2012 Mt. Rainier Archaeology Field School, Central Washington University:
A Report to the Jane C. Waldbaum Field School Scholarship Committee

Completed by Anne Vassar, Central Washington University
August 2012
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**Introduction**

The Sunrise Borrow Pit site (45PI408), recorded in 1990 by Rick McClure, is located in Mt. Rainier National Park (McCutcheon 2011). The sub-alpine site is at 5,000 feet in elevation (Figure 1, Figure 2) and is in a “borrow pit,” an area where sediment was removed to build a road to the Sunrise Visitors Center on Mt. Rainier during the 1930s. Central Washington University (CWU) conducted archaeological field schools at the site from 1997 to 2001, directed by Dr. Patrick T. McCutcheon. These five field schools recovered 4,383 chipped and ground stone artifacts from 182 excavation units (McCutcheon 2011).

CWU returned to the site in 2011 for a sixth field school, again directed by Dr. McCutcheon. Six one-meter-square units were excavated during the 2011 season; 2,986 artifacts, including gastroliths and manuports, were recovered (McCutcheon et al 2012). One-eighth inch screens were utilized during all field seasons to ensure a high artifact recovery rate.

The Sunrise Borrow Pit site is significant for several reasons. Mountain archaeology is still a relatively new field, because for many years ethnographers and historians believed that Native Americans did not utilize mountains (Burtchard 2007). Consequently, very few sub-alpine and alpine sites have been excavated, although more than 70 such sites have been identified at Mt. Rainier National Park (Burtchard 2007). Excavation at the borrow pit will help us learn more about pre-contact lifeways in an underexplored context. Further, the site is located on a prehistoric trade route over the
Cascade Mountains and into the Columbia Plateau. Study of artifacts found at the site can contribute to knowledge of how coast and Plateau peoples interacted in prehistory.

Figure 1. The site's "lunch room," at 5,000 feet.

Figure 2. View of Mt. Rainier from site's lunch area.
The 2012 CWU Field School

The 2012 field season at the Sunrise Borrow Pit site was held from July 16th through Aug. 17th. Dr. Patrick T. McCutcheon of Central Washington University again served as director and principal investigator. Students and staff were guests at the government housing at Mt. Rainier National Park’s Ohanapecosh Ranger Station. Students camped in tents in a meadow next to the housing, while staff had the use of the former ranger’s quarters; classes, meals and meetings were also held in this building.

The first week of field school was composed of classes and field trips while waiting for snow to melt at the excavation site. Students participated in mapping exercises, in which we learned to use northings and eastings, create profile maps, read topographical maps, and triangulate locations. We also engaged in orienteering, learning to set declinations and find points with Silva Ranger compasses; we then applied this information to complete targeted and untargeted orienteering courses. After completing mapping and orienteering classes, we practiced flint knapping with obsidian. We drew our obsidian flakes in our log books using established drawing conventions; next, we completed stone tool technological paradigmatic classifications on our own flakes, and on teaching flakes provided by Dr. McCutcheon.

During the first week we also learned how to properly keep an excavation log book. All daily activities were recorded in a timeline format, as well as a summary of the day’s events; this practice continued throughout field school. When not engaged in classroom activities, several field trips were taken. We hiked to Silver Falls and the Grove of the Patriarchs, both on the Ohanapecosh River in Mt. Rainier National Park. The Grove of the Patriarchs is a stand of old-growth timber, including cedars, which are
at least 1,000 years old (Figure 3, Figure 4, Figure 5). We also visited Le Wis Wis, a cove on the Ohanapecosh River, located on the neighboring Gifford-Pinchot National Forest. Several of us went swimming in the river, which was extremely cold because it is formed from glacial-melt water. Finally, we visited Sunrise Visitors Center, at 6,400 feet in elevation the highest point in the park that can be accessed by car (Figure 6). Field trips were undertaken to give students a sense of the environment in which we would be working and in which prehistoric peoples lived.

For the duration of field school, we were assigned two weekly article readings. Articles covered a range of relevant topics, including regional geology, human prehistory, and resource availability. We were also required to write one-page response papers for each article.
Figure 4. The author's mother with an old-growth tree, Grove of the Patriarchs.

Figure 5. Ohanapecosh River, Grove of the Patriarchs.
At the beginning of the second week we went to the Sunrise Borrow Pit site and began work. Field work started with digging out slump left behind from the initial soil removal in the 1930s, in order to create sediment profiles. We used both trowels and shovels for the digging. We created vertical walls to expose the tephra layers at the site, which result from prehistoric eruptions of Mt. Rainier, Mt. St. Helens and Mt. Mazama (now the site of Crater Lake, OR). Because the area is heavily forested, we had to cut out numerous roots and rootlets, and site disturbance due to root krotovinas was common. Rodent krotovinas were also present. The soil from the slump and the profiles we created was screened through 1/8-inch screens, but few artifacts were recovered. Once we had created a smooth wall in which the stratigraphic layers were visible, we drew and labeled sediment profile maps in our log books.
Figure 7. The author’s teammates digging and screening soil from slump deposits.

Figure 8. Sherri Middleton clipping rootlets from profile wall.
Upon completion of the sediment profiles, unit excavations began. Five excavation teams were divided between the northern and southern quadrants of the site, each team excavating a one-meter-square unit. Team members rotated the tasks of troweling, screening and keeping the excavation record. I was assigned to a unit in the northern quadrant with three team members: Anne Parfitt, a fellow student from CWU; Sherri Middleton, a student from University of Washington; and Nicholas Gouette, a student from Western Washington University. Because CWU was the only university in Washington State offering a field school this summer, students from four of the state’s five universities participated in our field school.
Figure 10. Sherri Middelton and Nicholas Gouette excavating our unit.

Figure 11. Dr. Patrick T. McCutcheon supervising excavation in the site's northern quadrant.
The units were excavated with a combination of stratigraphic and arbitrary levels. If a stratigraphic layer appeared to go deeper than 10 centimeters, arbitrary 10-cm levels were created; otherwise, stratigraphic levels were used. Type of level and level depths were recorded in excavation records. Tephra layers from Mt. Rainier eruptions were often deeper than 10 cm and were frequently dominated by volcanic lapili and bombs, making excavation and screening challenging. Rodent and tree krotovinas often caused lapili from upper layers to fall downward and disturb lower layers. Volcanic layers from Mt. St. Helens and Mt. Mazama tended to be shallower and to contain less volcanic debris, because the eruptions occurred farther away from the site. Volcanic layers could also be distinguished by color and by texture. We performed field analysis of sediments by wetting a small amount of the sediment in our hand and following a flow chart to describe the texture. This process helped us to determine what type of soil was in the layer, such as clay, loam, sand, etc.

Recovered artifacts were recorded on a collection log and bagged. The bags were labeled with site number, unit number, level number, initials of team members, date of recovery, and whether the artifact(s) were recovered in situ or in screen. Separate bags were kept for in situ and in screen artifacts. Two-gallon buckets were used to collect the dirt from units and features, and dirt from features was screened separately. This was done to test if features were high-density artifact areas. A bucket log describing how much soil was in each bucket, the soil’s texture and appearance, which level it came from, and any artifacts recovered, was also kept on a daily basis.

When a whole or fragmented tool or a manuport (such as river cobbles) was recovered, a three-point provenience was measured for the artifact before it was removed
and bagged. The measurements were recorded on the collection log and on the unit’s excavation record. Features were also recorded with three-point provenience. Photos of in situ artifacts and features were taken and the photo number recorded on a photographic record log. For the first week of excavations, photos of all three units in the northern quadrant were taken each time all units had reached the same level of excavation (Figure 12). When the bottom of each level was reached, a photo was taken and a map was drawn of the following level’s surface in the unit’s excavation record.

![Figure 12. Dr. McCutcheon photographing the north quadrant units.](image)

During the third week, one or two students from each team began taking a rotation on the total station with teaching assistant Tom Hale. The total station is a GIS tool used to map points at the site, which will later be compiled into a site map. The total station base is used to “shoot” a point indicated by a pole held at some distance away (Figure 13, Figure 14).
During the third week, my teammates and I began uncovering a fire feature in our unit. We were able to determine that it was created by humans because of the presence of
river cobbles; the site is located at 5,000 feet with no nearby rivers and river cobbles can only have arrived there if carried by people. The feature’s stratigraphic position indicated that it was about 2,000 years old. Stratigraphic and volcanic tephra dates for Mt. Rainier have been well-established through a variety of dating methods, including dendrochronology and radiocarbon dating (Mullineaux 1974).

We used trowels in a pedestal technique to isolate the rocks in the feature as we continued to excavate through the charcoal and soil surrounding them, and screened the charcoal from the fire feature (Figure 16, Figure 17). A portion of the feature was left unexcavated until the bottom was reached, in order to provide a profile of the feature (Figure 15). We recovered several flakes from the feature, but no complete or fragmented tools. After the bottom of the fire feature was reached, three-point provenience was measured and recorded for each rock in the ring, as well as the bottom and sides of the feature. The rocks were then individually bagged and logged, and the charcoal was collected for testing.

Figure 15. Beginning excavation of fire feature. Profile is visible in lower left.
Figure 16. Anne Parfitt and Nicholas Gouette continuing feature excavation. Profile is visible in upper right of unit.

Figure 17. Completed fire feature excavation prior to removal and bagging of rocks. The author completed the pedestal work on the uppermost right-hand rocks in the photo.
Figure 18. Fire feature after removal of rocks. The charcoal, which continued down for several centimeters, was bagged for testing.

Within a day, we began excavating another fire feature, this one the remains of burned logs (Figure 19, Figure 20). However, there were no rocks associated with this feature and few flakes, so it remains unclear if this fire was the result of human activity. The wood and charcoal were extremely well-preserved, with the grain of the wood still visible and portions of the wood still whole (Figure 21). These charred pieces were removed and bagged for testing.

Unfortunately, by the middle of the third week I began to experience severe pain in my right arm. On Thursday, Aug. 2nd, I woke unable to lift my right arm, with my right hand swollen and numb. A student at the field school was an experienced medic and he created a sling for me. I stayed at camp that day and on the following day I was driven by a staff member back to my home in Ellensburg, WA, to get medical attention. In Ellensburg I was seen by medical personnel at CWU Student Health, where I was
Figure 19. Fire feature of wood and charcoal. No rocks were recovered as part of this feature.

Figure 20. Wood and charcoal fire feature prior to its removal and bagging. The author excavated the wood fragment at the top of the photo.
given a diagnosis of severe carpal tunnel and ulnar nerve inflammation, and shoulder bursitis. I was advised by Student Health that I could return to the field school, as long as I rested and wore a sling when necessary.

I returned to the field school on the following Monday, Aug. 5th. Due to concerns for my health, Dr. McCutcheon and the rest of the staff decided I was no longer allowed to excavate, screen, or carry heavy objects. Because my right hand is dominant, I was also unable to write excavation records or log books. On days when my pain level and swelling were relatively low, I went to the site with the other students. I assisted in any way that I could, allowing for my injuries. Tasks I assumed included analyzing flakes and possible tools in screen and as they were uncovered in the units; carrying empty buckets; refilling water bottles for those excavating; taking photos; and running any errands that were allowed by my physical condition. On days when I was unable to go to
the site because of pain, I stayed behind at camp and assisted by sorting and organizing artifact bags. I also checked in bags when they came in from the field by cross-referencing them with the collection log to ensure that all records were complete, accurate and in accordance with each other.

However, by the middle of the fifth and final week, it became apparent that I was no longer able to engage in even these limited tasks. My pain level had become nearly intolerable and the inflammation in my arm was not decreasing. After discussions with Dr. McCutcheon and other staff, it was determined that I should return to Ellensburg for my health and well-being. On Wednesday, Aug. 15th, I departed field school two days before it ended. I was seen by staff at Student Health on Friday, Aug. 17th, and while my earlier diagnoses were confirmed, I was given an additional diagnosis of tendonitis in my right shoulder. I am still recovering from these injuries.

Closing Remarks

Because the field school has just ended, processing of artifacts and data has not yet begun. According to Dr. McCutcheon, exact counts of artifacts and information about their analysis will not be available until November 2012 at the earliest. However, some tentative information about excavation results can be provided. I recovered a biface fragment from our unit, while my teammates recovered three projectile points. One of these appeared to be a Rabbit Island Stemmed projectile point, a Columbia Plateau type dated 4000-2000 BP. Another projectile point base recovered by one of my teammates appeared to be of a coastal type which is unusual for Mt. Rainier; further analysis will reveal whether or not this is the case. Numerous chert flakes were recovered both in situ and in screen, and many of these appeared to be heat-treated, a process used to prepare
stone for chipping. A groundstone tool of indeterminate use, but marked by use-wear, was recovered from a neighboring unit, and a chert core was recovered from a third neighboring unit. A possible grinding platform and grinding stone were found in a southern quadrant unit. During the final day of excavation, stone flakes were found resting on a 9,000-year-old surface, pushing site occupation back to shortly after the final glacial melt at the beginning of the Holocene.

At least four fire features were excavated in the northern quadrant. Numerous gastroliths were recovered from all northern quadrant units, although it has not yet been determined whether the number of gastroliths is statistically significant. A large number of obsidian flakes were also found, which can be chemically traced to their source and may aid in understanding prehistoric trade. At least a dozen bags of charcoal, ash and sediment were collected for flotation testing in order to determine what plants were in use at the site.

Prior to my injury, I was able to participate in every aspect of the field school and excavation. I was also able to acquire the important skills of mapping and orienteering. The only exception to my completion of field school activities was operating the total station; total station rotations began after I was injured and I was unable to take part. After my injury, I participated in administrative tasks and attempted to assist staff and fellow students in any way possible, until I was no longer physically able to do so. While it has been a terrible personal and professional disappointment to me to learn that I am not physically able to excavate, I have begun acquiring other skills which will aid me in a career in archaeology, including field analysis and administration. Equipped with the
knowledge of what I can and cannot do, I can begin planning for my future in graduate school and beyond.

I was privileged to take part in a unique excavation in a unique setting, with an exceptional team of students and staff. I am also pleased to report that despite my injury, I received a grade of B+ for the field school. I could not have participated in the Mt. Rainier Field School without the generous assistance of the Archaeological Institute of America and the Jane C. Waldbaum Field School Scholarship. The funds were applied to my tuition, and I thank you for providing me with this opportunity.

Figure 22. The author (center) with teammates Sherri Middleton, Anne Parfitt and Nicholas Gouette
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