

Fire History of the City of Rocks National Reserve from 1926 to 2005

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Utah State University

June 2006



Photo by Timothy O'Sullivan, 1868
Courtesy of the National Archives and Records Administration

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EXECUTIVE SUMMARY

The City of Rocks National Reserve (CIRO) is jointly managed under a cooperative agreement between the National Park Service and Idaho Department of Parks and Recreation. Given the multiple agency management prior to becoming a Reserve, there was no comprehensive fire history for the City of Rocks itself. The purpose of this project was to research and map the fire history of the City of Rocks National Reserve.

Information regarding fire in CIRO was obtained from a variety of sources. Previously digitized fire history records were obtained from the USDA Forest Service and the Bureau of Land Management. Information was also gathered concerning fire from archival documents searches, emigrant diaries, oral histories and historical photographs. When historical fire reports or records contained maps of fires, they were digitized on screen. A digital map of all such fires was created in ArcView GIS 3.3 in Universal Transverse Mercator, Zone 12 North, in North American Datum of 1983. The resulting fire history map was provided as an overview figure in this report, as an attached quad size print out and digitally (Appendix 1). Copies of the historic fire reports used in this report from the Bureau of Land Management, USDA Forest Service, and the City of Rocks National Reserve were scanned at 300 dpi using a Canon CanoScan LiDE 60 into an Adobe Acrobat format and linked to a searchable database prepared in Microsoft Access and included in Appendix 2. Additional documentation (such as reports or photos) used in this report were also included in a separate database and attached as part of Appendix 2.

In total, the records search revealed 14 mapable fires within the City of Rocks National Reserve from 1926 to 2005. Other fires that could not be included on the map were documented and discussed in the report. Of the 14,320 acres within the City of Rocks, an estimated 3,562 acres or 25% of the Reserve burned over the reporting period. If the acreage could be calculated from the other fires, this estimate may be slightly higher.

This report has demonstrated several trends in fire for the City of Rocks National Reserve. First, there has been a pronounced increase in the number of acres burned in the Reserve since the 1950s. In the 1950s, only about 3% of the Reserve burned. Throughout the 1960s, 1970s and 1980s, less than 1% was burned. Then, from the 5% burned during the 1990s, there was a large jump when 14% of the Reserve blackened in just one fire in 2000. Second, fires not only got larger but also more difficult and time consuming to control. Finally, the majority of the reported fires in the Reserve occurred in the fall (September and October) and some in late summer (July and August). The resultant map and information regarding fire has provided an important baseline fire history data that will be useful to the City of Rocks National Reserve.

INTRODUCTION

The City of Rocks National Reserve (CIRO) is jointly managed under a cooperative agreement between the National Park Service and Idaho Department of Parks and Recreation. It contains approximately 14,320 acres of the Great Basin Desert Region in southern Idaho within the Albion Mountains. Prior to becoming a National Reserve in 1988, the City of Rocks consisted of approximately 28% Bureau of Land Management (BLM), 4% State, 21% US Forest Service and 47% private land (Daugherty 1988). Given the multiple agency management of the Reserve, there was no comprehensive fire history for the Reserve itself. Fire histories provide important baseline information for natural and cultural resource management. The purpose of this project was to research and map the fire history of the City of Rocks National Reserve using previously generated digital agency reports, historic agency fire reports, archival documents, and oral histories.

METHODS

Records Search

Information regarding fire in CIRO was obtained from a variety of sources. Copies of the digital fire histories that had been created by the previous land management agencies were obtained. Historical fire reports that had not yet been digitized were also gathered. This report closely overlapped with a project to research the historical vegetation in the City of Rocks (Morris 2006). Therefore, in conjunction with the records search for that work, information was also gathered concerning fire from archival documents searches, emigrant diaries, oral histories and historical photographs. Sources for this review included management plans, records, photos, reports and archives from: the City of Rocks National Reserve, the Bureau of Land Management Burley District Office, the Idaho State Bureau of Land Management, the United States Department of Agriculture Sawtooth National Forest Twin Falls Supervisor's Office, the United States Department of Agriculture Forest Service Region 4 Office, the South Idaho Press, the Idaho State Historical Society, the Cassia County Historical Society, the Utah State Historical Society, the Merrill Mattes Library, the Utah State University Library, the National Archives and Records Administration Regional Office in Seattle, WA, and the main branches in College Park, MA and Washington D.C..

Digitizing

A digital map was created in ArcView GIS 3.3 in Universal Transverse Mercator (UTM), Zone 12 North, in North American Datum (NAD) of 1983 (See Appendix 1). Any digital data that was not in this projection was re-projected to match. A USGS topographical quadrangle was acquired from <http://www.insideidaho.org> for the study area. The quad was re-projected using ERDAS Imagine 9.0 and converted to MrSid compression format for use in ArcView 3.3. An attribute entitled “Mask” was digitized on screen for aesthetic purposes to hide the dark space around the single quad map used in this project. When historical fire reports or records contained maps of fires, they were digitized on screen in ArcView GIS 3.3 software using section lines as guides. Although no formal tests were performed, the reported acreage of the fire was used to keep digitized boundary as accurate as possible. Fire boundary shapefiles were named using the fire name (misspellings included) given by the reporting agency and the year in which it occurred (i.e. Pinion77). The digital boundary of the Reserve was obtained from the City of Rocks and used to “clip” the fire boundaries to within the CIRO. The fire acreage within the City of Rocks was calculated using a calcarcre.ave script in ArcView GIS.

The attribute tables were created with the following information: an identification number, fire name, reported acres of the fire, acreage of the fire as mapped, acreage of the fire within the City of Rocks Boundary, the cause of the fire and the year and date on which the fire occurred. Since the acres reported by the agencies and the maps they provided are both estimates and often differed, “CIROAcr” was calculated as total acres reported inside the Reserve and “MappedAcr” was calculated as the total acres mapped within the Reserve boundary. More information regarding the definitions in the attribute tables is available in the metadata and in Table 1.

Databases

Copies of all the historic fire reports used in this report from the BLM, USDA Forest Service, and the City of Rocks were collected. These reports were scanned at 300 dpi using a Canon CanoScan LiDE 60 into an Adobe Acrobat format and linked to a searchable database prepared in Microsoft Access. Additional documentation (such as reports or photos) used in this report were also included in a separate database (See Appendix 2).

Table 1: Definitions in Attribute Tables

Attribute	Definition
Id	fire number assigned by the reporting agency
FireName	fire name assigned by the reporting agency
ReportAcr	number of acres burned given in the fire report
MappedAcr	number of acres that were mapped calculated from calcaracre.ave script
Cause	reported cause of fire if given by the reporting agency
Year	year of the fire given by the reporting agency
CIROAcr	acreage of the fire within the CIRO boundary; value is the same as “ReportAcr” if fire was solely within the Reserve or same as “MappedAcr” if fire acreage was cut to CIRO boundary
Date	date of the fire given by reporting agency

RESULTS

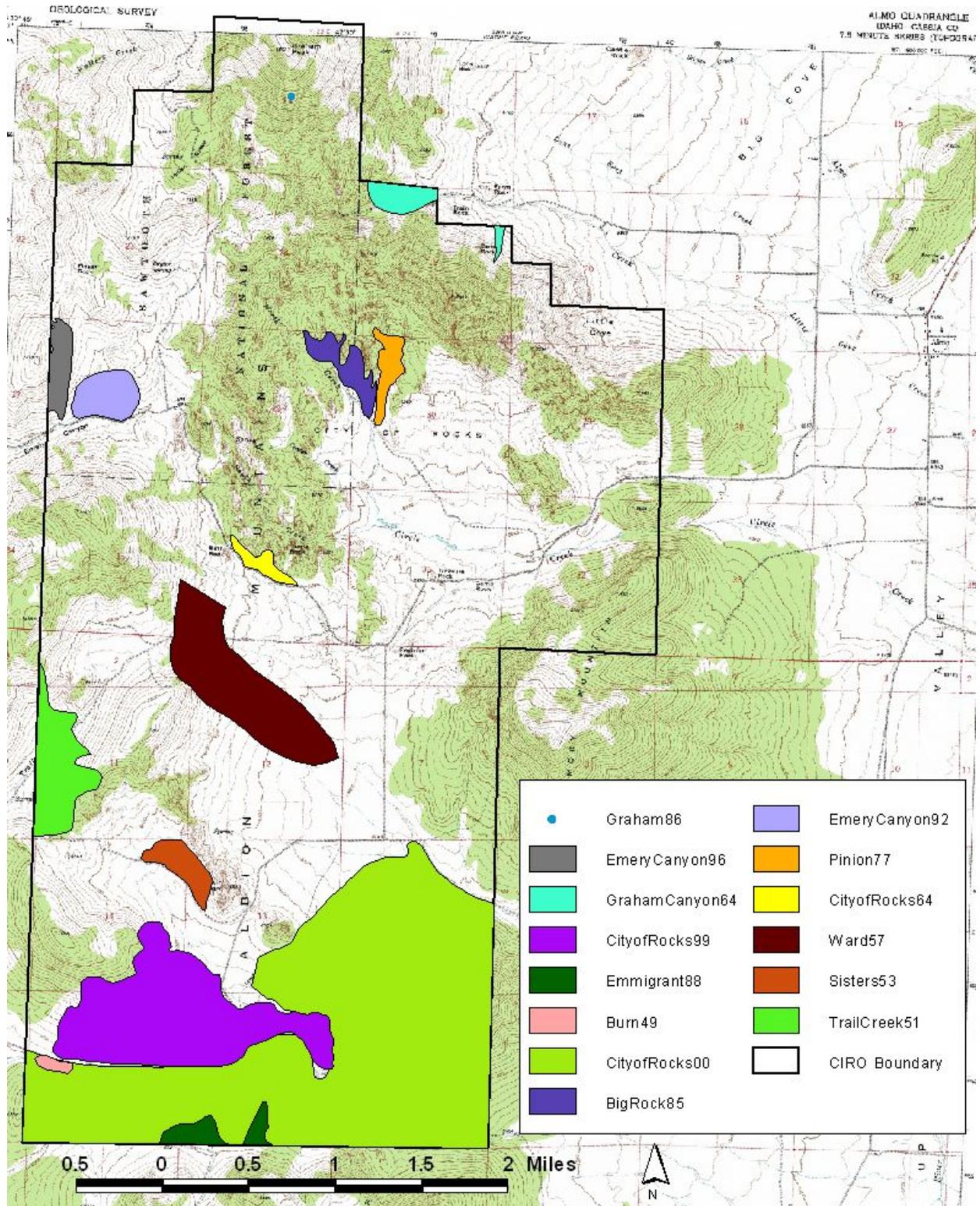
Previously digitized fire history records were obtained from the USDA Forest Service and the Bureau of Land Management. The state lands are covered under fire protection agreements with the BLM (Leonard Wehking 2005). The USFS Sawtooth National Forest Supervisor’s office in Twin Falls, ID, provided their digitized fire history on disc. The dataset contained point coverage of fires from 1926 through 2004 and polygon coverage from 1948 to 2003 (Jill Kuenzi, personal communication 2005). There was only one fire recorded within the CIRO Boundary during that period of time. Fire history maps from the Burley District of the Bureau of Land Management became available on line in May 2005 at insideidaho.gov (Denise Tolness, personal communication 2005). These maps included fires digitized by the BLM from the 1970s to present. This dataset recorded two fires in the 1980s, one in the 1990s and one in 2000 (BLM 2005, See Table 2) within the City of Rocks. BLM fire reports beginning in 1946 were located at the National Archives Pacific Alaska Region Office in Seattle, WA. Those archives contained six additional fires. Records from the City of Rocks National Reserve

included three fires. One, City of Rocks in 2000, had already been included in the BLM digital report. The other two, Emery Canyon in 1992 and Emery Canyon in 1996 were not. In total, the records search provided 14 mapable fires within the City of Rocks National Reserve from 1926 to 2005 (See Figure 1, Appendix 1 and Table 2). Information regarding these fourteen fires is summarized below (See Appendix 2 for further details in the fire reports). Information regarding the other fires that could not be mapped will be discussed in the next section.

Table 2: Mapped fires within the City of Rocks National Reserve

Fire Name	Date of Fire	Reported Acres	Mapped Acres	CIRO Acres	Cause
Burn	1949	none	12	12	unknown
Trail Creek	Sept. 7, 1951	390	164	164	smokers
Sisters	Oct. 9, 1953	90	57	90	smokers
Ward	Sept. 16, 1957	300	325	300	debris burning
Graham Canyon	Oct. 17, 1964	120	52	52	refuse burning
City of Rocks #60	Sept. 9, 1964	30	27	30	campfire
Pinion (sic)	Oct. 8, 1977	45	43	45	cooking fire
Big Rock	May 16, 1985	60	60	61	human
Graham	July 22, 1986	0.1	0	0.1	lightning
Emmigrant (sic)	Aug. 5, 1988	346	51	51	natural
Emery Canyon	July 31, 1992	50	75	50	unknown
Emery Canyon	Oct. 17, 1996	80	78	52	human
City of Rocks #3	Sept. 29, 1999	565	565	565	unknown
City of Rocks	Aug. 18, 2000	17,605	2,089	2,090	natural
				3,562	

Figure 1: Mapped Fires in the City of Rocks National Reserve



Mapped Fires

Burn 1949

This was the earliest fire boundary to be mapped from the archival documents. It was hand drawn on an aerial photo used in Range Survey files from 1952. The aerial photo was part of the Burley District of the Bureau of Land Management Range Survey files (See Appendix 2). No report was found on this fire at the National Archives and Records Administration Pacific Alaska Region Office in Seattle. Therefore, no further information regarding date or cause was reported.

Trail Creek 1951

This was the earliest reported fire within the CIRO from the historic BLM records at the National Archives and Records Administration Pacific Alaska Region Office in Seattle. It was digitized on screen from hand drawn maps in the original fire report. It was reportedly started by a cigarette on September 7, 1951. The reporting officer said it was a difficult fire to contain due to the steep terrain. However, it was contained within about four hours of discovery and declared out the same day. The total fire covered 390 acres but only about 164 of those were within the City of Rocks National Reserve.

The BLM report stated the fire covered a total of 390 acres in Sections 10 and 11. BLM Range Conservationist, Delmar Vail, described this fire in his range survey notes in 1952 (BLM 1952, See Appendix 2). Vail said in his notes, “this area was burned over in 1951 and reseed (sic) in the fall of 1951. Cattle were turned in to the are (sic) in the spring of 52. All Acr (sic) plants have been eaten down to the ground – some places have been puled (sic) out of the ground roots and all.” He described the vegetation type on the burn as “Acr – Weeds” but does not specify what species of weeds. The abbreviation Acr most likely refers to *Agropyron crestatum* or crested wheatgrass.

Sisters 1953

This fire was part of the historic BLM records located at the National Archives and Records Administration Pacific Alaska Region Office in Seattle. It was digitized on screen from hand drawn maps in the original fire report. This fire was difficult to digitize due to the discrepancies between the fire boundary shape and the reported acreage. The report stated that

the fire covered 90 acres but it was impossible to digitize the fire boundary consistently with the report's map at more than 57 acres. Since the fire report's map and reported acreage were both estimates of the BLM Range Aid, it seemed more important to maintain the best possible replication of the boundary in this instance. This fire was started by smokers on October 8, 1953 and was declared out within 4 hours the same day.

Ward 1957

This fire boundary was obtained from the historic BLM records located at the National Archives and Records Administration Pacific Alaska Region Office in Seattle. It was reported as a total of 150 acres. However, that total does not appear to include the 150 acres of private land that also burned that day. When it was digitized on screen to the best possible replication of the report's map, the total was closer to 300 acres. This makes sense based upon the way the report was filled out. The Ward fire was reportedly started by debris burning and was put out in about an hour after being reported.

Graham Canyon 1964

This fire boundary was obtained from the historic BLM records located at the National Archives and Records Administration Pacific Alaska Region Office in Seattle. It was digitized on screen from hand drawn maps in original fire report and cut to the CIRO boundary. It was reportedly started on October 17, 1964 by refuse burning. The total area of the fire was 120 acres with only about 52 of those acres within the City of Rocks. It was contained within 6 hours and reported as out by the next day. Even so, the BLM reportedly used 2 ground tankers, two bull dozers and 11 aerial drops to contain the blaze. Memories of this spectacular fire can be found in the oral histories recorded with Alan and Richard Bruesch (2005). This fire burned up slope from very near the Bruesch family ranch.

City of Rocks 1964

This fire boundary was obtained from the historic BLM records located at the National Archives and Records Administration Pacific Alaska Region Office in Seattle. It was digitized on screen from hand drawn maps in original fire report and came within 3 acres of the reported size. It was started from a cooking fire on September 9, 1964. The report stated that "local

ranchers and tourists in the recreation area started suppression but the fire grew too rapidly”. An aerial attack by the BLM brought the flames down enough that it was possible to contain it with shovels in about 4 hours. The fire was declared out by the next day.

Pinion (sic) 1977

This fire boundary was obtained from the historic BLM records located at the National Archives and Records Administration Pacific Alaska Region Office in Seattle. The reported and digitized acreage of the fire were very close (within 2 acres). It was reportedly started on October 8, 1977 by a cooking fire used by a group of pine nut collectors. It was contained without incident by the end of the day and declared out by October 10th.

Big Rock 1985

This fire boundary was obtained from the BLM fire history (BLM 2005), re-projected into UTM, Zone 12 North, in NAD of 1983. The fire was started by humans on May 16, 1985 and burned a total of 61 acres within the City of Rocks. There were reportedly 18 crew members and two engines deployed to contain the blaze. It was considered under control within about 7 hours of discovery and was declared out the following day.

Graham 1986

The location for this fire was downloaded from data provided by the USFS Sawtooth National Forest Supervisor’s Office and projected into UTM, Zone 12 North, in NAD 1983. The Graham fire was started by lightening on July 22, 1986 and burned only about 0.1 acre. This fire was contained and declared out by the next day.

Emmigrant (sic) 1988

This fire boundary was obtained from the BLM fire history (BLM 2005), re-projected into UTM, Zone 12 North, in NAD of 1983 and clipped to the City of Rocks boundary. The cause of the fire was listed as “natural” (lightening). It started on August 5, 1988. In total, the fire burned some 346 acres and only 51 were in the City of Rocks. This fire took a couple of days to control and was not declared out until August 8, 1988.

Emery Canyon 1992

This fire boundary was obtained from the City of Rocks National Reserve files concerning rehabilitation of the fire and digitized on screen from a hand drawn map in original fire record. The fire report was unavailable from the BLM (Jeryl McRill, personal communication 2005) even though the BLM assisted with the blaze (Jackson 1992). According to the rehabilitation plan, the fire was suspected to have been human caused. It started on July 31, 1992 and suppression efforts included “several engines/pumpers”. The fire was reportedly contained at 50 acres. Best possible replication of the shape put the mapped acres at 75.

Emery Canyon 1996

This fire boundary was obtained from the City of Rocks National Reserve files and digitized on screen from a hand drawn map in the original incident report. According to the incident report, the BLM assisted with the blaze. The fire started on October 17, 1996 and was contained and declared out the same day. It was reported to have covered 80 acres. When digitized to the best shape from the map it contained 78 acres with only about 52 of those acres in the City of Rocks. This fire was reportedly ignited by a spark from a dozer operated by an NPS employee. There were several descriptions of this fire in oral histories (Jones 2005, Keck 2005).

City of Rocks 1999

This fire boundary was obtained from the BLM fire history (BLM 2005), re-projected into UTM, Zone 12 North, in NAD of 1983 and clipped to the City of Rocks boundary. The fire started on September 9, 1999. There was no cause reported or information regarding how long it took to contain the fire. It burned a total of 565 acres within the City of Rocks.

City of Rocks 2000

This fire boundary was obtained from the BLM fire history (BLM 2005), re-projected into UTM, Zone 12 North, in NAD of 1983 and clipped to the City of Rocks boundary. The fire was ignited by “natural” causes on August 18, 2000 and burned for 5 days before it was controlled. It was declared out on August 25, 2000. The fire was mapped by the BLM at 17,605

acres of which 2,090 were within the City of Rocks. The report listed that at least 7 engines, 3 dozers, and close to 60 helicopter drops were used to fight this blaze.

This was the largest fire in recent history within and around the City of Rocks and the small town of Almo. Therefore, there were many descriptions of this fire provided in the oral histories (See Jackson 2005, Jones 2005, Ward 2005, and Shilling 2005). According to accounts by Ned Jackson, former Superintendent of the City of Rocks National Reserve, this fire was ignited in Utah and burned into Idaho and the City of Rocks. He said that the community members, even the “old timers”, had never seen anything like this fire in the recent past. The fire was a very hot crown fire that moved along the tops of the pinyon and juniper without having to be sustained by ground fire. It was such a hot blaze that it glazed the soil in some areas on the slope north of the historic stage station. This hardening of the soil made conditions even worse for erosion during a severe thunderstorm a few days after the fire. Mr. Jackson said that he applied for fire rehabilitation funding through the National Parks Service and gained enough support to seed the hand lines (or areas cleared as fire lines). The BLM also helped by aerially seeding portions of the burn within the Reserve. He believed that the seedings from both of these efforts were very successful (Jackson 2005).

Other Fires

As discussed previously, information regarding historic fires was also collected from emigrant diaries, archival documents, oral histories and historic photos. Although this information was not able to be included in the digital map, it was important for the baseline understanding of the fire history of the Reserve. The results are described chronologically below.

The earliest recorded and datable fire *near* the City of Rocks National Reserve comes from a cross section of a pinyon pine taken from BLM land. A 1998 report from BLM Burley District stated that a fire scarred branch was cut from a pinyon tree just outside the CIRO on an eastern-facing slope of the Cedar Hills about 0.6 miles north of Emigrant Canyon (T16S R24E S20 NE ¼) (Makela 1998, See Appendix 2). Tree ring analysis from this sample revealed fires in 1944 and 1814 at this location. That means the earliest known fire in the *area* was in 1814.

Systematic notes were taken from a collection of 100 diaries and recollections from the period of overland emigration for any mention of: climate conditions, vegetation, water sources,

animals, and fire (Morris 2006). Only one diary within the collection mentioned a wildfire in the general area surrounding the City of Rocks National Reserve. Kilgore (1850) stated that a fire had burned and was still burning after he passed Granite Pass in July (Morris 2006). He did not offer any further speculation as to the cause or the result of the fire. There were references to fires across the prairies by emigrants, however, there were no entries related to current or past fire within the City of Rocks in the diaries obtained for the study (Morris 2006).

The earliest known historic photos from within the City of Rocks National Reserve were taken in 1868 by Timothy O'Sullivan as part of the King Survey of the 40th parallel (Morris 2006). These images reveal fire scars along hillsides within the CIRO (See Figures 2 and 3). In addition, King mentioned not being able to conduct triangulation work during late summer months (in Northern Utah) due to problems with haze and smoke from fires filling the valleys (Records of the King Survey 1867-1871).

Prior to becoming the Sawtooth National Forest, the USDA Forest Service area included in the CIRO was known as Minidoka National Forest (MNF History 1941). The Minidoka National Forest was created in 1908 from the Raft River and Cassia Forest Reserves (MNF History 1941). The Minidoka Forest included 637,088 acres in Idaho and Northern Utah. The Albion Ranger District of the Minidoka National Forest contained 79,956 acres (MNF Report 1949). The portion of the City of Rocks that was part of the National Forest would have been part of the Albion Division of the Minidoka forest. According to the annual game reports filed for the Minidoka National Forest, there were no fires reported from 1918 through 1924 (MNF Game Reports 1918 to 1950).

Other records prior to 1926 for the USDA Forest Service summarize the fire history by district, region and/or by forest. According to summary reports for the Minidoka National Forest, only 1 acre burned in 1925, 134 acres burned in 1926, none in 1927, 350 acres burned in 1928 and 1 acre in 1929 (USDA District 4 Report 1929, See Appendix 2). The four year average for the Minidoka National Forest from 1925 through 1929 was only 97 acres burned per year. None of these burned acres were reported to have occurred within the City of Rocks National Reserve. A 1937 Summary fire report for all of the National Forests reported the number of acres burned per year from 1908 by Region (USDA Forest Service Summary Report 1937, See Appendix 2). There was no way to tell whether any of these burned acres were within the Minidoka National Forest or within the portion that became the City of Rocks National Reserve.

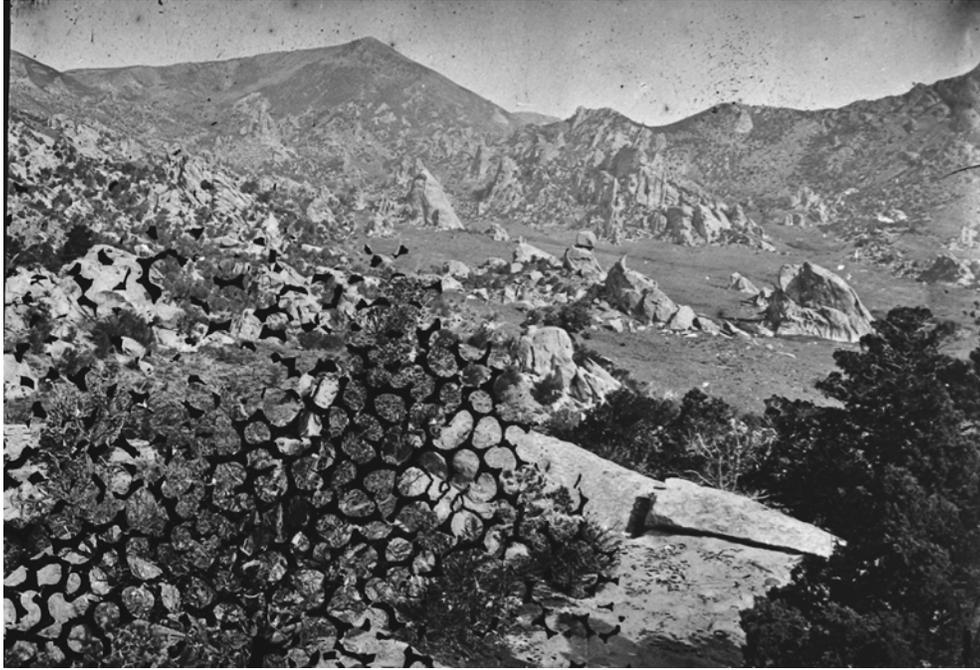


Figure 2: Photo 1 by Timothy O’Sullivan, National Archives and Records Administration, 1868
The original photo was damaged in the left corner where the glass negative had begun to peel. It was taken looking northwest from near the top of Box Top Trail. The distant slopes in upper right corner show signs of past fire.



Figure 3: Photo 2 by Timothy O’Sullivan, National Archives and Records Administration, 1868
This photo was taken looking east toward the entrance to the Reserve from near the Box Top Trail. The fire scar along the north slope of Smoky Mountain is very evident

The records were less revealing for the non-forested lands during the time period prior to the Taylor Grazing Act in 1934 and before the creation of the Bureau of Land Management in 1946. After 1934, unpatented land that was not under the National Forests, privately owned or state property was managed by the Grazing Service as the Raft River Grazing District No. 2 (Morris 2006). There were no written fire records found from this time period. However, according to the Idaho Sunday Statesman in 1927, the percentage of “other lands” (not National Forest) in Idaho that burned in 1926 (2.7%) was higher than forested lands (1.2%) even though there were far more acres of forested lands in the state (Idaho Sunday Statesman 1927).

Oral histories were a useful way to gather information concerning fires prior to the creation of the BLM in 1946. The oldest fires that anyone recalled stories about were around the Big Cove area. Stumps and burned logs were found in areas their parents and grandparents told them had burned (R. Bruesch 2005, Sheridan 2005). There was also evidence of early fires on junipers in the hills on the southern end of the Reserve before the big fire in 2000 burned through most of the old growth woodland (Jackson 2005). During a drive through the City of Rocks, Jim Lloyd recalled a fire on the hillsides above the “old Shoemaker homestead” (around the road up to the Circle Creek overlook) that cleared off the slope well enough to make it a very nice tobogganing spot when he was about ten (about 1928) (J. Lloyd 2005). Vinola Archibald also recalled a fire across the road from their family ranch (Lloyd family) when she was small (maybe about 1924 or so) that was started by lightening (Archibald 2005). This fire was just outside the east entrance to the City of Rocks National Reserve. Other recent fires that were described included one just northwest of the old gravel pit by the east entrance from Almo about ten years ago (J. Lloyd 2005, S. Lloyd 2005). The scar on the hillside was still visible from this fire but there was no written record found.

There was one fire report within the BLM historic records located at the National Archives and Records Administration Pacific Alaska Region Office in Seattle that did not contain a map and, therefore, was not included on the digital map. The report, however, was included in the digital database (See Appendix 2). The Kirkpatrick fire was started by lightening on August 8, 1957 and it burned only about ½ acre of brush (T16 R23 S14). It was contained by one BLM fire crew member within four hours and declared out the same day.

Finally, there were two fire reports provided by the BLM that did not contain maps, acreage, cause or suppression information. The City of Rocks files did not contain any record of

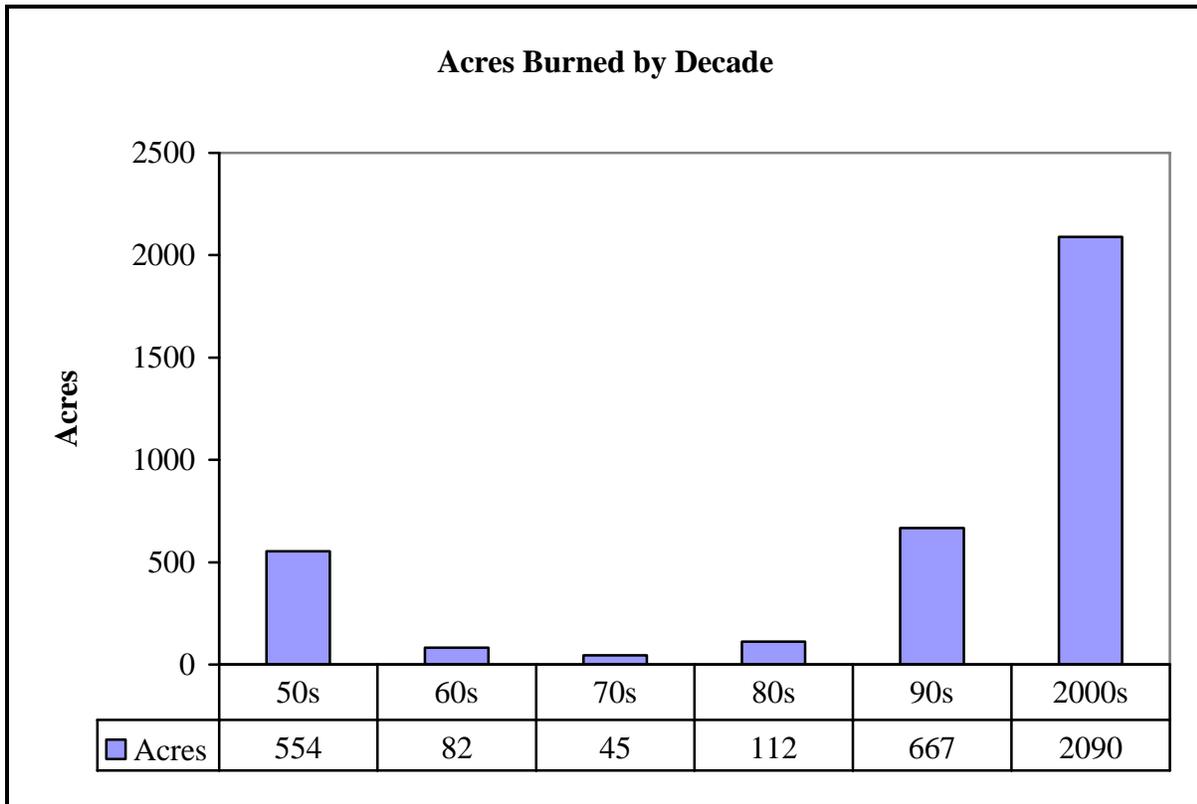
these fires. The reports simply stated that the BLM assisted with fire suppression on August 10 and August 19, 1999. Both reports were included in the digital database (See Appendix 2).

DISCUSSION

Of the 14,320 acres within the City of Rocks, an estimated 3,562 acres or 25% of the Reserve burned over the reporting period from 1926 to 2005. Based on fire information obtained from other sources that could not be mapped, this percentage could be slightly higher. This report has demonstrated several trends in fire for the City of Rocks National Reserve. First, there has been a pronounced increase in the number of acres burned in the Reserve since the 1950s (See Figure 3). In the 1950s, only about 3% of the Reserve burned. Throughout the 1960s, 1970s and 1980s, less than 1% was burned. Then, from the 4% burned during the 1990s, there was a large jump when 14% of the Reserve blackened in just one fire in 2000. Second, as the summary of the fire reports demonstrated, fires not only got larger but also more difficult, time consuming (and probably costly) to control. Finally, the majority of the fires in the Reserve occurred in the fall (September and October) and some in the late summer (July and August) (See Table 2).

Given this late fire season, it was interesting that the emigrant diarists did not mention any fires in the City of Rocks during the decades of overland migration. The photos from 1868 clearly show fire scars on the slopes along the California Trail corridor (See Figure 2). Had they witnessed such a fire or seen the impacts soon after, they surely would have noted it because fires would have reduced their feed and fuel resources. It was also interesting that most of the oral history participants did not remember there being very many fires until more recently (G. Durfee, B. & A. Jones). They usually only mentioned the big fire that burned through the City of Rocks in 2000 or another large fire out by Elba in the late 1990s. There were a few fires attributed to debris burning in the BLM reports, however, oral history participants said that residents did not really use fire as a way to clear the land for cultivation (Durfee 2005, B & N. Ward 2005).

Figure 4: Acres burned per decade in the City of Rocks National Reserve



Finally, the City of Rocks National Reserve encompasses a relatively small area. Fires of the size and magnitude experienced in 2000 clearly showed the potential for conflagration in the Reserve. In addition, a recent report concluded that over half of the vegetation within the City of Rocks was in the high to medium risk category for fire (Stock 2005). Therefore, understanding and planning for fire will be a top safety concern for the Reserve in the future. A fire history, such as the one created in this report, should be a useful baseline of information to assist in that process. In addition, it should provide a good starting point for future planning, monitoring and management of both natural and cultural resources.

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APPENDIX 1

Digital Copy Available at the City of Rocks National Reserve

APPENDIX 2

Digital Copy Available at the City of Rocks National Reserve