

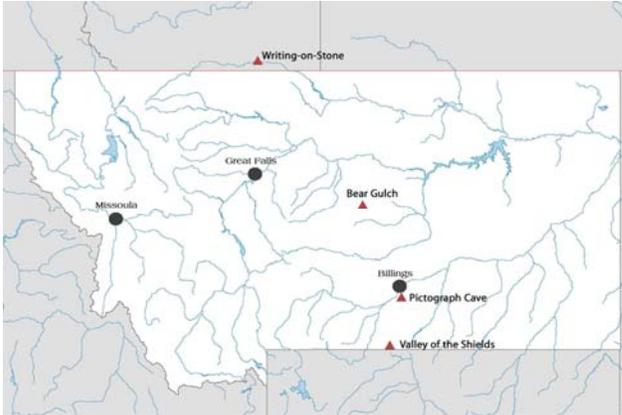
Bear Gulch Pictograph Recording Project: 2005 Progress Report



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During the summer of 2005 the long awaited recording of the extensive Bear Gulch Pictographs began in central Montana. This was a cooperative effort of several organizations with funding from various sources, including the MAS Conservation Committee. Macie Lundin, the site's owner, has been interested in having the site recorded since at least 2000 when she opened the site for public tours. John and I talked with her often about recording, but we did not have the time nor the personnel for a full recording, although we did full photography on various occasions through the years with various equipment. Macie was agreeable when Jim Keyser offered to assemble a group of volunteers to record the site. We did the digital photography and assisted on other aspects of the fieldwork. The report is to be a communal effort between several of us. As with all archeological projects, agreement to conduct the project was just the beginning of extensive planning, fund raising, and preparations for two weeks of fieldwork during July of 2005. The purpose of this paper is to provide a brief progress report on accomplishments during the past year and update the MAS on how contributed money was spent on recording and analysis.



Many of you know this impressive site, but for anyone not familiar with it, the Bear Gulch Pictographs are southeast of Lewistown in a sandstone bordered canyon in a breaks area in the northern foothills of the Snowy Mountains.



Rock art in the form of thousands of paintings and engravings is mostly along the western bluffs of layered, sandstone. Shield-bearing warriors are the dominant motif, and in 2002 we presented a paper at the MAS meetings on shield variety that we had observed at the site. Although sites with shield-bearing figures range from Canada to Mexico, no other known site has such a great concentration.



Last summer recording consisted mostly of direct tracing of all figures and full coverage of the entire site with a professional digital camera and several support cameras. Previous informal drawings of selected figures and many photos taken over the years are available for comparison. We also completed full mapping of the site by GPS and other methods, defined and numbered panels, and collected a wood sample for dating and analysis.



The project was under the general direction of Jim Keyser, shown here, and had the participation of four professional archeologists. Recording by tracing was also under Jim's direction. Detailed photography was done by John. Dr. Angelo Fossati, a long-established rock art researcher from Italy, participated as a recorder and contributed

through his extensive experience from around the world. My participation has been with project setup, some aspects of fieldwork, and will continue through analysis, presentation, and reporting of results. George Poetschat, of the Oregon Archeological Society, served as Logistics Coordinator and organized the sixteen volunteers from the Oregon and Montana Archeological Societies to record the site. Among the volunteer recorders were two students. Melissa Ray is a graduate student working on her M.A. in Anthropology from the University of Montana and plans to use Bear Gulch data for her thesis. Melissa Greer, our daughter-in-law, is completing her B.A. in Anthropology at Longwood University in Virginia, and has used some of the Bear Gulch materials in her



studies. She worked on several of Keyser's rock art recording projects in Oregon and Wyoming, before meeting our son during a rock art trip to Spain. The landowner, Macie Lundin provided unbelievable meals and good camp atmosphere, while her son Ray and his friends provide great showers and other camp amenities.



As many of you know, field tracing is a controversial recording method. Jim is a strong proponent of field tracing, while I was more skeptical and believed computer tracing had made field tracing an outdated recording method. John believes in both and feels that intensive field tracing provides a necessary backup to detailed computer processing and tracing of high-resolution digital photographs. Thus, going into the project, we decided to test the two methods of manual tracing and computer tracing to evaluate their relative pros and cons. The result is a paper we have jointly prepared for presentation at the SAA meeting next week. We originally designed a system to compare time and personnel necessary for field tracing versus computer tracing, but we soon discovered calculating the time involved in these tasks is not a useful measure of comparison between the two approaches. Both are time consuming, and it depends on whether one wants to allocate more time to the field or more to the office when choosing a method based solely on time. Of course, any field recording also necessitates considerable additional time in the office for processing the drawings. The most important relative considerations of the two tracing methods are impact and accuracy.



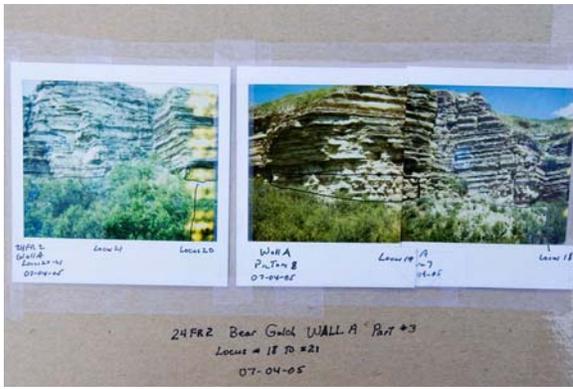
Although we considered several pros and cons of tracing while at the Bear Gulch site, here we will only touch on the most important consideration associated with a decision to field trace, and that is *impact to the site*. Tracing should not be done if it promotes spalling, but we found that the remaining figures at Bear Gulch are on stable surfaces. It is often

possible that one part of a site can be traced and not another, but Bear Gulch was adequately uniform in stability that we had no trouble setting up and tracing.

Even if the wall or boulder is stable, wet weather can sometimes weaken rock, and tracing should be done only when dry. Sandstone can spall during rain or melting snow, so recording at Bear Gulch in the heat of July avoided this potential problem. Once it has been decided that tracing is appropriate, very little pressure should be used, regardless of wall surface stability, to prevent spalling or marking on the wall. It is important to use non-marking tape with controlled adhesive qualities, and as little as possible. Photographing the rock art, for computer tracing, is non-impacting with a good camera and lenses, but impact is possible if one climbs on the rocks for a better view, or leans against unstable surfaces.

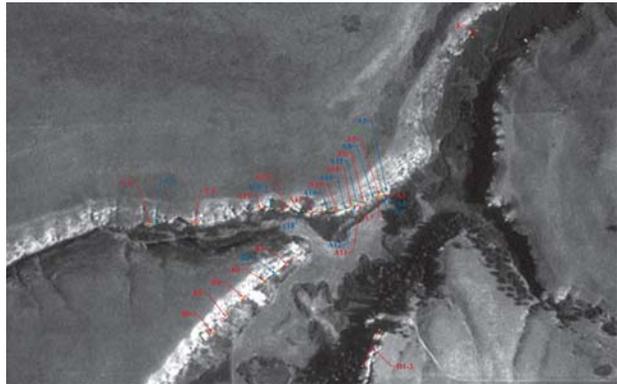


Fieldwork began by dividing the site into walls, or major parts of the cliff, labeled A, B, C, etc. Walls were divided into smaller sections called *loci*, or large utilized parts of the wall with more or less continuous cultural attention. Individual areas within the loci were recorded as panels, which in turn were made up of numerous figures in close proximity and presumably, at least in many cases, parts of a single composition or use. These divisions down to the panel level were labeled with blue painter's tape — a kind of light-weight masking tape — for easy recognition. Loci were mapped onto the site with hand-held GPS units, and panel locations on each loci were marked on Polaroid instant prints



taken in the field, as well as hand-drawn sketches. Individual panels were traced, so that — at least in theory — every figure was recorded exactly where it was on the panel, at each loci, on each wall, and within the site as a whole.

Maps were produced using GPS and other information. Waypoints were downloaded into the Igage AllTopo Map program and plotted on a USGS topographic map to provide site legal location and overall configuration details, with other information added through the Adobe



Illustrator postscript drawing program. Site details from GPS mapping were also imported into ArcView and displayed on an aerial photo, as shown here. This map can be expanded and enhanced to include links to individual panel photos, drawings, field notes, or other information in the overall linked databases. Photographic recording included full photography of all rock art, as well as general views of the site. Panoramas of walls and the site as a whole were stitched by computer.

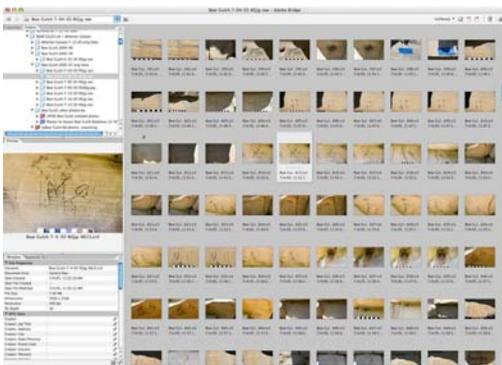
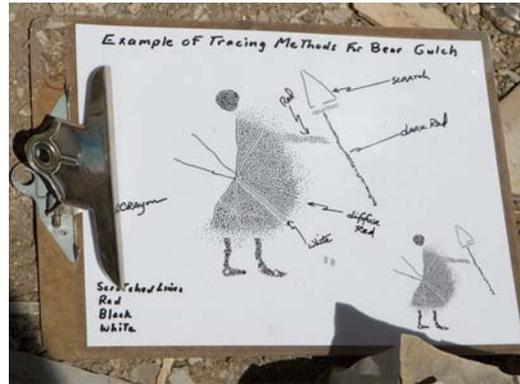


For the field tracing, volunteers mostly were teamed in pairs of an experienced recorder and a less experienced person. In some cases, the most experienced recorders worked alone, but with someone nearby to assist as necessary. The field tracing process involved measuring a sheet of plastic and taping it over the panel such that no tape touched any rock art. The selected tracing technique depended on the type of rock art, but all work was done with a fine-point Sharpie. Stippling was used for paintings,



which involved dotting over painted areas. Dots are placed closer together for darker paint and more separated for lighter sections. For incised images, the lines were traced. Some panels required multiple layers of plastic, with incised figures and painted figures — and in some cases superimposed layers — recorded on different sheets. The plastic sheet was labeled with the

site number, recorder's name, date, wall letter, locus number, panel number, and arrow showing up within the panel. After the panel was traced, individual figure measurements were recorded on a form along with additional notes. After recording was finished, all information was placed in a labeled envelope, which was checked for completeness and entered onto a master work list.



In the field the digital photographic process was much less complicated. High resolution photographs were taken of the site, each panel, and component figures from different perspectives and with different settings. Photographs were saved in full resolution RAW format, an uncompressed, unprocessed 16-bit

data file that allows greatest color information and post-processing capability for detail extraction. A detailed photo log, with additional notes, was done by digital voice recorder for later transcription.



During fieldwork a piece of wood was found jammed into a sandstone crack and appears to be part of scaffolding built to allow access to the upper parts of the wall. A sample of the wood was collected for analysis. Dr. Phil Dering, ethnobotanist at the Shumla School in Texas, identified the wood as pine, which occurs throughout this area.

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 214805 SAMPLE : BEARGULCH WD ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (wood): acid/alkali/acid 2 SIGMA CALIBRATION :	230 +/- 40 BP	-23.8 o/oo	250 +/- 40 BP
	Cal AD 1520 to 1580 (Cal BP 430 to 380) AND Cal AD 1630 to 1680 (Cal BP 320 to 270) Cal AD 1770 to 1800 (Cal BP 180 to 150) AND Cal AD 1940 to 1950 (Cal BP 10 to 0)		

Beta Analytic dated the wood to A.D. 1640 to 1660, which suggests answers to questions of age and possible association with the rock art. Beta is a commercial operation, and much of the non-subsistence budget went for the date. The date supports our idea that the wood could be part of a scaffold system associated with the rock art. The many large shields relative to body size and the lack of horses and guns at the site had previously suggested that most of the rock art predates the introduction of the horse, which arrived about 1730, and dominance of the bow and arrow with most of the shield bearers indicates that they post-date the AD 500 introduction of the bow and thus were made during the Late Prehistoric Period. The C14 date suggests that some probably were done in the late 1600s just prior to the arrival of the horse. Hopefully, money eventually will be available for direct dating of the rock art, although chalking and pencil outlining throughout the mid 20th century has affected many of the figures.

Fieldwork now is provisionally done, and processing of field tracings has begun in the Oregon lab. They are being redrawn as necessary, copied and reduced for storage, and prepared for publication. Figure descriptions and inventories are being made, and

comparative information is being searched. At our office in Wyoming, the thousands of photographs from this session have been processed for distribution to other members of the study team. Additional processing and enhancement has begun for publication and other forms of public display. Photos are stored in different areas on DVDs as a redundant backup system, and further distribution is anticipated.



Analysis of the 2005 data is on-going, but some preliminary thoughts are possible. The site is the best western example of a late Plains rock art expression, with its dominance of shield-bearing warriors. Cultural affiliation appears to be more closely tied to southeastern Montana than it does to the island mountains of the central part of the state, but the site was probably used by people from more than one culture throughout the Late Prehistoric Period. Function and extreme variation of the shields and related figures are the focus of several studies, and consideration is being given to possible identification of ethnic affiliation or influence. Only a few of the warrior figures appear to have been actively engaged in conflict activity. Those appear in small engraved biographic scenes, such as this one, and may be more successfully linked with either specific or general groups. There are few animals, and none appears to be integral to hunting scenes or even associated with shield warriors. Shield association with initiation rites presently is thought to have some support.



In summary, the 2005 recording resulted in a large amount of data that will take many years and many people to organize and analyze. We anticipate it will be the focus of many oral presentations, published articles, reports, and theses. Our daughter-in-law Melissa participated as part of a field school internship and has additionally used project

information for school papers. In addition to recording rock art, Melissa Ray, conducted some subsurface testing for use in her Master's thesis at the University of Montana. She is also presenting a poster on the project at this conference. A symposium is planned for an upcoming Plains Conference, and a rock art recording workshop for MAS members is being planned as part of the Conservation Committee grant. The workshop was temporarily postponed this year because Keyser had other obligations. Thus, the site continues to provide information on earlier lifeways on the northwestern Plains and probably will continue to influence our interpretations for years to come.