The fire area had burned 20,801 acres as of September 16th.

The Berry Fire has been very beneficial in many ways for Grand Teton National Park and the John D. Rockefeller Parkway, however there are some identified rehabilitation needs for trail clearing, vegetation recovery, and endangered species habitat evaluation due to the large size of the fire and the impacts of management resources (vehicles and camps) on a few specific locations.

The primary objectives of the Berry Creek Fire BAR Plan are to:

- Repair or improve a helibase, a fire camp, and 20 miles of roadside vegetation where soils have been compacted and vegetation is unlikely to recover naturally from the impacts of vehicles driving off road.
- Monitor and treat noxious weeds post fire for three years along roads, trails, and 4 acres of disturbed ground.
- Update the Lynx Habitat Suitability Map for Grand Teton NP and the John D. Rockefeller Parkway based on burn severity analysis.
- Repair 20 miles of trails that were burned over by the fire.

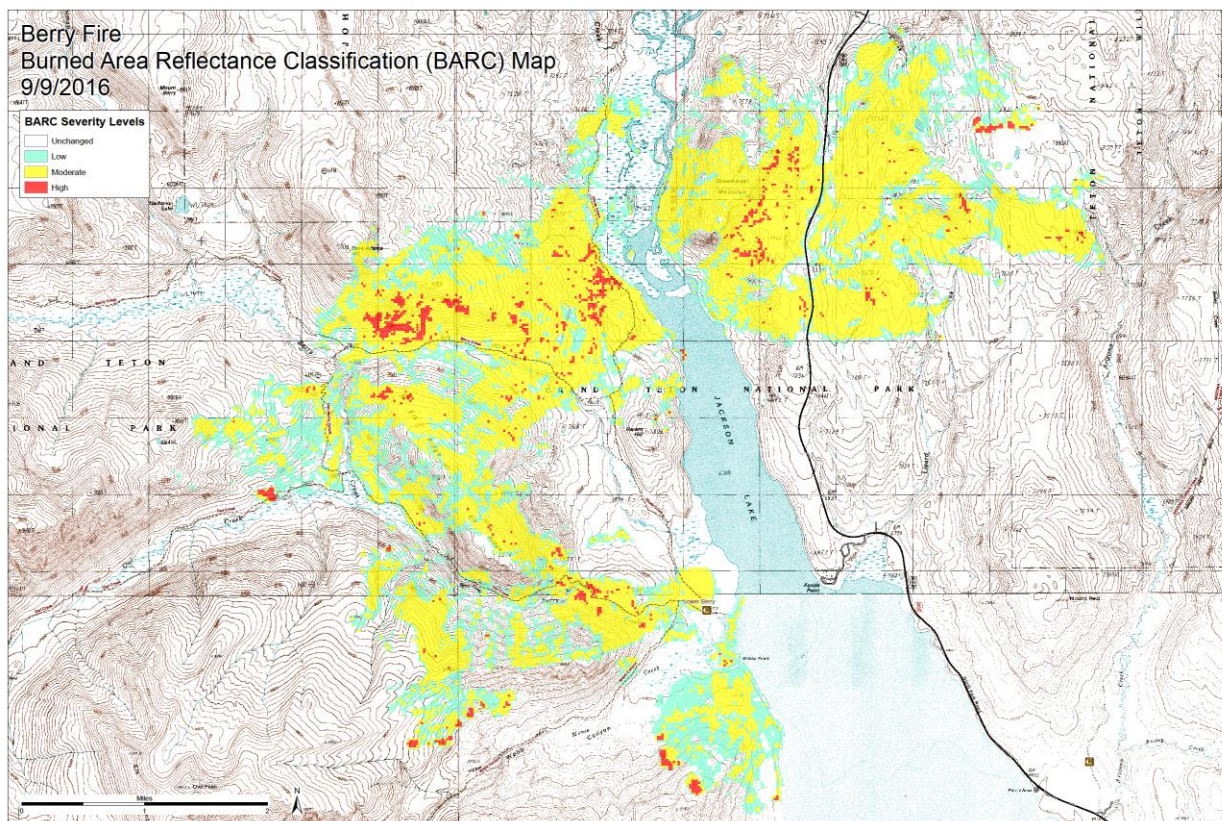
Four specifications—*B1-Revegetation*, *B2 – Weed Control*, *B3 – Trail Repair*, and *B4 – Lynx Habitat Mapping*. The total BAR request is \$115,034 for FY 2017-2020.



Post-Fire Assessment

The following rapid assessment burn severity map shows where there are potential impacts to vegetation, habitat, and trails in the fire area. The map shows low severity dominating the area, however there are some large patches of high severity based on flight observations. Possibly smoke in the post fire Landsat image has resulted in a decreased change in dNBR values. Also, this map does not include roughly 6000 acres of additional growth that occurred on Sept 11.

Moderate and high severity areas have the highest likelihood of trail damage and lynx habitat effects. Moderate and severe areas along roadsides are at highest risk for invasive species post fire.



PART E - SUMMARY OF ACTIVITIES AND COSTS

LINE ITEM NUMBER	SPECIFICATION NUMBER	TITLE	UNIT	UNIT COST	NUMBER OF UNITS	WORK AGENT	COSTS
1	B1	Revegetation Helibase and ICP	acres	\$ 2,247.00	4	F, S	\$ 8,988
2	B2	Revegetation North Park Roadsides	acres	\$ 925.00	32	F, S	\$ 29,600
2	B3	Weed Control Roadsides	miles	\$ 1,228.24	8.5	F, S	\$ 10,440
	B4	Weed Control Backcountry Trails	miles	\$ 558.00	20	F, S	\$ 11,160
3	B3	Trail Repair	miles	\$ 1,766.68	20	F, S	\$ 35,334
4	B4	Lynx Habitat Mapping	acres	\$ 0.23	151,856	G=Grantee (NPS)	\$ 35,000
	B5						
TOTAL COSTS							\$ 130,522

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

Revegetation and Weed Control:



This is a vegetation rehabilitation plan for the impacted areas associated with the 2016 Berry fire within Grand Teton National Park, J.D. Rockefeller Jr. Memorial Parkway and Bridger-Teton National Forest. The Berry fire was a lightning-caused fire started in Grand Teton NP on July 25, 2016. This plan is presented to mitigate long-term environmental impacts from the Berry fire and associated the wildland fire, as well as fire management actions. Vegetation reclamation activity will be conducted primarily during the field season of 2017, with invasive plant surveys and treatments continuing through 2019. All vegetation rehab activities will be monitored by a vegetation crew leader.

1. Helicopter Base and Incident Command Camp Rehabilitation (4 Acres):

The Helibase and Incident Command areas included parking areas, staging areas and landing zones that run through sagebrush-grassland communities. The primary disturbances are located in meadows off of North Park Road, just prior to Colter Bay, along the “Colter Bay Dump” gravel road and the camping/parking areas associated with the helibase and ICP. Vehicle parking, driving, staging, water tender operation, camping and other activities on the vegetation adjacent to the roads and camps have resulted in compacted soils and destroyed sagebrush vegetation. Vegetation and soil disturbances are located adjacent to the helibase and Spread Creek ICP camp. Rehab will focus on replanting specific areas directly impacted by the recent fire activity, primarily in camping and parking areas near these two areas.

Native seeding, including sagebrush, will be collected by park vegetation crews from the surrounding region and will be processed and dispersed.

Park Staff – Prep and Native Revegetation - Helibase and ICP:

Resource Crew Leader:	1-GS-09	x	\$32.00/hr x 40 hr (1/2pp) = \$1,280.00
Resource Management Crews:	6-GS-05	x	\$16.70/hr x 40 hr (1/2pp) = \$4,008.00
Native Seed collected, cleaned and propagated and sewn:			\$925.00/acre x 4 acres = \$3,700.00

Total: **\$8988.00**

2. North Park Roads Revegetation

Resource crews would re-establish native plants in the areas along park roads affected by the Berry Fire. This will include collecting, propagating, and sewing native roadside grass seed along average of 30 feet on each side of the affected park roads. This equals approximately 32 acres for revegetation. This would occur the first year after the fire incident.

Park Staff and Native Revegetation – North Park Roadsides:

Resource Crew Leader:	1-GS-09 x \$32.00/hr x 40 hr	= \$1,280.00
Resource Management Crews:	4-GS-05 x \$17.00/hr x 40 hr	= \$2,720.00
Native Seed collected, cleaned and propagated:		\$800.00/acre x 32 acres = \$25,600.00

Total: **\$29,600.00**

3. Post-Fire Invasive Weed Management - Roadsides

Sections of the North Park Road (approximately 4.5 miles) and the Grassy Lake Road (approximately 4 miles) were burned over during the Berry fire. The primary threat due to the fire activity includes the spread of invasive, noxious weeds. Roads and vehicular traffic are already an existing source of invasive weed propagation, including spotted knapweed, musk thistle, Canada thistle, yellow toad flax, houndstongue, common mullein and cheat grass. The added disturbance of a wildland fire will exacerbate the spread of noxious weeds and prevent the natural establishment of native plants along these roads. Non-native weeds will be monitored and treated by park Vegetation crews annually for 3 years.

Invasive weed herbicide treatments would be undertaken by park employees along the burned section of the North Park and Grassy Lake roads twice each year for three years subsequent to the fire. Herbicide and PPE would also be needed. These actions will diminish the immediate impacts of noxious weed establishment as well as perpetuate both the planted and natural establishment of native vegetation along the roadsides affected by the fire.

Park Staff and Invasive Weed Control (X 3 Years)

Resource Crew Leader: 1-GS-09 x 2 treatments x 3 Years x \$32.00/hr x 10 hr	= \$1920.00
Resource Management Crews: 6 -GS-05 x 2 treatments x 3 Years x \$17.00/hr x 10 hr	= \$6120.00
Herbicide, Surfactant, PPE (\$800/yr)	= \$2400.00

Total: **\$10440.00**

4. Backcountry Trail Invasive Weeds

Approximately 20 miles of backcountry trails throughout the burn area were burned as a result of the Berry Fire. This resulted in trails that are in deteriorating condition from snags and potential erosion. In addition, the areas burned have had small populations of invasive weeds species including Canada and musk thistle, and yellow toadflax. Resource crews will travel along 20 miles of impacted and reconstructed trails to survey and treat invasive weeds once per year for 3 years subsequent to the Berry Fire event. Herbicide and PPE are also needed.

Park Staff and Invasive Weed Control (X 3 Years)

Resource Crew Leader: 1-GS-09 x 3 Years x \$32.00/hr x 40 hr	= \$3,840.00
Resource Management Crews: 4-GS-05 x 3 Years x \$17.00/hr x 40 hr	= \$8,160.00
Herbicide, Surfactant, PPE \$1000/yr	= \$3,000.00

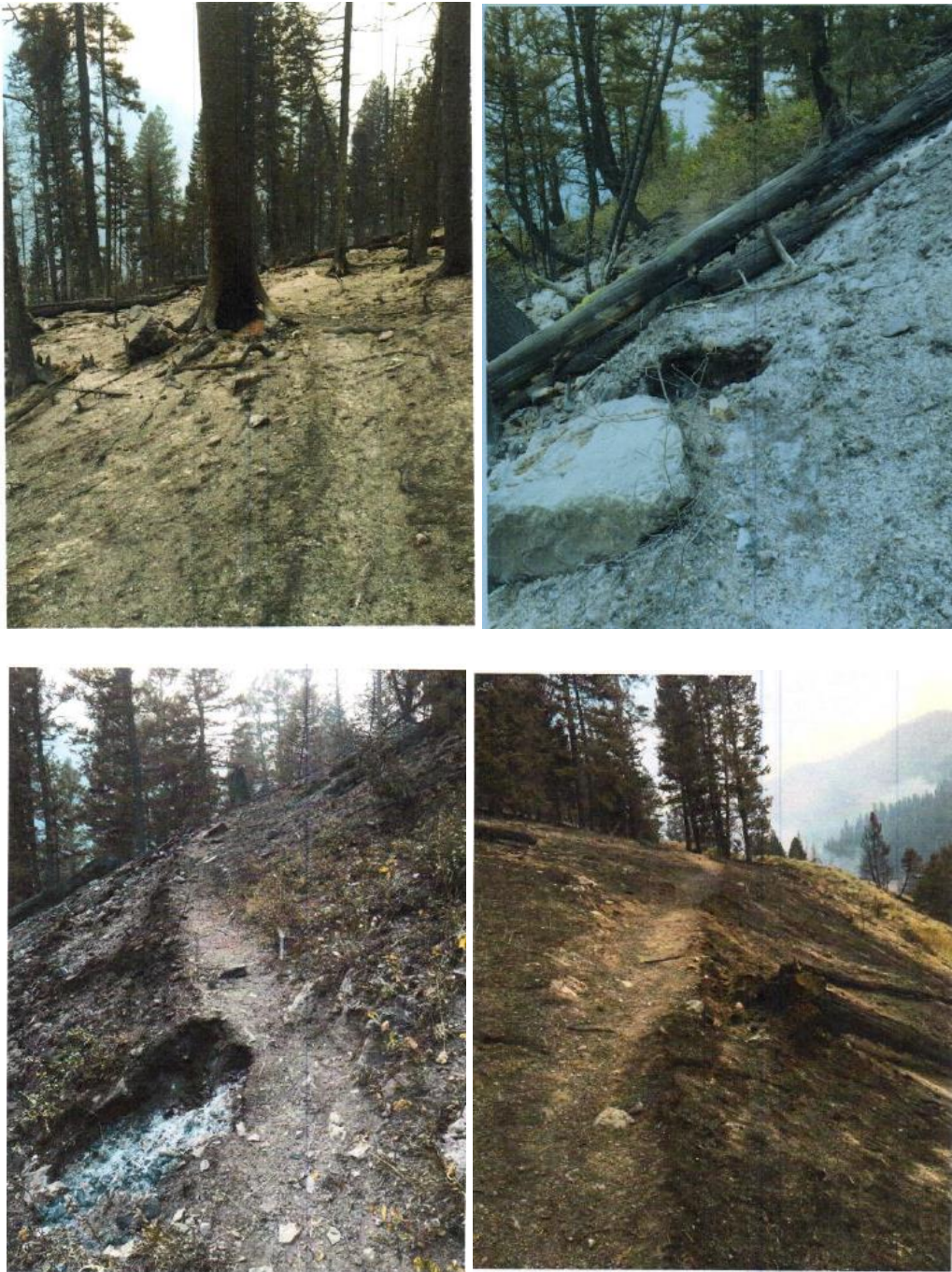
Total: **\$11,160.00**

Total Vegetation Costs:

- | | |
|--|---------------------|
| 1. Helicopter Base and Incident Command Camp (4 Acres/1 Year): | \$8,988.00 |
| 2. North Park Roads Revegetation (32 Acres 1 year) | \$29,600.00 |
| 3. North Park Roads Invasive Weed Management (8.5 miles/ 3 Years) | \$10,440.00 |
| 4. Backcountry Trail Invasive Weed Treatment | \$ 11,160.00 |
| 5. | |

Total: **\$60,188.00**

Berry Fire Trail Repair:



Trail Conditions Assessment:

Burn Severity. The portion of the Berry fire that impacted Grand Teton National Park's northern trail system burned with a wide range of severity. The sections of the Trail system experienced the full range: Unburned, Low Severity, Moderate severity, and High severity.

Impacts to Trails.

Impacts to trails from the Berry fire can be categorized into several classifications; (1) Trees across the trail - that have either fully burned or fallen due to weakened root structure, (2) Fire weakened trees adjacent to the trail, (3) Burned out roots degrading trail structure, (4) Higher severity areas where ground cover has been completely burned away leaving degraded soil stability, which is more greatly

impacted by erosion. Because of limited access to fire due to on-going fire activity, only a few pictures of fire damage are attached to this report.

Owl Creek Trail (Lower Berry to Owl / Berry cutoff):

This section of the Owl Creek trail is in need of heavy maintenance. The tread will need to be re-contoured to reverse damage done by spring snow melt and rain. One day of saw work is required to assure that the trail is passable, there are currently 20 plus trees that have fallen across the trail, along with 15 – 20 fire weakened trees adjacent to the trail which will need to be mitigated for safety. There are also 10 to 15 stump holes which should be dug out and backfilled to avoid washouts.

Owl Creek Trail (Owl/Berry cutoff to the West):

This section of trail experienced moderate but sustained backing fire behavior as the fire slowly progressed to the west past the cutoff trail. With a very low grade the majority of work necessary in this section consists of removing trees which have fallen across the trail as well as mitigating any hazard trees that pose an imminent threat to the trail. Estimating 2 days of saw work for saw team, in addition to re-contouring tread and replacing damaged drainage structures.

Owl/Berry cutoff trail:

This section of trail was the first impacted by the increased behavior on the Berry fire. The trail is intact, with some damage to trail structures, 10 waterbars burned and need to be replaced as well as a raised causeway which partially burned. This section of trail will require 1 day of saw work to remove fallen trees as well as mitigate the immediate threats of additional trees coming across the trail.

Webb canyon trail:

The fire has burned west up Webb canyon approximately 4.5 miles. The fire burned with a typical intensity seen in a lodgepole/mixed conifer forest. This trail is by far the most heavily impacted by the fire. There are approximately 100-200 trees of varying DBH down across the trail, and many fire weakened trees adjacent to the trail. Additionally many trail structures (water bars, switchbacks) were completely lost. In many areas the trail route is completely unrecognizable. This section of trail will require 6 days of saw work utilizing a saw team just to clear, with additional 8 days' work to reestablish tread and replace lost structures.

Berry Creek trail (Owl/Berry cutoff to the junction of the Glade trail):

Fire impacts to this section of trail were minimal. The integrity of the trail itself has not been diminished. Approximately 20 – 25 trees of varying DBH have fallen across the trail. Additionally an equal number of fire weakened trees adjacent to the trail will need to be mitigated. Estimating 1 full day with saw team to make it passable.

Berry Creek trail (From Owl/Berry cutoff to Upper Berry Patrol cabin):

The fire burned heavily over approximately 2 miles up the Berry Creek trail from on its second major run. Burning in heavy timber caused many downed trees, fire weakened trees and damage from burned out stump holes, tree removal will take 2 days.

Glade trail: Fire has burned across many sections of this trail in heavily timbered areas. It will take 2-3 days to remove downed trees and weakened trees.

Future Maintenance needs:

Complete burn of trees with accompanying weaken root structure along the trail corridor, will cause trees to fall at an accelerated rate due to wind and winter snowfall for a least 3 years. This increased downfall will be above normal maintenance loads and will require an additional 2 weeks of tree clearing each season in addition to on-going tread repair until vegetation re-establishes itself.

Conclusions:

It will take significant effort to clear the trail of downed timber and re-establish tread in areas where it has disappeared due to lost vegetation which kept the trail intact. In addition large stump holes throughout the 20 miles of damaged trails will need to be backfilled and tread re-established where lost. A large portion of the trail exists in a mid-slope location, thereby heightening the likelihood of impacts that will continue to occur over time.

Lynx Habitat Mapping

STATEMENT OF NEED: The Berry Fire is a lightning-caused fire discovered on 25 Jul 16, on the west side of Jackson Lake near Berry and Owl creeks in Grand Teton National Park (GTNP). The park is managing this fire for resource and ecological benefits. The fire area had burned 20,801 acres as of 15 Sep 16 that has included parts of three Lynx Analysis Units in the park. Fuels for this fire consist mainly of mature spruce-fir and lodgepole pine.

The National Park Service's mission defined in the NPS Organic Act of 1916 is, in part, to preserve wildlife resources. The Biological Assessment for the GTNP Fire Management Plan (2004) outlines the following mitigations pertaining to Canada lynx, listed as Threatened by the US Fish and Wildlife Service:

1. GTNP fire personnel will analyze fire-related data (e.g., size, severity), coordinate with park biologists to evaluate fire-related impacts to lynx habitat on an annual basis and provide this information to USFWS as part of an annual compliance review of the GTNP fire management program.
2. Fire management actions will be planned to maintain $\leq 30\%$ of mapped lynx habitat in a currently unsuitable condition.

The Fire Management Plan BA explains that “managing for a natural fire regime may result in short-term negative, but long term beneficial effects to lynx habitats, and fire is necessary to maintain and perpetuate forest types and diversity of age classes used by lynx.”

A conservation measure of the 2013 Canada Lynx Conservation Assessment and Strategy (LCAS) indicates “if more than 30% of the lynx habitat in a Lynx Analysis Unit is in early stand initiation structural stage, no further increase as a result of vegetation management projects should occur on federal lands.” The LCAS also states that “validation of lynx habitat within core areas will continue to be a priority to assure that conservation measures are applied effectively.”

GTNP is committed to monitoring and mapping suitable lynx habitat as directed in the Fire Management Plan BA. Identifying and mapping lynx suitable habitat is essential to ensure the park's commitment to maintain $\leq 30\%$ of mapped lynx habitat in a currently unsuitable condition.

We are requesting funds (\$35,000) to update the Lynx Habitat Suitability map for the park's five Lynx Analysis Units. This budget includes before and after fire imagery (e.g., WorldView3), and analyzing, interpreting, and ground truthing the spectral data.

Budget

- Labor: \$27,000 for 0.5 FTE GS-7 to acquire, analyze, interpret, and ground truth spectral data as well as provide current assessment of lynx habitat in response to the Berry Fire.
- WorldView3 Imagery: \$8,000
- Total: \$35,000