A PALEOINDIAN SURFACE COLLECTION FROM ROSE VALLEY, CALIFORNIA

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Ferris Borden, an avocational archaeologist, collected an assemblage of projectile points and bifaces in the late 1960s as part of a joint project with the Archaeological Survey Association (ASA). After a falling out with this organization, the Borden collection disappeared until a relative of Mr. Borden offered it to the Maturango Museum in Ridgecrest, California. The collection contains surface material collected near Coso Junction in Rose Valley, California. The Borden collection is clearly of great antiquity, as it includes a few Clovis points, as well as many Paleoindian Great Basin stemmed points that include Lake Mojave and Silver Lake points. Lake Mojave and Silver Lake points are of approximately the same antiquity and their association with one another may indicate they served different functions.

In the late 1960s and early 1970s Ferris Borden and his wife, in conjunction with the Archaeological Survey Association, collected surface artifacts from a site near Coso Junction in Rose Valley, California (Figures 1 and 2). Borden was an avocationalist and had no formal archaeological training, nor did his wife. Only the most basic provenience was noted on any of the artifacts. For example, Borden noted that a large number of the artifacts were collected in Section 1, Township 22 South, Range 37 East. The vast majority of the artifacts were lithic material, specifically obsidian. According to Borden (1971), debitage was not collected, though some is clearly present in the collection.

Borden amassed a wide array of lithic material that includes substantial numbers of Paleoindian artifacts. These include: Clovis points; Great Basin concave base points; Great Basin stemmed points, including Lake Mojave and Silver Lake points; crescents; as well as more conventional lithic cores and scrapers. The Borden collection also includes projectile points of lesser antiquity. Of particular interest in this study are the Lake Mojave and Silver Lake points, varieties that form a cluster of lithic artifacts known as Great Basin stemmed points (Justice 2002).

NATURAL ENVIRONMENT

Paleoenvironmental studies indicate that 11,000 years ago the Rose Spring Valley looked much like it does today in terms of topography. Bordered on the west by the Sierra Nevada and on the east by the Coso Range, the area is, and has been, one of high volcanic activity, which makes it a great source for tool stone. Sitting some 4,000 ft. above sea level, the Rose Valley is a high desert environment today, but 11,000 years ago it would have been a mix of lacustrine and riverine environs as the Owens River meandered through, leaving myriad oxbow lakes in its wake (Rogers 2010). There were also many large lakes left as remnants of glacial melting at the end of the Pleistocene, and these lakes included Owens Lake to the north and Little Lake to the south (Justice 2002). At that time, a grassy valley combined with many water sources provided a lush environment that supported abundant waterfowl, fish, and a wide array of land mammals.

CULTURAL SETTING

Several important sites surround the area where these artifacts were collected. To the north, an unusual deeply stratified site at Rose Spring (CA-INY-372) has been excavated several times since the 1960s, most recently by Yohe (1992a). The Rose Spring site shows evidence of having been occupied since at least 5,600 years before present, but there may be cultural deposits below the lowest level

Figure 1. Rose Valley's location within California. Photo courtesy of S. Rogers.

excavated. The base of a fluted point was recovered at the Rose Spring site in 1956 (Yohe 1992b). Further south, the Stahl Site at Little Lake has evidence of occupations dating to 5,500 years before present.

Stratified sites are rare in desert environments, for the desert floor is often subject to erosive deflation. Most of the finds are lithic scatters that represent the commingled remains of many time periods and traditions within the same level. The site where the Borden material was collected is no exception. The antiquity is inferred solely on the basis of the presence of several Clovis and Great Basin concave base points that are, without question, Paleoindian.

RESEARCH DESIGN AND FIELD METHODS

Borden collected the artifacts in an effort to establish the degree of erosion as a means of dating surface artifacts. In his effort to retrieve all manner of implements displaying differing degrees of erosion, Borden inadvertently secured an excellent representative sample of the artifacts present at the site. In keeping with his impromptu research design, he classified each artifact in an erosion category, in which one represented the least amount of erosion, and therefore, presumably the youngest age, and four represented the most erosion and therefore the oldest age.

Borden characterized the site as a kill site, and this may very well be the case. There are many implements in various stages of production, as well as many that appear to have been exhausted and discarded. There is little to indicate a habitation site based on the surface artifacts. The type and

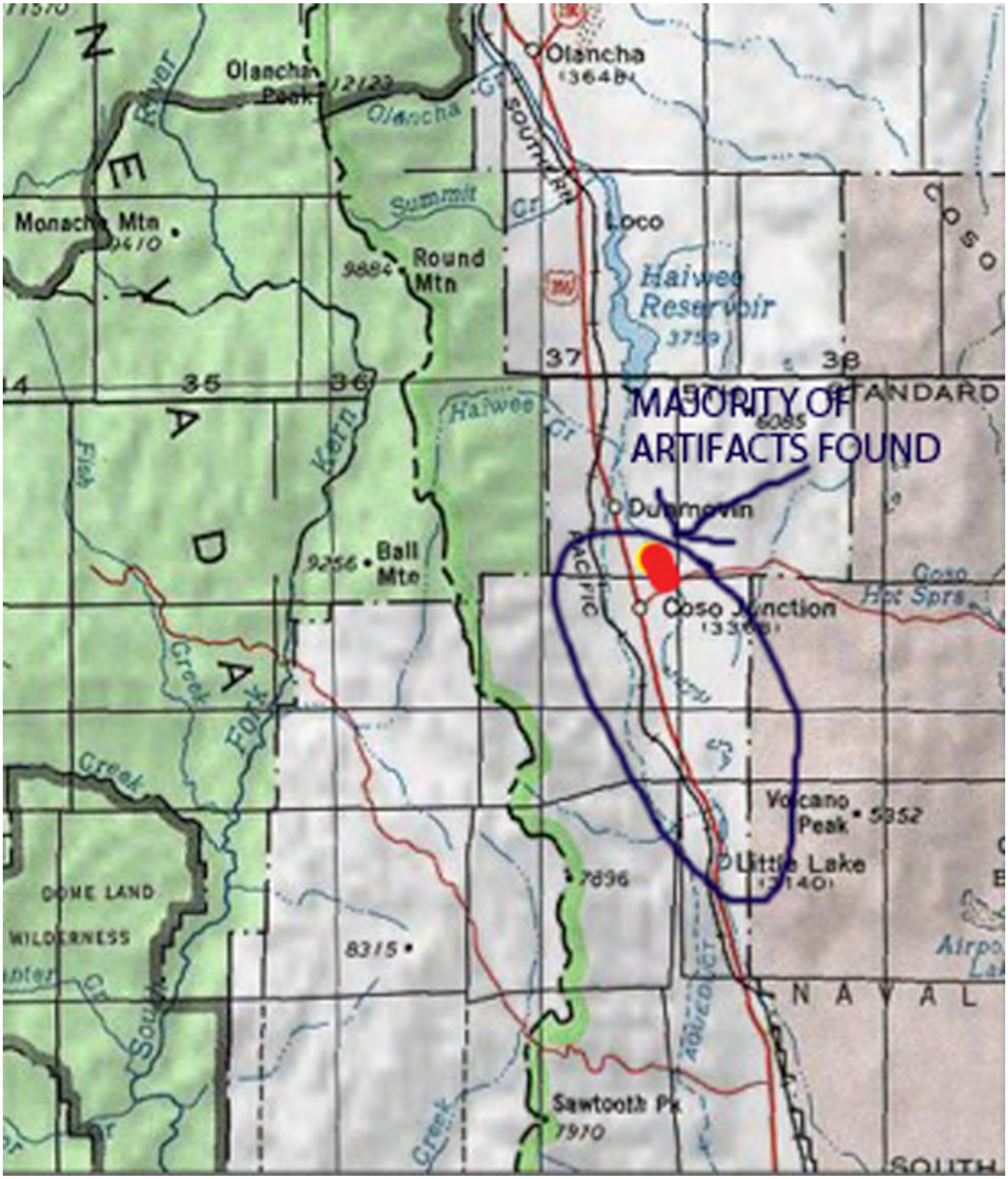

Figure 2. Site location. Artifacts were found as far south as Little Lake, but most were found in area marked with the red dot. Photo courtesy of S. Rogers.

Figure 3. Lake Mojave points, showing the great variation in size and shape.

distribution of the artifacts as described by Borden suggests large-scale meat processing, and it seems unlikely that this would be carried out anywhere other than the kill site.

LABORATORY METHODS

The initial objective of the laboratory work was to catalog all the artifacts in the Borden collection, for no inventory had been undertaken since their accession at the Maturango Museum. In cataloguing the Great Basin stemmed points, a great deal of variability in the Lake Mojave points and less variability among the Silver Lake points was observed. These two points are thought to be roughly contemporaneous with one another (Justice 2002). The focus of the analysis was on these points. They were measured in length, width at the haft, and thickness, and weighed. A total of 25 Lake Mojave points and 10 Silver Lake points were analyzed. There were many more of each, but these were selected because they were unambiguously identifiable, complete, and in relatively good condition.

Twelve of the points were dated by Rogers (2010) using obsidian hydration, and two Lake Mojave points were subjected to protein residue analysis.

RESULTS

Lake Mojave points get their name from the site at Lake Mojave where, at the shoreline of this ancient lake, many surface scatters were found. At such locations, these points predominated. As noted by Justice (2002), they tend to be highly variable in shape and size. The Lake Mojave points in this collection are no exception (Figure 3; Table 1). Many are large and lanceolate in form (Figure 4), others are long and narrow (Figure 5), while others were relatively short and wide (Figure 6). Some looked as though they had been reworked at both ends, so that the resulting point was barely a nub, with the stem being equally small (Figure 7). Thickness did not vary greatly, and the vast majority of the points were made of obsidian.

Obsidian hydration dating on 12 concave points yielded an age of 11,306 radiocarbon years before present or 12,712 calendar years before present. All were made of Coso obsidian (Rogers 2010).

Table 1. Measurements for Lake Mojave and Silver Lake Points.

CAT. NO.	PROVENIENCE	MATERIAL	LENGTH (MM)	WIDTH (MM)	THICKNESS (MM)	WEIGHT (G)	FIGURE
			LAKE MOJAVE SERIES				
08.29-9.5-3	Sec 1, T22S, R37E	Basalt	72.52	21.40	8.88	13.4	3a
08.29-7.2-1	Sec 1, T22S R37E	Obsidian	68.73	27.19	7.58	5.5	3b
08.29-7.3-3	Sec 1, T22S, R37E	Obsidian	60.17	22.98	8.45	8.4	3c
08.29-3.9-1	Sec 1, T22S, R37E	Obsidian	51.22	32.12	9.82	13.5	3d
08.29-7.3-5	Sec 1, T22S, R37E	Obsidian	50.36	24.21	9.04	8.3	3e
08.29-7.3-6	Sec 1, T22S, R37E	Obsidian	50.23	24.47	6.43	6.4	3f
08.29-7.3-7	Sec 1, T22S, R37E	Obsidian	50.16	27.24	8.04	9.9	3g
08.29-18.1-1	Sec 1, T225, R37E	Chert	43.93	20.73	6.04	4.9	3h
08.29-7.3-2	Sec 1, T225, R37E	Obsidian	42.62	19.72	5.98	4.7	3i
08.29-7.2-4	Sec 1, T22S, R37E	Quartzite	38.94	19.68	7.01	5.1	3j
08.29-7.3-18	Sec 1, T22S, R37E	Obsidian	32.06	22.21	7.43	4.3	3k
08.29-3.11-33	Sec 1, T22S, R37E	Obsidian	48.34	13.77	6.02	3.6	5a
08.29-3.9-5	Sec 1, T22S, R37E	Obsidian	49.29	15.93	8.17	5.7	5b
08.29-9.5-3	Sec 1, T22S, R37E	Basalt	72.51	21.40	8.88	13.4	5c
08.29-7.2-3	Sec 1, T22S, R37E	Chert	60.84	26.57	5.48	9.6	4a
08.29-7.3-5	Sec 1, T22S, R37E	Obsidian	50.36	24.21	9.04	8.3	4b
08.29-7.3-3	Sec 1, T225, R37E	Obsidian	60.17	22.98	8.45	10.5	4c
08.29-3.9-4	Sec 1, T22S, R37E	Obsidian	47.86	30.68	9.54	12.8	6a
08.29-3.9-1	Sec 1, T22S, R37E	Obsidian	51.22	32.12	9.82	13.5	6b
08.29-7.3-1	Sec 1, T22S, R37E	Obsidian	63.21	34.83	10.31	20.6	6c
08.29-7.2-2	Sec 1, T22S R37E	Obsidian	34.31	25.06	7.65	5.5	7a
08.29-7.3-18	Sec 1, T22S, R37E	Obsidian	32.06	22.21	7.43	4.3	7b
08.29-7.2-4	Sec 1, T22S R37E	Quartzite	38.94	22.21	7.01	5.1	7c
08.29-7.3-10	None	Obsidian	35.49	20.82	6.49	4.8	7d
08.29-7.2-7	Sec 1, T22S R37E	Obsidian	35.76	25.45	6.19	4.8	7e
			SILVER LAKE SERIES				
08.29-0-6	Little Lake	Obsidian	47.13	26.01	5.68	8.0	10a
08.29-0-3	Sec 24, T22S, R37E	Obsidian	58.43	25.72	6.42	9.6	10b
08.29-0-4	Sec 7, T22S, R38E	Obsidian	52.18	29.28	7.75	11.0	10c
08.29-0-2	Sec 36, T22S, R37E	Obsidian	51.33	36.58	11.56	18.3	10d
08.29-13.1.3-1	Sec 1, T22S, R37E	Obsidian vs. Basalt	50.21	29.03	7.19	9.9	10e
08.29-0-5	Sec 13, T22S, R37E	Obsidian	42.90	24.18	5.76	5.3	10f
08.29-13.1.3-2	Sec 1, T22S, R37E	Obsidian vs. Basalt	43.05	27.16	7.37	8.2	10g
08.29-17.4.2-3	Rose Valley 20	Obsidian	37.77	25.21	8.22	6.2	10h
08.29-17.4.2-2	Rose Valley 18	Obsidian	41.25	25.66	6.44	6.1	10i
08.29-17.4.2-1	Rose Valley 20	Obsidian	40.92	24.44	7.05	6.8	10j

While dating was not performed on Lake Mojave or Silver Lake points, they are widely thought to range in age from 11,000 to 8,000 years before present (Justice 2002).

Protein residue analysis was performed on two Lake Mojave points. One specimen possessed relatively sharp edges and thus appeared to have not been subjected to much sandblasting while the other appears to have been heavily reworked, with a fairly large stem and nub-like point. The results of the analysis were negative, which is likely a consequence of the artifacts being subjected to surface conditions for an extended period of time before being deposited into the archaeological record.

A t-test was performed at significance level $p < 0.05$ to compare average height in the two samples. The mean height of the two point styles was found to be statistically identical. An f-test was performed using a significance level of $p < 0.05$ to compare the variances in height between the two point styles. The results confirm that the sampled Lake Mojave points have significantly higher variability than do the Silver Lake points.

Figure 4. Large-sized Lake Mojave points.

CONCLUSIONS

Lake Mojave and Silver Lake points are much alike. The primary difference is that Silver Lake points have well-defined shoulders that create a definite stem, while Lake Mojave points lack a clear hafting point. It seems unlikely there would have been two styles of projectile points that were used simultaneously for so long. If they were contemporaneous with one another, then a more likely explanation for the two point styles is that they served different purposes. Rogers (2010) has suggested that these Great Basin stemmed points were knives. This may be a good explanation for Lake Mojave points; in fact, a comparison with a modern surgical knife reveals a striking similarity in form to the Lake Mojave points (Figures 8 and 9). However, the morphology of Silver Lake points is more consistent with known projectile points than with knives.

Figure 5. Tall, narrow Lake Mojave points.

If Lake Mojave points were used as knives, this would account for their great variability as well, for it seems unlikely a projectile point would be sharpened and reused to the point of a nub. What we are seeing could be various stages in the use-life of a knife. Alternatively, the morphological variability of Lake Mojave points may simply reflect different sizes for different jobs, much like what we see in today's knives. It is also conceivable that such bifaces also functioned as thrusting spears, where the objective is to strike repeatedly at short range, stabbing, withdrawing, and stabbing again. Such dispatching spears have been used by native peoples around the world for thousands of years.

Figure 6. Short, wide Lake Mojave points.

Examining use-wear on these Lake Mojave points or others, as well as subjecting more of them to protein residue analysis, could further test this hypothesis. While it would be expected that residues, which are clearly unsuitable as projectile points, would provide additional evidence that these artifacts were knives. Use-wear in the form of striations and polishing suggests a back-and-forth sawing motion, a motion typically seen on knives (Odell 2003). Presence of use-wear consistent with a knife and protein residue would be the best possible evidence.

By contrast, examination of the Silver Lake points reveals *some* variation in size, but not nearly on the scale of the Lake Mojave points (Figure 10). They do not show evidence of extensive reworking, and have an appearance that is more consistent with projectile points than knives.

Figure 7. Small nub-like Lake Mojave points.

Figure 8. Lake Mojave point overlain with surgical knife tip to highlight similar shape.

This is an important collection because of its great antiquity. It would be worthwhile testing this hypothesis further to see if indeed Lake Mojave and Silver Lake points represent two different tools in the Paleoindian toolkit. Further analysis is obviously warranted.

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Figure 9. Same Lake Mojave point with surgical knife tip for side-by-side comparison.

Figure 10. Silver Lake points.

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