

Final Report

2008 Discovery Pool Grant

Multi-Spectral Imaging Project, Canyonlands National Park

National Park Service, Southeast Utah Group

by:

Bud F. Turner, Principal Investigator

Chris Goetze, SEUG Cultural Resource Program Manager

Research Need and Questions Addressed:

The Primary Research Need for the Multi-Spectral Imaging Project in calendar year 2008 was to create a baseline photographic record in the visible and infrared spectrums for each Barrier Canyon Style pictograph panel in the Salt Creek Archeological District. These images can then be used for research, management, and interpretive programs including an ongoing effort to monitor any changes to the panels through time.

Methodology and Personnel:

Due to the distance and rugged terrain, Discovery pool Grant Funds were used to rent a helicopter to fly the Principal Investigator, Bud F. Turner, and Pat Flanigan, Canyonlands National Park Exhibit Specialist, into the remote area of Middle Salt Creek near the Upper Jump to document the pictograph panels in that locality. Mr. Turner and Mr. Flanigan spent eight days from September 25, 2008 to October 2, 2008 locating and documenting thirteen separate sites and their associated pictograph panels in visible and infrared wavelengths using digital cameras, and on black and white film utilizing a 35mm film camera.

Discovery Pool Grant funds were also used to produce Resource Monitoring Image (RMI) books to be utilized by Park Service personnel on regular resource monitoring patrols. These books contain the complete photographic record of each pictograph panel, and are designed to be used to rephotograph the panels from the same camera position and direction as the original, baseline survey images. This will allow the park to determine the amount and rate of change to each panel, and will help prioritize and determine future preservation and restoration efforts as needed.

Number and Names of Staff Utilized Throughout the Project:

A total of three personnel were utilized during the MSI Project documentation in Middle Salt Creek. They were:

- Bud F. Turner, Principal Investigator
- Chris Goetze, National Park Service, Southeast Utah Group, Cultural Resource Program Manager
- Pat Flanigan, Canyonlands National Park Exhibit Specialist

Projected Results:

The ultimate goals of the Multi-Spectral Imaging Project in Canyonlands National Park are to provide a baseline photographic survey of all pictograph panels in Canyonlands National Park in visible and infrared wavelengths, as well as in 35mm black and white film for archival purposes. These baseline survey images, plus the Resource Monitoring Images, will help determine the amount and rate of change to the panels and aid in prioritizing any future preservation and restoration efforts.

Actual Results:

Due to the heavy equipment required for the project, the remote location, and the difficult logistics of accessing Middle Salt Creek in Canyonlands National Park, the Project opted to pay helicopter rental expenses for ferrying the Project team and their equipment into the area. Because of the expense of this mode of travel, the Project was able to afford only one flight into the Middle Salt Creek. Despite maximizing their time and accomplishing work at thirteen locations in Middle Salt Creek, an additional Discovery Pool Grant request will be needed to complete the Multi-Spectral Imaging Project in calendar year 2010.

Resource Monitoring Image Books were created for all documented pictograph panels in the Needles District and were distributed to appropriate National Park Service staff to use on Resource Monitoring patrols.

Conclusions and Application of Research Results to Future Educational or Interpretive efforts:

In addition to creating a baseline photographic survey of all Barrier Canyon style pictograph panels in Canyonlands National Park, the Multi-Spectral Imaging Project has provided an increased understanding about the creation of these panels and how human or natural processes later modified them. Infrared imaging has proven to be a valuable tool in visualizing these ancient images, often bringing out details lost in visible light due to vandalism or natural erosion and sedimentation.

As far as can be determined, this is the first time multi-spectral imaging in visible and infrared wavelengths has been utilized to document pictograph panels in a comprehensive manner. When the entire project is completed, the results will be published in an appropriate peer review professional publication, and the process documentation, including methods, naming standards, and equipment utilized will be made available to other agencies for use in documenting their rock art. The images themselves will be made available to qualified current and future

researchers to study the original application methods and the changes brought about by time and the elements.

In the mean time, Mr. Turner has provided numerous presentations about the project, its purpose and results, to potential technical and financial supports, and the general public, in a format that was both interesting and enlightening. During those presentations, the support of the Canyonlands Natural History Association has been gratefully acknowledged. The project will also be highlighted in a National Geographic program, "America's Wild Spaces: Canyonlands," scheduled to be aired on The National Geographic Channel Thanksgiving evening, November 26, 2009 at 8:00 pm Eastern time. A DVD of the program will be available after the television special airs.

Future Research Needs:

Because the Project had to pay ferry time for the aircraft from its home base on both flights in and out of Middle Salt Creek, there were insufficient funds to fly into Upper Salt Creek. An additional Discovery Pool Grant request for 2010 to complete this final segment of the Multi-Spectral Imaging Project will be submitted before the deadline on November 15, 2009.

Attachments:

Sample page of Resource Monitoring Images from the Four Faces pictograph panel in Middle Salt Creek is attached. This is one of the sites documented during the eight-days the project team spent in Middle Salt Creek.



Fig. 3. Four Faces Pictograph Panel in Visible Color.

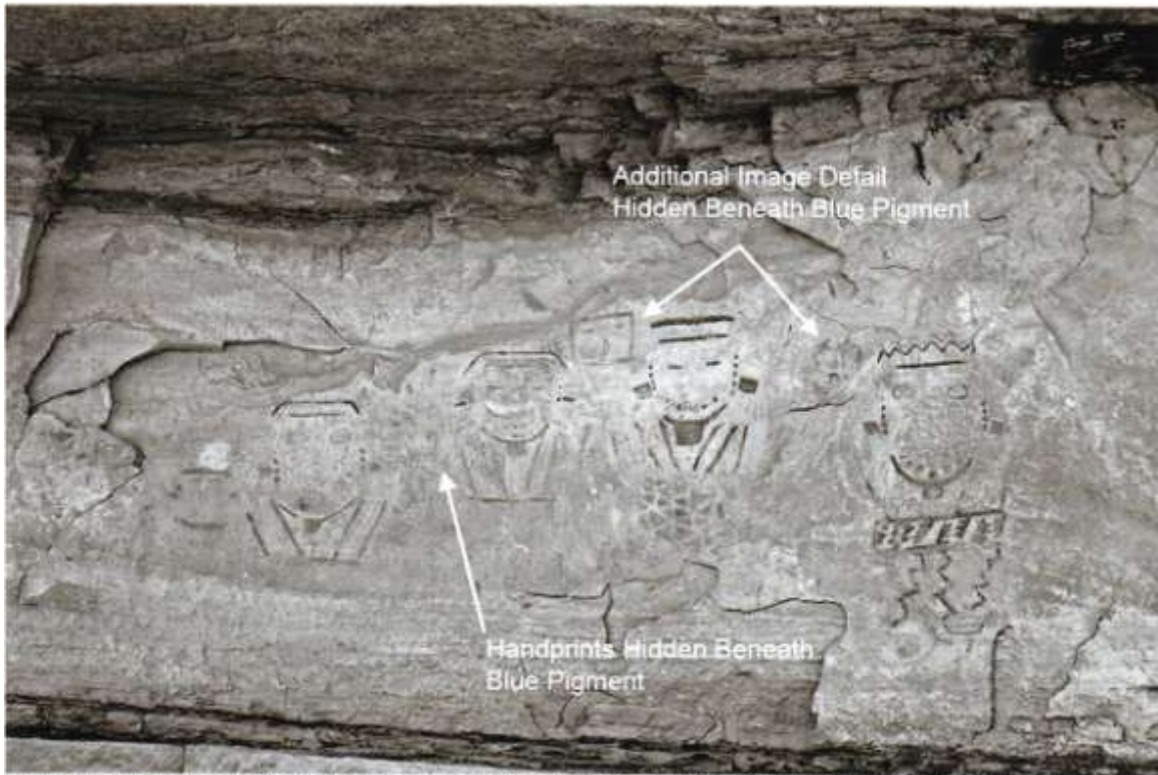


Fig. 4. Four Faces Pictograph Panel in Infrared. Note additional details hidden beneath blue color in visible light.

The images below are from two pictograph panels in Middle Salt Creek.



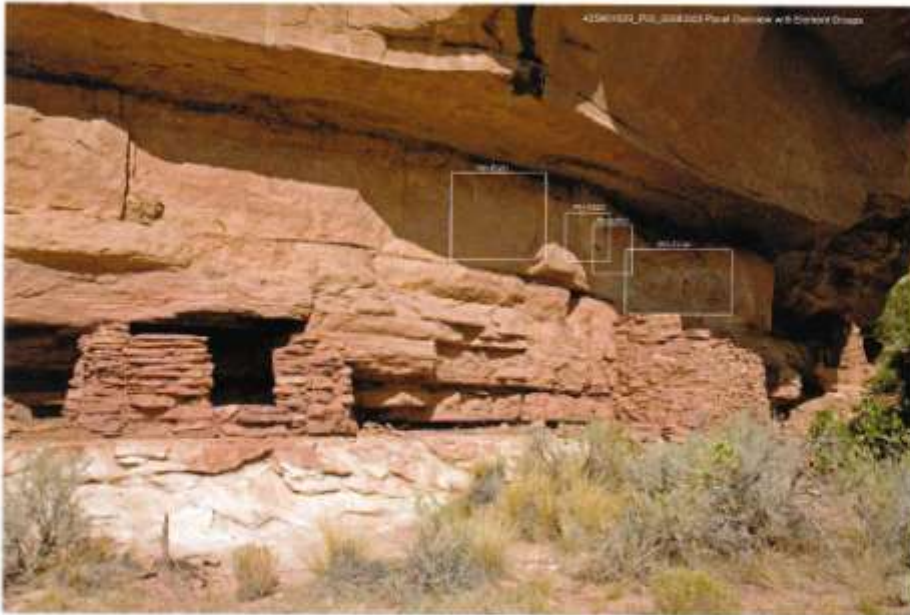
Fig. 1. All American Man Pictograph Panel in Visible Color



Fig. 2. All American Man Pictograph Panel in Infrared. Note additional elements beneath hand prints, and charcoal drawings only visible at infrared wavelengths.

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Camera Direction: 360 degrees



Four Faces

42SA01629_P01-EG01_20080929_VIS0029

Camera Direction: 360 degrees



Four Faces

42SA01629_P01-EG03_20080929_VIS0032 Camera Direction: 360 degrees



Four Faces

42SA01629_P01-EG04_20080929_VIS0035 Camera Direction: 360 degrees



Four Faces