Spring Mountain Wilderness
Rock Climbing Inventory

Completed for the Mt. Charleston, La Madre and Rainbow Wilderness Areas

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Introduction

The goal of this project was to collect sufficient data to effectively represent the rock climbing activity in the Mt. Charleston, La Madre, and Rainbow Wilderness Areas. This information is to be used by the Bureau of Land Management and United States Forest Service in the development of a Wilderness Management Plan for these areas. To adequately represent the amount of climbing activity in these wilderness areas the inventory team collected spatial and attribute data on the location of climbing areas and wall, the state of access trails to these walls, the number of routes on each wall, an estimate of the number of bolts and anchors on the routes, and any other elements that might describe climber specific activity. Initially a comprehensive inventory of bolts and anchors on the climbing walls in the three wilderness areas was considered an important aspect of the study. However, as the project progressed it was determined to be nearly impossible to collect exact counts of all of the hardware on a climbing route from a ground-based survey. Therefore, hardware data was obtained for the majority of the routes through a review of climbing literature, websites, and human resources and was field verified for accuracy whenever possible. Thus, the field survey element of the project became focused on the number of routes, number of pitches, number and quality of trails accessing the routes and other signs of human impact or animal disturbance found at each climbing area. Trail quality was reflected by the presence or absence of such things as braided trails, eroded sections, markers and signage, and trail delineation. The results of this study are presented in this report and reflect the work of Great Basin Institute personnel from 3 October 2005 to 15 February 2006.

Methods

Literature Review:

Several guidebooks, as well as at least one website, list information for climbing in the Spring Mountains. The inventory team collected six guides (*Red Rock Canyon: A Climbers Guide, Rock Climbing: Red Rocks, Red Rocks Climbing, Red Rock Odyssey, Islands in the Sky,* and *Las Vegas Limestone*) and found one current website (www.climbingredrocks.com) which were determined to provide comprehensive and up-to-date coverage of information for the climbing areas focused upon in this study. Each wilderness area had several climbing areas identified by location and sub-divided into individual walls at each area. Each wall had at least one, usually several, climbing routes identified in the guidebooks. Information for each route was collected regarding the name of the route, difficulty using the Yosemite Decimal System (YDS), grade, type of climb, number of bolts, number of anchors, number of pitches, height, first ascent party, date of first ascent, the guidebooks that provide information on that route, and any comments that may be necessary to clarify the description of the route. All data was cross-referenced between as many sources as possible. Data was also compared to personal information gathered from speaking with members of the local climbing community. The complete dataset containing this information can be found in the EXCEL spreadsheet presented on the accompanying CD. This dataset reflects any updates made to the route attributes that were verified by field survey efforts and may have contradicted what was originally reported in the climbing literature.

Field Survey:

Climbing wall information was verified by field survey techniques to provide visual confirmation of route location and characteristics. The field survey team used binoculars to visually inspect climbing walls for the presence or absence of climbing routes and hardware on those routes. The information collected in the literature review provided a guide to where climbs should be located and the number of bolts and anchors each route was expected to have. It should be noted here that anchors were considered individual and separate entities regardless of the number of bolts they were made up from. Visual inspection, however, provided updated information reflecting the true location of the routes and actual hardware counts. This data was recorded and entered into the route inventory database. Spatial data reflecting the location of the climbs was collected in the field using a Trimble GeoXT GPS unit. All field data was collected using a standardized methodology to ensure consistency and accuracy throughout the course of the study.

Point data was collected at 1 sec. logging intervals with a minimum of 35 points collected before storing the feature. Point data included climbing wall midpoints, climbing wall endpoints, photopoints, and points of interest. Climbing wall endpoints were only collected at areas where the wall was too wide to be effectively represented by a single point and both ends of the wall were accessible to the survey team. Points of interest included trailheads, survey markers (including wilderness boundary signs), rock art, graffiti, campsites, guzzlers, animal nests, etc.

Line data was collected to represent access trails that are used in the approach to the climbing walls. Trails that were mapped included routes created and maintained by management agencies as well as those created by individual users without agency consent. Line data was collected at 5 sec. logging intervals as the surveyor traveled the length of the trail being mapped. Some climbing walls were accessed by routes through washes and by scrambling over rocky terrain. These routes were mapped if distinct sign of human travel was evident and sufficient GPS signal was available.

Each climbing wall was photographed in the field using a digital camera. Efforts were made to take each photo such that the entire wall and all climbs on that wall were visible in the scene. Since most walls can be unrecognizable from different points of view, GPS point data was collected at each of the locations that the photos were taken. This should ensure the proper identification of the walls by future researchers using the photo records taken during this study. Photo data was also collected at major trailheads and trail intersections that provided access to the walls. This data should aid in the identification of the correct approach route to each wall, especially when the approach calls for travel over braided trail networks or poorly defined paths. GPS point data was also collected to represent photopoints of trail information. Points of interest encountered during the field survey were also documented by photograph when deemed necessary by the survey team. These points were usually of small features such as guzzlers, rock art, survey markers and graffiti. Therefore GPS photopoints were not collected for most of these features because the Point of Interest itself served as the location from which the photo was taken.

GIS Database:

Spatial data collected in the field was eventually entered into a GIS database for more detailed analysis. GPS data was collected in the field with new files created for each day of field survey work. The files were transferred from the Trimble device to a Great Basin Institute hard-drive using GPS Pathfinder Office (GPO) 3.0 software. Raw GPS data was differentially corrected using base files downloaded from the Las Vegas Water District CORS site. GPS data that was not differentially corrected due to poor satellite geometry/reception was left intact and labeled as such. The data was then exported as shapefiles and brought into ArcView 9 for final processing.

Trail data collected in the field was especially difficult to differentially correct due to inconsistent satellite signal over prolonged periods and the extent of the mapped area. Consequently, many of the trails represented in the GIS reflected minor inconsistencies compared to those found in the field. Overlapped lines, gaps at intersections, displaced features and other small errors caused the trail layers to appear disjointed and unclear. These errors were corrected by hand in the GIS by comparing the trail data to background DRG files, field notes and maps taken from guidebooks and other sources. Minor editing produced trail maps that were accurate in their representation of those found in the field but may not necessarily retain the spatial precision actually collected by the GPS unit. The raw, unedited data is included on the accompanying CD as shapefiles representing the data exactly as exported by GPO.

Due to poor satellite signal strength or geometry some climbing walls required hand-mapping techniques to be accurately represented in the GIS. This was usually the case for walls located in narrow canyons formed by high cliffs on either side. For these situations spatial data was usually collected from a point where satellite signal was sufficient and the wall in question was in direct line of sight. A compass bearing and distance estimate was made to the base of the wall from the actual location where the point data was collected. This offset information allowed the wall to be mapped based on reliable field observations rather than by hand alone. The offset point was then differentially corrected and imported into the GIS database following normal procedures. Background DRG files and guidebook information was used to fine tune the location of the point to ensure maximum accuracy in terms of its relative physical location in the canyon. Any climbing walls that were mapped by this process were identified by a comment made in the Climbing Wall point attribute table.

Known Issues:

Field survey results yielded 1,065 known climbing routes in the Mt. Charleston, La Madre, and Rainbow Wilderness Areas. Of these, 574 routes were visually inspected for bolt and anchor counts. The remaining 491 routes (47% of all routes) inventoried by the survey team were either too tall or inaccessible to accurately see hardware from the ground. Bolt and hardware data for these routes was taken from literary sources and first-hand accounts by local climbers.

Field survey efforts were also unable to reach the base of every wall inventoried over the course of the study. 162 individual walls were identified by the survey team, of which only 5 were not field verified. These five areas were The Egg (Willow Springs), Upper Bridge Mountain (Icebox Canyon), Hidden Wall (Icebox Canyon), The Coffin (Oak Creek Canyon), and Western Spaces Wall (Black Velvet Canyon) and were all located in the Rainbow Wilderness. These walls were determined to be inaccessible due to dangerous approach terrain and relatively unused by the majority of climbers visiting Red Rocks.

Of the 157 walls that were field verified, 34 of these were mapped using the offset technique described above. This represents nearly 22% of the total climbing walls mapped over the course of this study. These statistics should be taken into consideration when determining the overall reliability of the spatial data collected in the field. Post-processing by differential correction is another major factor that plays a role in the accuracy of the spatial data collected in the field. As mentioned above, poor satellite signal strength or geometry can create situations where there is insufficient data to perform a differential correction. This is especially common on trail features, but found on some climbing wall points as well, mostly in the Rainbow Wilderness Area. These features are identified as "Uncorrected" in their respective attribute tables. This information is meant only to serve as a reminder to consider the source of the data used to produce the GIS maps included with this report.

Data

Area:	Walls	Routes	Bolts	Anchors
Mt. Charleston	13	135	793	104
La Madre	31	184	605	101
Rainbow	116	746	2013	799
TOTAL:	**160**	**1065**	**3411**	**1004**

574/1065 routes field verified – 53%

43 new routes not found in literature.

NOTE: The use of the term "field verified" and the associated data given above (and throughout this report) refers only to the verification of bolt and hardware counts on the routes in a given area. All routes inventoried over the course of this study were field verified in terms of existence and location and are represented as such in the GIS database. The exception to these are the 5 walls mentioned above.