



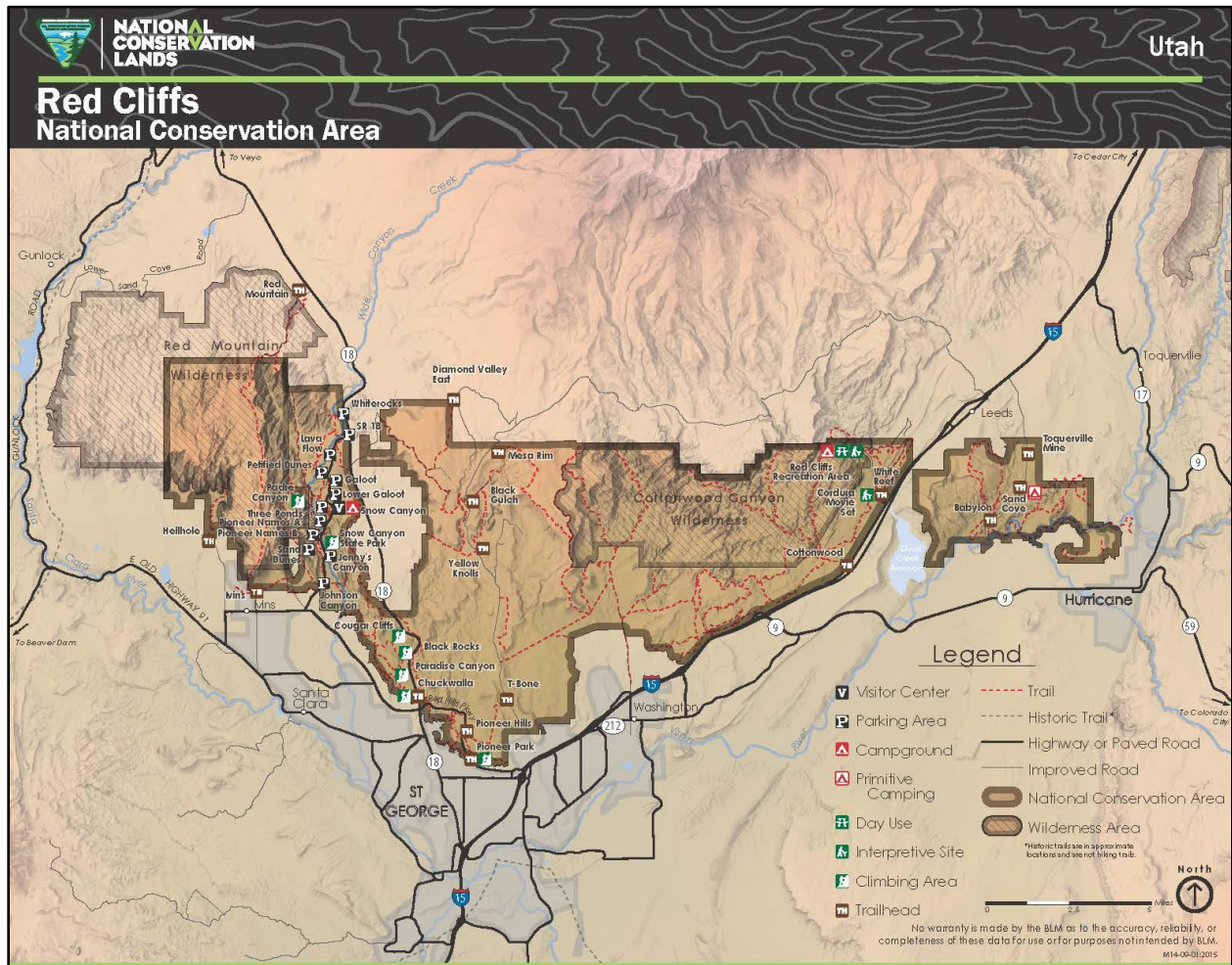
NATIONAL CONSERVATION LANDS

Utah
2021: Annual Manager's Report

Red Cliffs National Conservation Area



Map



Accomplishments

During the 2021 fiscal year, the BLM was focused on remediating the impacts of five large wildfires that burned more than 15,000 acres in the NCA during the summer and fall of 2020. The fires damaged or destroyed numerous recreation facilities, including trailheads, trail markers, and signs at various locations in the NCA. The Cottonwood Trail Fire did major damage to facilities in the Red Cliffs Recreation Area, a fee site with a developed campground, day use areas, and a non-motorized trail network, located within the NCA boundaries. Using Emergency Stabilization and Rehabilitation funding, we were able to repair the damages to five trailheads and replace signs, solar panels, water pipeline vaults, wood guardrail fencing, and other facilities in the Recreation Area.

Most of the acres burned in the 2020 wildfires are within designated critical habitat for the threatened Mojave desert tortoise. With Emergency Stabilization and Rehabilitation funding, we were able to aerially re-seed 15,000 fire-damaged acres with native species and out-plant 2,800 mature, nursery-grown Mojave Desert native species in two planting plots, one along Cottonwood Springs Road, the other near the Cottonwood Trailhead. The out plantings will create “fertile islands” of mature plants that quickly set seed, helping to naturally re-vegetate habitat that benefits desert tortoise and other wildlife. While there is still much more fire remediation work to be completed, we were grateful to have been awarded post wildfire funding that allowed us to accomplish a great deal of work in FY21.



Figure 1: Cottonwood Trailhead fire damage.

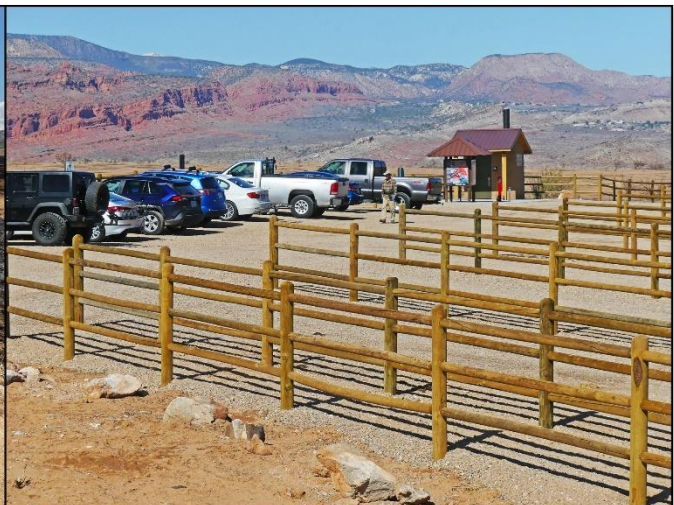


Figure 2: Rebuilt Cottonwood Trailhead.

Challenges

The Red Cliffs NCA is challenged by the need to protect and restore critical habitats for at-risk wildlife species, including the threatened Mojave desert tortoise, in the face of prolonged droughts, higher temperatures, and catastrophic wildfires. The lower elevations of the NCA are primarily within the Mojave Desert ecoregion, where wildfires were formerly a rare occurrence, as some desert shrubs, like creosote bush, are naturally fire-resistant and widely spaced apart, impeding fire spread. Invasive annual brome grasses today fill in the gaps between individual plants, creating a highly flammable fine fuel source that has increased the size, intensity, and frequency of wildfires. This rise in wildfire frequency, extent, and intensity has severely impacted desert shrub communities and Mojave desert tortoise populations, complicating recovery efforts. We continue to conduct research, working with multiple partners, to evaluate the most successful and cost-effective ways to rehabilitate fire-damaged desert vegetation communities in the NCA.



Figure 2: Wildfire-burned terrain within the Red Cliffs NCA.

Visitors

Located within the annexation zones of Washington County's five largest cities, the Red Cliffs NCA abuts residential subdivisions and light industrial zones on all but its northern boundary. Residents and visitors to the region enjoy the open space and outdoor recreation opportunities that are available in the NCA, including hiking, mountain biking, and equestrian trail riding on over 130 miles of designated non-motorized trails; camping in developed and primitive campgrounds; backpacking in the Cottonwood Canyons and Red Mountain Wilderness areas; and rock climbing at multiple designated climbing sites—all just a few minutes' drive from downtown St. George. Many of the 46 Special Recreation Permit (SRP) holders who operate in the NCA offer commercial guiding services for rock climbing, mountain biking, and equipment rentals and shuttles to trailheads. In FY21, NCA visitation increased to an estimated 324,000 visits, an increase of nearly 100,000 visits or 45%, when compared to FY20 visitation levels.



Figure 3: Hikers on a trail in the Red Cliffs NCA

Partnerships

During FY21, the following partners assisted Red Cliffs NCA staff with resource conservation, monitoring, and restoration projects: Conserve Southwest Utah, Southern Utah National Conservation Lands Friends (SUNCLF), Backcountry Horsemen of America-Southwest Utah Chapter, Southern Utah Wilderness Alliance, the National Park Service-Lake Mead National Recreation Area's Song Dog Native Plant Nursery, Southern Utah University, Utah Tech University, University of Nevada, Las Vegas, Utah Conservation Corps, and the American Conservation Experience (ACE).

In partnership with Red Cliffs NCA staff, biologists from the Utah Division of Wildlife Resources (UDWR) completed annual population and habitat monitoring for mule deer, Gambel's quail, mourning dove, Virgin spinedace, Mojave desert tortoise, southwestern willow flycatcher, western yellow-billed cuckoo, Virgin River chub, and woundfin. UDWR staff also assisted with fire-damaged habitat rehabilitation projects in the NCA.



Figure 4: American Conservation Experience (ACE) work crew.

Science

During FY21, the Red Cliffs NCA Biologist, assisted by ACE Biological Resource Associates, continued a long-term monitoring program for Mojave desert tortoise, Gila monster, bat species, and other BLM Sensitive species, conducting field surveys and using acoustical monitoring devices to detect and identify bat calls in the NCA. The goals of this program are to determine the current distribution, abundance, age structure, diet, home range, and habitat use of at-risk species, to provide baseline information from which to evaluate future trends and attainment of NCA management goals. This effort will benefit declining populations of BLM sensitive species, potentially reducing the need for listing under the Endangered Species Act.

Dr. Marius van der Merwe at Utah Tech University and three student field assistants redeployed and monitored 15 camera traps within the 2020 Turkey Farm Road Fire perimeter, to collect data that will allow comparisons to be made of mammal species composition and abundance before and after the fire. This project is part of a national collaborative effort by the Smithsonian Conservation Biology Institute to capture the diversity of mammals throughout the United States and to investigate some overarching trends in mammalian distribution. The camera stations detected 17 mammal species (see study results figure below).

Camera-Trap Survey of Mammal Activity in the Cottonwood Canyon Area of the Red Cliffs National Conservation Area, southwest Utah

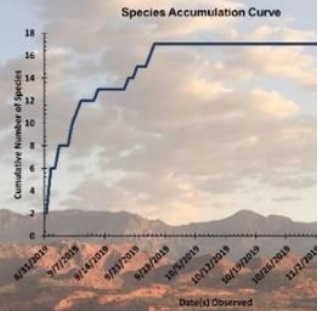
Reagan Compton, Christine Patrick, Kaylynn Garner
Dixie State University

Introduction

Camera-traps are becoming a powerful and affordable research tool to measure mammalian presence and activity. With appropriate sampling effort, camera-trap data provide estimates of species richness and has the potential to detect elusive species. Activity patterns reflect important dimensions of ecological niches and natural history.

Methods

- Study area: Cottonwood Canyon - Red Cliffs NCA.
- 15 camera-traps (Browning Strike Force) deployed in 3 dry sandy washes.
- Cameras were 50 cm off the ground and at least 200m apart.
- Sampling effort: 891 Trap nights from 31 August to 2 November, 2019.
- Cameras were set to take 3 pictures in quick succession for each detection. For independent detection events occurrences should be divided by 3.



Species list

Common Name	Scientific Name	Occurrences
Ring-tailed cat	<i>Bassaris astutus</i>	3
Desert cottontail	<i>Sylvilagus auduboni</i>	405
Black-tailed jackrabbit	<i>Lepus californicus</i>	21
Gray fox	<i>Urocyon cinereoargenteus</i>	15
Chili chipmunk	<i>Tamias dorsalis</i>	83
Western spotted skunk	<i>Spilogale gracilis</i>	27
Coyote	<i>Canis latrans</i>	237
Desert woodrat	<i>Neotoma lepida</i>	326
White-tailed antelope squirrel	<i>Ammospermophilus leucurus</i>	404
Merriam's Kangaroo rat	<i>Dipodomys merriami</i>	630
Bobcat	<i>Lynx rufus</i>	133
American badger	<i>Taxidea taxus</i>	12
Deer Mouse	<i>Peromyscus sp.</i>	724
Pocket Mouse	<i>Chaetodipus sp.</i>	15
Rock squirrel	<i>Spermophilus variegatus</i>	307
Mule deer	<i>Odocoileus hemionus</i>	4
North American Raccoon	<i>Procyon lotor</i>	4

Discussion

All 17 species were detected in the first month of our study. Rock squirrels and white-tailed antelope squirrels were the most active diurnal mammals with peak activity in the middle of the day (when coyotes and bobcats were mostly inactive.) At night the most active mammals were Merriam's kangaroo rat and an unidentified *Peromyscus* species. Desert cottontail activity was concentrated in the mornings. Surface water in this area is unreliable and mammals more dependent on water (e.g. mule deer and northern raccoons) are likely only occasionally passing through.

Acknowledgments:
We would like to thank John Kellam (BLM Wildlife Biologist) and Dr. Marius van der Merwe (Biology Professor at DSU) for help and support with the project.

Results

We detected 17 species of mammals. The species accumulation curve indicates gains in species richness with sampling effort. Graphs represent the activity patterns of 6 species of interest over the 24 hour daily cycle.

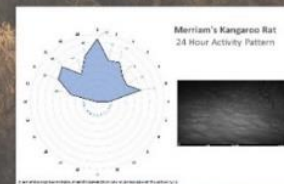
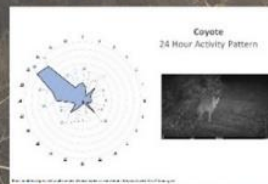
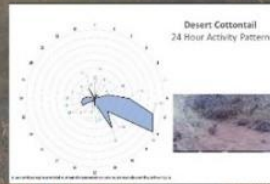
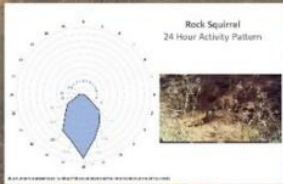


Figure 5: Camera-trap survey results, Dixie State University, Rec Cliffs NCA.

Climate Impacts

The native vegetation communities of the Red Cliffs NCA are being impacted by climate change effects, including persistent severe drought conditions, elevated annual temperatures, erratic precipitation events, and more frequent wildfires. Invasive annual brome grasses have proliferated after wildfires, outcompeting native species, and are contributing to increases in wildfire frequency, extent, and intensity. Climate impacts are threatening ecosystem integrity and resiliency in the NCA.



Figure 6: Wildfire burning in Red Cliffs NCA, 2020.

Climate Resiliency

Long-term climate monitoring and trend data are collected by a solar powered HOBO weather station and precipitation measurement gauges set up at various locations in the Red Cliffs NCA. Since 2016, NCA staff have implemented large and small-scale habitat rehabilitation research projects, out-planting mature, nursery-grown native species to create “fertile islands” in fire-damaged areas and monitoring plant survival and recruitment. Through this research, we hope to determine the most effective species and methods to use to rehabilitate fire-damaged native vegetation communities and create more climate-resilient landscapes.



Figure 7: Handplanting nursery shrubs during wildland fire restoration efforts, Red Cliffs NCA.

Social and Environmental Justice

American Conservation Experience (ACE) work crews assisted Red Cliffs NCA staff with habitat rehabilitation projects in fire-affected desert tortoise critical habitat. ACE Emerging Professionals in Conservation (EPIC) Resource Associates completed internships with the NCA Biologist, gaining field and office experience in wildlife and threatened and endangered species population and habitat condition monitoring. Both ACE programs provide young professionals with “on the ground/in the field” experiences that support their development as future conservation leaders and federal agency employees. Exceptionally qualified, ethnically, and socially diverse candidates are recruited by ACE for its programs, helping to meet BLM’s objectives of providing meaningful project and internship experiences for youth corps members, and fostering a sense of public land stewardship in the next generation.



Figure 8: Youth ACE work crew handplanting in Red Cliffs NCA.

Events

The Covid-19 pandemic forced the cancellation of many special events that are normally held in the Red Cliffs NCA. One exception was the “Star Party” at the Red Mountain Wilderness Trailhead, held during the 2021 Southwestern Utah Astronomy Festival. The Astronomy Festival is an annual fall public event hosted by the National Park Service at various parks and national monuments in southwestern Utah and by the BLM in the Red Cliffs NCA. For the September 11th “Star Party” at Red Mountain Wilderness Trailhead, a BLM park ranger and volunteers from the St. George Astronomy Group set up telescopes and assisted members of the public to identify stars and planets visible in the night sky from that location. The volunteers also educated visitors about the global issues of light pollution, including the impacts on migratory birds and the need to protect areas with dark night skies.



Figure 9: Milky way Galaxy at night, Red Cliffs NCA.



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Red Cliffs

National Conservation Area

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