The Montana-Yellowstone Archeological Field School Project: Results of 2007–2008 Archeological Survey and Testing in the Boundary Lands, Gardiner, Montana

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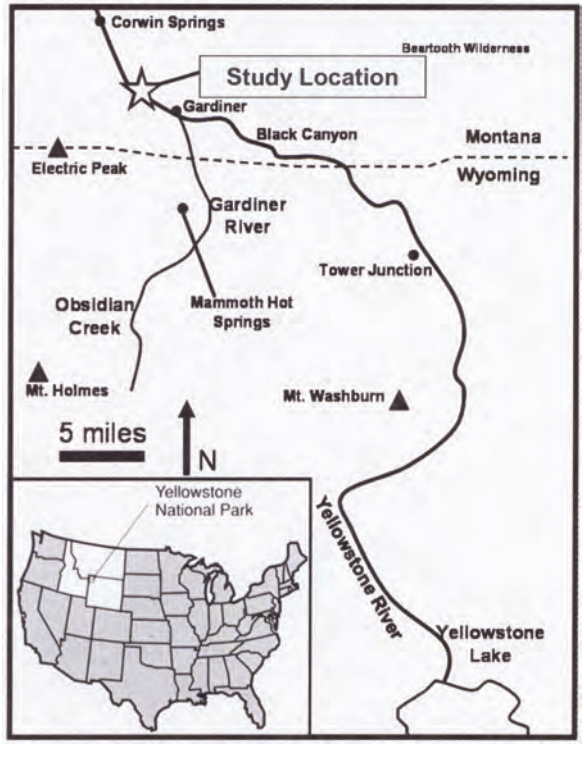
Introduction

The Montana-Yellowstone Archeological Project (MYAP) is a cooperative archeological field school developed by Yellowstone National Park (YNP) and the University of Montana (UM) Department of Anthropology. The 2007–2008 MYAP entailed a comprehensive survey and evaluation of archeological resources in the boundary lands of Yellowstone National Park. Sponsored by the Rocky Mountain Cooperative Ecosystem Study Unit (RM-CESU), the project also serves as a field school in archeological field methods from a cultural resource management perspective. Overall, the field school has trained twenty-three undergraduate and graduate students in its two years in existence.

The initial two years of the project entailed the survey and testing of archeological sites in the Boundary Lands, a roughly 3,000-acre tract along the upper Yellowstone River, bounded by Yellowstone's north entrance station on the south, and on the north by the YNP

Figure 1. Location of the Montana-Yellowstone Archeological Field School Project.



boundary at Reese Creek, north of Gardiner, Montana (Figure 1). The 2007 project area was approximately 700 acres, measuring approximately 3.61 miles northwest-southeast along the river, and between 1,000 and 2,000 feet southwest-northeast between the river and adjacent mountain slopes. MYAP surveyed 2,057 acres in 2008, largely west of the Old Yellowstone Road which marked the limits of the 2007 study area.

In two years, the MYAP surveyed 2,757 acres within Boundary Lands, resulting in the study of 47 archeological sites. Full results of archeological work are available in technical reports submitted to Yellowstone National Park (MacDonald 2007; Maas and MacDonald 2008). The remainder of this paper provides a summary of the key findings of the MYAP in the 2007 and 2008 field seasons, including an overview of results of excavations at 24YE355—Cinnabar and the Yellowstone Bank Cache site—and 24YE357—the Airport Rings site.

Summary of 2007 archeological results

During the 2007 field season, the University of Montana archeological team surveyed 700 acres of the boundary lands east of the Old Yellowstone Road, and west of the Yellowstone River, approximately between the new Heritage and Research Center in Gardiner, and Reese Creek. The MYAP team identified 14 archeological sites, including 8 with historic site components and 11 with prehistoric site components. Five of the sites contained evidence of both historic and prehistoric occupations.

After survey, excavations were conducted at Site 24YE355 to evaluate its eligibility for listing on the National Register of Historic Places. Excavations in the prehistoric portion of the site—Area A, or the Yellowstone Bank Cache Site—yielded evidence of five prehistoric fire pits, including two radiocarbon dated to 1600 and 1670 B.P. (years before present, "present" defined as 1950), respectively. The test excavations recovered abundant faunal remains and lithic artifacts, including Late Archaic Pelican Lake projectile points (MacDonald, Maas, and Hardes, forthcoming). In the historic portion of the site—Area B, or Cinnabar (Figure 2)—excavations identified nine depressions associated with the former location of the original Northern Pacific railroad depot, occupied between 1883–1903. Abundant artifacts were recovered that substantiate this period of site use, while the MYAP team also excavated a 5-ft.-deep river cobble and mortar foundation to a large building, perhaps the Cinnabar hotel.

Summary of 2008 results

The 2008 field season included a full inventory of prehistoric and historic archeological resources within the remaining 2,057 acres of the boundary lands not studied in 2007. The focus of the 2008 field school was on the portion of the boundary lands that lies west of the Old Yellowstone Trail road, up to the base of the foothills, with the North Entrance Ranger Station being the southern boundary and Reese Creek the northern. The MYAP crew investigated a total of 37 sites, including 24 with prehistoric components and 23 with historic components. Of the 37 investigated sites, the MYAP team identified 29 previously-unknown sites, while eight were previously recorded by YNP.

After survey, test excavations were conducted at four sites: 24YE0355 (Cinnabar, Area B), 24YE0357 (Airport Rings), 24YE0185 (99YP66) and 24YE0190 (RJP1). Additional

Figure 2. Northern Pacific train leaving Cinnabar Station in the late 19th century. Cinnabar is in the right rear. View is to southeast. Courtesy of the University of Montana Archives and Special Collections.

information obtained from 24YE0190 and 24YE0357 helped expand our knowledge and understanding of the use of upland camping and hunting sites by prehistoric peoples, while additional understanding of the complexities and placement of historic towns in the upper Yellowstone Valley were investigated at 24YE0355 and 24YE0185. Site 24YE0190 yielded 199 sub-surface artifacts predominately of obsidian that helped understand tool production and use on the landscape. Site 24YE0357 yielded a total of 687 lithic artifacts and three excavated hearths dating between the Middle Archaic and the Late Prehistoric. In total, the 2008 MYAP crew recovered 1,017 lithics and 795 historic artifacts from the 37 sites.

Research results

Based on results of archeological work conducted by MYAP in 2007 and 2008, it is clear that Native Americans have utilized this region since the Paleoindian Period, or approximately 11,000 years ago. Overall, the Late Plains Archaic (ca. 3,000–1,500 years ago) accounts for more than 50% (n = 48) of the projectile points recovered from both excavated and surface contexts (Figure 3). Of the 93 total projectile points collected in 2007-2008, Late Prehistoric points (ca. 1,500-300 years ago) account for 25% (n = 24), compared to 12% (n = 12) for the Middle Plains Archaic (ca. 5,000-3,000 years ago), and two for the Paleoindian period (>8,000 years ago). One of the Paleoindian projectile points is a red porcellanite Clovis point fragment that was likely recycled as a cutting tool during subsequent occupations. No Early Plains Archaic projectile points were recovered in either 2007 or 2008. Overall, these point data show a substantial and strong occupation of the Upper Yellowstone River during the Late Plains Archaic period, as well as during the preceding Middle Plains Archaic period, and subsequent Late Prehistoric periods.

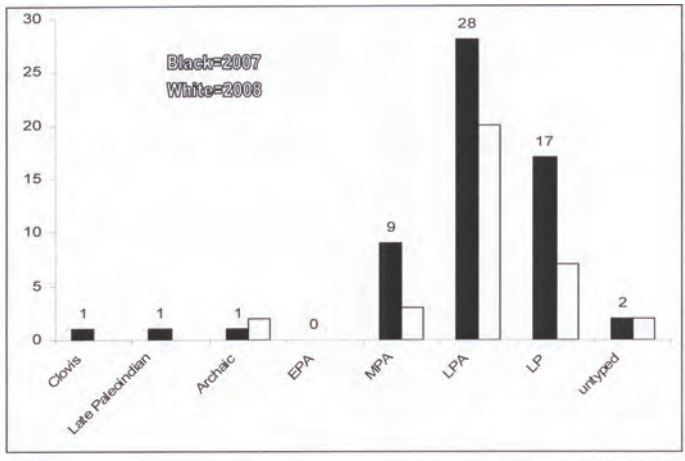


Figure 3. 2007–2008 Projectile points by period (n=93 total).

Excavations also focused on deciphering how lithic raw materials were utilized by prehistoric Native Americans in the Yellowstone Valley. In so doing, the team was able to better understand settlement patterns and tool-use practices. In particular, research focused on the comparative use of locally-available cherts (e.g., chert from the Crescent Hill chert source east of Mammoth, Wyoming) with use of locally-available obsidian from Obsidian Cliff and other nearby sources. Other lithic raw materials were recovered include dacite, orthoquartzite, porcellanite, and quartz, each of which was used differentially by prehistoric Native Americans. MYAP studied the procurement, use, and discard patterns of tools produced from all of these various lithic raw materials to better understand trade, settlement patterns, and tool production and use by Native Americans in the Yellowstone Valley.

Obsidian accounts for 67% of the 93 projectile points recovered at sites between 2007–2008 (Figure 4). In the 2007 sample, obsidian accounts for 66.1% of the points, while it accounts for 67.6% in 2008. Crescent Hill chert is the second most common material at the sites, accounting for 20% of the total collected projectile points. In 2007, Crescent Hill chert accounts for 22%, compared to 17.6% in 2008. Other lithic raw materials are poorly represented in the site assemblages, with dacite (n = 2), orthoquartzite (n = 3), porcellanite (n = 1), quartz (n = 2), and other untyped cherts (n = 4) accounting for the remainder of the site assemblages.

As reflected in Figure 3, the projectile point data from 2007 and 2008 support a gradual increase over time in the percentage of obsidian use compared to other material types. While only two Paleoindian points were recovered (both in 2007), both were produced from non-obsidian materials (chert and porcellanite). During all sub-periods of the Archaic, there is a relatively consistent use of obsidian (about 55–60%) compared to other materials (35–40%). However, these percentages increase substantially during the Late Prehistoric period, with obsidian accounting for nearly 80% of the point assemblages, compared to only around 20% for other materials. As reflected in Figure 4, these trends over time display a strong and significant correlation ($r^2 = 0.74$; $p < .05$). Clearly, obsidian use increased during

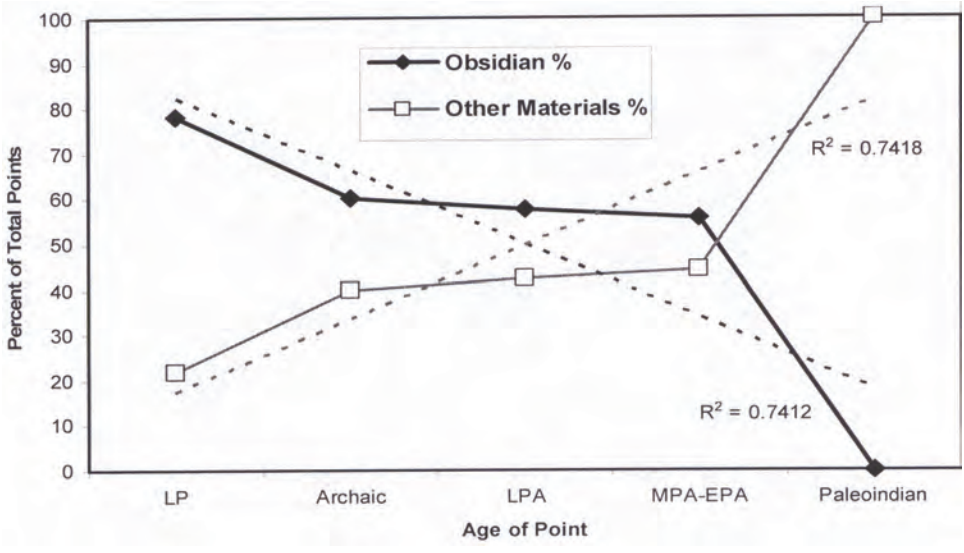


Figure 4. Summary of 2007–2008 MYAP projectile points by material and age.

the Late Prehistoric compared to the preceding periods.

Generally, Obsidian Cliff was the main source for lithic material during all time periods (Hughes 2008), followed by Crescent Hill chert. The 2007–2008 data indicate increasing use over time for obsidian, especially that procured from Obsidian Cliff in Yellowstone National Park. Lithic sourcing indicates that obsidian debitage (debris from stone tool manufacture) from dated Late Prehistoric features (from Airport Rings, 24YE357) is 100 percent from Obsidian Cliff, as is the obsidian debitage from dated Late Archaic Pelican Lake features (from Yellowstone Bank Cache, 24YE355). In other words, while other types of volcanic rocks from Bear Gulch in Montana and Big Southern Butte in Idaho were utilized and traded as projectile points, stone tool manufacture in the Upper Yellowstone Valley appears to have been primarily restricted to obsidian from Obsidian Cliff and chert from the Crescent Hill source (ca. 20 miles east of Mammoth Hot Springs, Wyo.).

Future research by the Principal Investigator and graduate students will compare these data with those from other investigated sites to better understand the organization of lithic technology of Native Americans living in the Upper Yellowstone River Valley during prehistory.

The 2007–2008 survey also identified a total of 32 stone circles at five sites in the Boundary Lands. The setting of the five sites varies from upper terraces overlooking the Yellowstone River (Stephens Creek [24YE356] and Airport Rings [24YE357]) to upland flats and high benches adjacent to springs and low-order feeder streams (all three sites in 2008). All of the sites are in well-protected settings, generally with water and a good view on one side, and a hill or enclosed valley on the other.

Overall, the chronological trend supports long-term use of stone circles in the Boun-

dary Lands, with sites dating to the Late Archaic—GMS-1 (24YE182)—and Late Prehistoric—Airport Rings (24YE357). The latter site also yielded a Middle Archaic hearth within one of the stone circles, leaving open the possibility that it may be the earliest dated stone circle in the Northern Plains. However, it is possible that the Late Prehistoric stone circles simply overlay an early Middle Archaic occupation of the site. Livers and MacDonald (2009) provide a full technical report of excavations at Airport Rings.

Historic use of this area was frequent during the last 150 years. In addition to excavations at Cinnabar, the MYAP team identified several homestead remains, irrigation canals, and trash dumps associated with the historic use of the area. At Cinnabar, excavations identified nine depressions associated with the former location of the original Northern Pacific railroad depot, occupied between 1883-1903 (Figure 3). Abundant artifacts were recovered that substantiate this period of site use. In 2007, the MYAP team also excavated a 5-ft.-deep river cobble and mortar foundation to a large building, likely the Cinnabar Hotel. In 2008, excavations revealed the wooden floor of a blacksmith shop, as well as a privy, several outbuildings and a store. In addition, magnetometry studies indicated the presence of a buried foundation south of the main Cinnabar area. Excavations confirmed that a structure probably stood at that location (Sheriff and MacDonald, forthcoming). Dick and MacDonald (2009) provide a full technical report of the historic archeological investigations at Cinnabar.

Conclusion

Between the 2007 and 2008 MYAP field seasons in the Boundary Lands, the University of Montana field teams surveyed a total of 2,757 acres, including 2,057 in 2008, and 700 in 2007. MYAP worked at a total of 47 sites and collected 9,979 total lithic and historic artifacts, including 2,725 lithics and 7,254 historic artifacts. Even more importantly, with funding from the Rocky Mountain CESU, Yellowstone National Park, and the University of Montana, the Montana-Yellowstone Archeological field school project trained 23 undergraduate and graduate students in archeological field methods from a cultural resource management perspective.

The project has also provided ample research opportunities for several graduate students as well as the project principal investigator. Several papers on MYAP have already been presented at national and regional conferences. Graduate students Lester Maas, David Dick, and Michael Livers are using project data for graduate projects, while several more are in the planning stages for additional research. The 2009 version of the MYAP is slated for Yellowstone Lake and Swan Lake Flats, with the intention of collecting data by which to compare upland versus lowland sites within the Yellowstone Ecosystem.

Acknowledgments

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