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Chronology of Elko Series and Split Stemmed Points from Northeastern Nevada

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Few research oriented surveys or excavations have been conducted in northeastern Nevada. As a result, the chronological patterning of projectile points in that portion of the Great Basin is poorly known. In the past, archaeologists frequently have used point chronologies established for other regions of the Great Basin to type and date surface points from the northeastern region. This study reports obsidian hydration results for 109 projectile points from northeastern Nevada. These data indicate that both Late Pleistocene/Early Holocene and Middle Holocene aged split stemmed points are present in northeastern Nevada at least as far west as Mary's River. Elko series points, however, may not have reached northeastern Nevada until the Middle Holocene. These interpretations have important implications for several models that account for the diachronic distribution of Great Basin point styles across the Great Basin.

NORTHEASTERN Nevada lies between the Bonneville and Lahontan drainage basins (Fig. 1). Apart from a few notable exceptions (Heizer et al. 1968; Elston and Budy 1990; Elston and Raven 1992; Schroedl 1994), few systematic surveys or excavations have been conducted in this region of the Great Basin. Because of the lack of research in northeastern Nevada, archaeologists frequently have used projectile point chronologies established for other regions of Nevada to type and date surface projectile points from the northeastern region.

The type site currently used most frequently for these purposes is Gatecliff Shelter (Fig. 1a) (Thomas 1983). Based on earlier research (Heizer and Baumhoff 1961; Lanning 1963; Clewlow 1967) and on dates from Gatecliff Shelter, Hidden Cave, and Silent Snake Springs, Thomas (1983, 1985; Layton and Thomas 1979) dated split stemmed projectile points from central and western Nevada to between 5,500 and 3,300 years B.P. Additionally, Thomas (1981) argued that Elko series points postdate split stemmed points in the Lahontan Basin and in central Nevada. This chronological ordering of split stemmed and Elko series projectile points in central and western Nevada has been accepted by most researchers (Elston 1986).

James Creek Shelter (Fig. 1b), however, is replacing Gatecliff Shelter as the site of choice to interpret the projectile points of northeastern Nevada. Based largely on data collected from this shelter, but also relying on those collected from Lower and Upper South Fork shelters (Heizer et al. 1968; Spencer et al. 1987), Elston and Katzer (1990:264-267) proposed a typological and chronological sequence for the projectile points of the Upper Humboldt River Drainage that closely matches those from Gatecliff Shelter.

The borrowing of projectile point typologies and chronologies from sites such as Gatecliff Shelter may be appropriate to interpret the projectile points of northeastern Nevada only if the archaeological records of the Bonneville and Lahontan basins are identical; but this may not be the case (Aikens 1970; Holmer 1986). For example, in contrast to the interpretations from the Lahontan Basin, Holmer (1986) proposed that two types of split stemmed points are present in the Bonneville Basin: an earlier Pinto variety and a later Gatecliff variety. Additionally, Elko series points appear to both predate and postdate split stemmed points in the Bonneville Basin, perhaps being manufactured as early as 8,000 years B.P. in the eastern Great Basin (Aikens 1970).

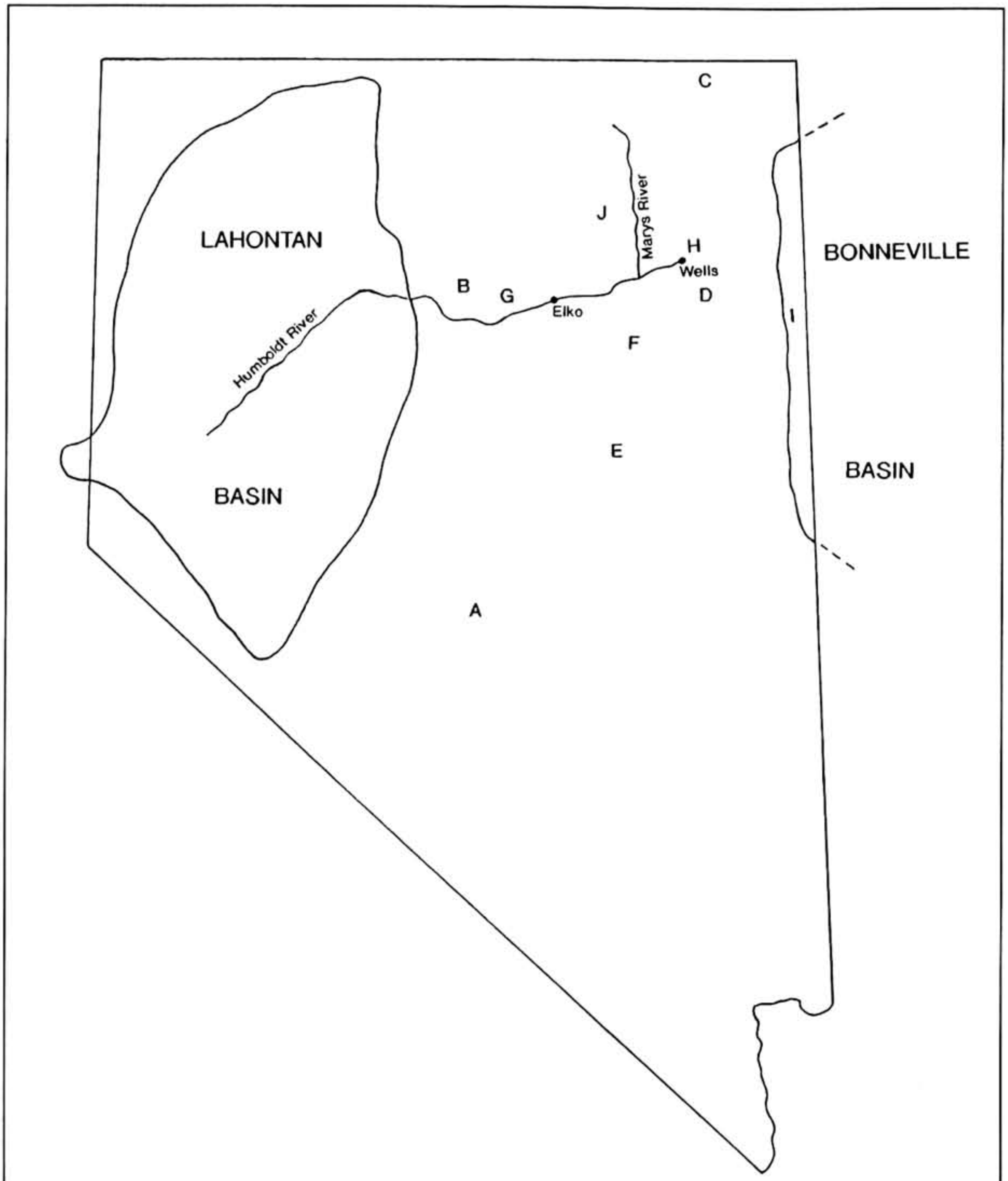

Fig. 1. Key sites mentioned in the text: (a) Gatecliff Shelter; (b) James Creek Shelter; (c) Browns Bench; (d) northern Independence Valley; (e) Long Valley; (f) Ruby Valley; (g) Dry Susie Creek; (h) Town Creek Site; (i) Pilot Creek Valley-Toano Range; (j) Badger Spring.

With these interpretations in mind, and considering that much of northeastern Nevada lies between the Bonneville and Lahontan basins, this paper addresses two related questions: (1) do Elko series points postdate split stemmed points in northeastern Nevada? and (2) do the split stemmed points in northeastern Nevada chronologically match those from the Bonneville Basin or those from the Lahontan Basin?

In order to address these questions, previous obsidian hydration dating (OHD) of artifacts manufactured from Browns Bench obsidian was reviewed in published and unpublished reports, and new OHD results were obtained from 96 projectile points recovered from over 50 different sites located in northeastern Nevada. These data indicate that the chronology of split stemmed and Elko series projectile points throughout much of northeastern Nevada does not match those from either the Bonneville or the Lahontan basins.

"LONG" AND "SHORT" CHRONOLOGIES

Warren (1980), Thomas (1981), Holmer (1986), Jenkins (1987), and Vaughan and Warren (1987), among others, have reviewed the historical development of the so-called long and short chronologies exhibited by the Bonneville and Lahontan basins, respectively. The debate centers on the age of Elko series and split stemmed projectile points. A complete review of the debate is beyond the scope of this paper, but a brief summary is in order.

Elko series points are found throughout the Great Basin. Yet these points, and in particular Elko Corner-notched points, may be as much as 5,000 years older in the Bonneville Basin than they are in the Lahontan Basin (Aikens 1970; Thomas 1981). Sites such as Danger Cave and Hogup Cave indicate that Elko Corner-notched points first appeared in the Bonneville Basin by 8,000 years B.P. (Jennings 1957; Aikens 1970). In contrast, sites such as Gatecliff Shelter indicate that Elko points first appeared near the Lahontan Basin about 3,300 years B.P., and at least 2,000 years after the first appearance of split stemmed points in the region (Thomas 1981, 1983). Flenniken and Wilke (1989), however, argued that Elko Corner-notched and Northern Side-notched points are the prototypes for all other dart styles in the Great Basin, and therefore the long chronology applies to both the western and eastern Great Basin.

The split stemmed problem is more complex. Danger Cave and Hogup Cave, for example, each contained split stemmed and shouldered projectile points. Many of these points appear to be morphologically similar to the Pinto points defined earlier from the Pinto Basin sites (Amsden 1935), the Stahl site (Harrington 1957), and from southern California (Rogers 1939). Additionally, the split stemmed and shouldered points from the Mojave Desert and from the Bonneville Basin appear to be roughly contemporaneous with one another. In both regions, split stemmed points date to at least 8,000 years B.P. (Jennings 1957; Aikens 1970; Jenkins 1987; Pryor 1994; Schroth 1994).

Thomas (1981, 1983), however, found projectile points in Monitor Valley and in other areas of the western Great Basin that seemed to resemble morphologically the Pinto points from California and from the Bonneville Basin. Thomas (1981) called these split stemmed and corner-notched points Gatecliff, and dated them between 5,500 and 3,300 years B.P.

Thomas (1981:22-23) placed the split stemmed points from California into his Gatecliff type, but he did not specify whether split stemmed points from the Bonneville Basin should also be subsumed under the Gatecliff type. Conversely, Jenkins (1987), Vaughan and Warren (1987), and Schroth (1994) argued that split stemmed points from the Mojave Desert of California are morphologically and chronologically distinct from the split stemmed points of central and western Nevada. Additionally, Holmer (1986) argued that the majority of split stemmed points from the Bonneville Basin are morphologically and chronologically distinct from the split stemmed points of central and western Nevada.

Typing the split stemmed points from northeastern Nevada as Pinto, Gatecliff, or a new type not yet defined is not the focus of this paper. The problem addressed here is that although split stemmed points are found in both the Lahontan and Bonneville basins, the eastern split stemmed points may be as much as 3,000 years older than those in central and western Nevada. Because northeastern Nevada lies between the Bonneville and Lahontan basins, an important question is: Were the split stemmed points from northeastern Nevada manufactured only during the Middle and Late Holocene, or were some of them manufactured earlier during the Early Holocene or Late Pleistocene (Early Holocene [10,000 to 7,500 B.P.], Middle Holocene [7,500 to 4,500 B.P.], Late Holocene [4,500 B.P. to present]; after Grayson 1993:233-276)?

METHODS

This study attempts to build a *relative* chronology of Elko series and split stemmed projectile points from northeastern Nevada by utilizing OHD. The strengths and weaknesses of OHD have been discussed elsewhere (Friedman and Smith 1960; Jackson 1984; Beck and Jones 1995). As noted by Beck and Jones (1995:52), temperature and relative humidity are two of the main controlling factors in any attempt to use OHD. The ambiguity involved in OHD research, including differential rate of development of rinds that result from differences in temperature, air and soil moisture content, and origin and chemical signature of specific glasses (Hughes and Smith 1993), precludes assigning absolute dates to projectile points based on hydration rind thickness. As a result, the questions that a researcher attempts to answer using OHD must be of corresponding specificity (see also Beck and Jones 1995:52). It would be methodologically unsound to attempt to discern, for example, whether Elko series points are 8,000 years old or 3,000 years old in northeastern Nevada using OHD. OHD may indicate, however, whether Elko points display a recent or ancient chronology in northeastern Nevada. OHD studies may also be able to discern if one point style predates, is roughly contemporaneous with, or postdates other point styles. With this in mind, OHD may become an effective tool for the relative dating of surface artifacts and assemblages (Beck and Jones 1995:71).

All of the projectile points analyzed in this study were most likely manufactured from Browns Bench (BB) obsidian (Fig. 1c). The artifacts were sourced to the BB area based on the close proximity of the artifacts to the BB source area, and on relatively rare and unique visual attributes of the glass. BB obsidian is a very dull, opaque glass. In contrast to most other obsidians, light does not readily penetrate glass from the BB area, even through thin sections of the material.

Artifacts manufactured from BB obsidian were chosen for analysis because the BB area is the largest and the only known source of natural glass in northeastern Nevada. Additionally, projectile points that range in age from the Great Basin Stemmed series to the Desert series, and that were made from BB obsidian, are common in northeastern Nevada, particularly in the eastern half of Elko County.

Hughes and Smith (1993) recently reviewed the genesis of the BB obsidian source. It is a welded tuff or ash-flow tuff obsidian that is often referred to as "ignimbrite" or "vitrophere." The artifact quality obsidian from the BB source is available as small- to medium-sized cobbles, and may be black, red, variegated (red with black spots), or gray in color. According to Hughes and Smith (1993:87), "The cobbles appear to be residual, or nearly so, from extensive high-temperature welded tuffs that formerly covered this entire region."

At a macro scale, the BB obsidian displays a "Browns Bench geochemical type" that differentiates it from other obsidians, including other welded tuff obsidians to the north and east

(Hughes and Smith 1993:87). The BB source, however, extends over a very large area, and factors such as multiple eruption chambers resulted in geochemical variation between obsidian cobbles within the general source area. As Hughes and Smith (1993:85) noted, "Several processes contribute to geochemical variability in obsidian formed in welded ash-flow deposits, and this chemical variation can be expected in obsidian artifacts derived from such deposits."

The geochemical variability exhibited by the BB obsidian source has only begun to be explored, and this is another reason why any attempt to assign absolute dates to artifacts based on OHD would be premature. Until more research is conducted on the possible variability in hydration rates between individual glass sources within the larger BB source area, and between BB artifacts lying on the surface versus those that have been buried for an extensive period of time, the relative dating of artifacts reported here must assume a constant rate of hydration for BB obsidian regardless of the specific environmental histories of each artifact. This assumption is oversimplistic, but it may be noted that of the BB points that have been submitted for hydration analysis, 20 of the 22 (91%) Early Holocene Great Basin Stemmed points had hydration bands that measured 10.5μ or greater, and 32 of the 35 (91%) Late Holocene arrow points had hydration bands that measured 5.1μ or less. The general nature of the questions being asked in this study is considered congruent with the OHD results obtained earlier and presented below.

The hydration rind measurements were completed by Thomas M. Origer, Director of the Obsidian Hydration Laboratory at Sonoma State University. After removing a small sample from each point specimen, the sample was reduced by manual grinding. The correct thin section thickness was determined by the touch technique and the transparency test. Hydration bands were then measured with a microscope. Six measurements were taken at several locations along the edge of each thin section. Each hydration measurement represents the mean of these six measurements.

OHD RESULTS

Table 1 reports that OHD results have been obtained for 127 projectile points, three bifaces, and 30 pieces of debitage manufactured from BB obsidian. Of the 127 points, 109 were recovered from northeastern Nevada. This study reports new OHD results for 96 projectile points, including two Great Basin Stemmed, four Pinto-like, 22 split stemmed, three small stemmed, four Humboldt, three Large Side-notched, 22 Elko series, 14 Rosegate, 18 Desert Side-notched, and four Cottonwood Triangular points (Table 2).

OHD results for the projectile points recovered from northeastern Nevada are illustrated in Figure 2. The general chronology of Cottonwood, Desert Side-notched, and Rosegate points matches those reported for the Lahontan and Bonneville Basins (Holmer 1986:110, Fig. 23). On the other hand, the chronology of Elko series points most closely matches the chronology proposed for the Lahontan Basin, while the chronology of split stemmed points most closely matches the chronology proposed for the Bonneville Basin. It is these two point styles that are discussed in more detail below.

For this study, hydration measurements were obtained for 22 Elko series points (Fig. 3a-f) and 22 split stemmed points (Fig. 3g-l, n-o) from northeastern Nevada. The 22 split stemmed points were recovered from 12 different sites located primarily in the eastern half of Elko County. Of these 22 points, 11 were recovered from the Town Creek Site (Fig. 1h). This site exhibited over 150 split stemmed points in a 38 by 38 m. area (Petersen and Stearns 1992). Four split stemmed points were found in the Pilot Creek Valley-Toano Range area (Fig. 1i), four were found north of the Humboldt River (Fig. 1), two were found in Independence Valley (Fig. 1d), and one was from an unprovenienced locality. Of the 22 Elko series points, 15 were recovered from the Pilot Creek

Table 1
OHD RESULTS OF PROJECTILE POINTS, BIFACES, AND DEBITAGE MANUFACTURED FROM BROWNS BENCH OBSIDIAN

Type	No. of Samples	Range (μ)	Associated Radiocarbon Date	Reference
Great Basin Stemmed	6	9.6-11.2	N/A	Murphy 1985[a]
	14	9.5-16.0	N/A	Beck and Jones 1990[b]
	2	14.0-15.0	N/A	this report
Pinto-like[c]	4	4.7-12.7	N/A	this report
split stemmed	1	11.0	N/A	Beck and Jones 1990
	1	7.0	N/A	King 1994[d]
	22	2.8-12.1	N/A	this report
small stemmed	3	8.6-9.4	N/A	this report
Humboldt	1	8.2	N/A	King 1994
	4	6.2-11.4	N/A	this report
Large Side-notched	3	7.1-9.3	N/A	this report
Elko series	1	6.2	3,030 B.P.	Reust et al. 1994[e]
	2	10.0-11.0	N/A	Beck and Jones 1990
	3	5.1-6.3	N/A	King 1994
	22	3.5-8.2	N/A	this report
Rosegate	1	5.1	N/A	King 1994
	14	1.2-6.8	N/A	this report
Desert Side-notched	1	2.8	N/A	Beck and Jones 1990
	18	1.3-6.3	N/A	this report
Cottonwood	4	1.7-2.9	N/A	this report
debitage	22	5.7-6.4	2,600-3,030 B.P.	Reust et al. 1994
	1	1.3	210 B.P.	Reust et al. 1994
	7	9.6-10.7	N/A	Murphy 1985
bifaces	2	8.0-8.1	N/A	King 1994
	1	5.9	2,600-3,030 B.P.	Reust et al. 1994

[a] Artifacts recovered from northern Independence Valley (Fig. 1d).
[b] Artifacts recovered from Long Valley (Fig. 1e).
[c] Points exhibit narrow shoulders and minimal basal notching; these points resemble several of those recovered from the Pinto Basin site (Amsden 1935:47, Plate 13f, o), and from Long Valley, Nevada (Beck and Jones 1990:247, Fig. 4b).
[d] Artifacts recovered from Ruby Valley (Fig. 1f).
[e] Artifacts recovered from Dry Susie Creek (Fig. 1g).

Valley-Toano Range area (Fig. 1i), and seven were found north of the Humboldt River (Fig. 1).

The hydration bands on the split stemmed points ranged in thickness from 2.8μ to 12.1μ. The hydration bands on the Elko series points ranged in thickness from 3.5μ to 8.2μ. The 2.8μ reading on a split stemmed point and the 3.5μ reading on an Elko series point were aberrant compared to the other readings from each respective population, so they were excluded from the data presented in Figure 2. The remaining band widths ranged between 4.2μ and 8.2μ for Elko series points, and between 5.8μ and 12.1μ for split stemmed points.

Table 2
NEW OBSIDIAN HYDRATION MEASUREMENTS FOR 93 PROJECTILE POINTS FROM NORTHEASTERN NEVADA[a]

Point Type	Measurements (μ)
Great Basin Stemmed	14.0, 15.0
Pinto-like	4.7, 5.4, 11.6, 12.7
split stemmed	2.8, 5.8, 5.9, 6.6, 6.8, 7.0, 7.1, 7.3, 7.3, 7.4, 7.6, 8.3, 8.4, 8.4, 8.6, 8.6, 8.7, 9.4, 9.4, 9.5, 10.5, 12.1
Humboldt	6.2, 6.3, 6.9, 11.4
Large Side-notched	7.1, 8.6, 9.3
Elko series	3.5, 4.2, 4.3, 4.8, 5.8, 5.8, 5.9, 6.1, 6.2, 6.2, 6.3, 6.3, 6.7, 6.9, 7.2, 7.3, 7.3, 7.3, 7.5, 7.7, 7.8, 8.2
Rosegate	1.2, 2.0, 2.6, 3.7, 3.8, 4.0, 4.4, 4.9, 4.9, 4.9, 5.0, 5.1, 5.6, 6.8
Desert Side-notched	1.3, 1.3, 1.4, 1.4, 1.5, 1.5, 1.8, 1.8, 2.0, 2.3, 2.4, 2.4, 2.5, 2.5, 2.5, 2.7, 4.4, 6.3
Cottonwood Triangular	1.7, 1.8, 2.2, 2.9

[a] The three nondiagnostic "small stemmed" points are not included. Five of the 93 measurements reported here are considered aberrant: 3.5μ on an Elko series point; 2.8μ on a split stemmed point; 1.2μ and 6.8μ on two Rosegate points; and 6.3μ on a Desert Side-notched point.

The mean hydration rim width of the 21 split stemmed points was 8.1μ. The mean hydration rim width of the 21 Elko series points was 6.5μ. The hydration bands on 37 of the 42 (88%) split stemmed and Elko series points measured between 5.8μ and 9.5μ (Table 2). After comparing these measurements to those obtained from Great Basin Stemmed and from arrow points, it was concluded that the majority of the split stemmed and Elko series points probably had been manufactured sometime during the Middle Holocene. The split stemmed points with hydration band widths of 10.5μ and 12.1μ, however, were most likely manufactured during the Early Holocene or Late Pleistocene.

Do the data indicate that Elko series points postdate all split stemmed points in northeastern Nevada? In order to determine if the split stemmed and Elko series points came from statistically different or statistically similar populations, two Mann Whitney U tests were performed. The Mann Whitney U test is the ordinal equivalent of the parametric t test. The Mann Whitney U test was chosen instead of the t test in order to avoid the two major assumptions of the t test. Because it is a parametric statistic, the t test assumes that the two populations in question exhibit normal distributions and homogeneity of variance (Siegel 1956:152; Weinberg et al. 1981:410). If these two assumptions cannot be confidently applied to the interval or ordinal data being tested, then the Mann Whitney U is a powerful statistic to test whether two independent samples were drawn from the same population (Siegel 1956:116).

The first test included all 44 split stemmed and Elko series points (Table 3). The results indicated that the two populations are statistically different from one another at the 0.01 confidence level (Z_u = 3.17, critical Z_u @ 0.01 = 2.58).

The second test excluded the 2.8μ reading on a split stemmed point and the 3.5μ reading on an Elko series point (Table 3). The second test also excluded the two split stemmed points with hydration bands equal to or greater than 10.5μ. Be-

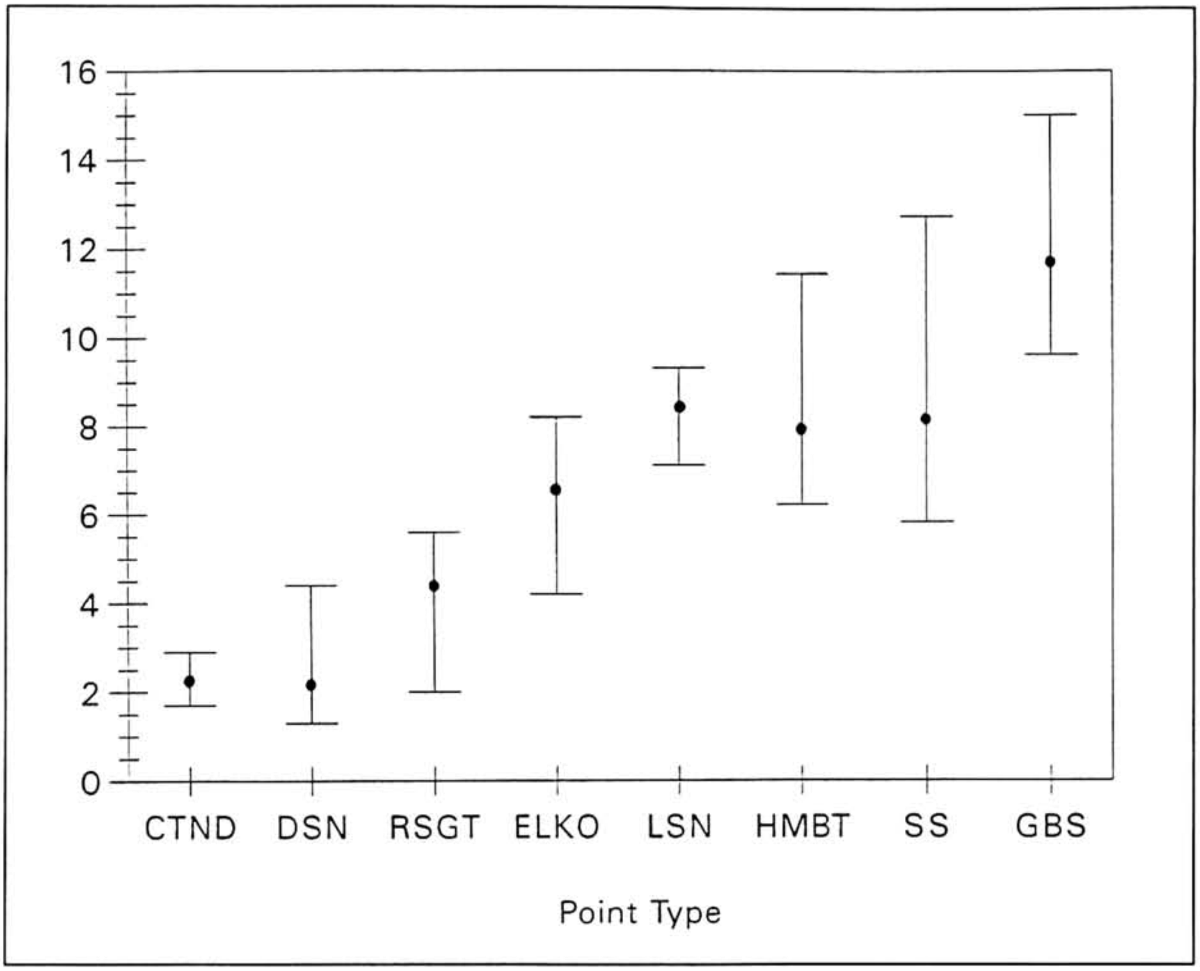

Fig. 2. Obsidian hydration results for 101 northeastern Nevada projectile points manufactured from Browns Bench obsidian. Of the 109 points from northeastern Nevada that have been measured for hydration bands, five are considered aberrant, and they have been removed from the samples reported here. These five are : (1) 3.5μ on an Elko series point; (2) 2.8μ on a split stemmed point; (3) 6.8μ on a Rosegate point; (4) 1.2μ on a Rosegate point; and (5) 6.3μ on a Desert Side-notched point. The three nondiagnostic "small stemmed" points also were not included in the sample. The dots represent the mean of each point type sample. Point abbreviations are as follows: Cottonwood Triangular (CTND); Desert Side-notched (DSN); Rosegate (RSGT); Elko series (ELKO); Large Side-notched (LSN); Humboldt (HMBT); split stemmed (SS); Great Basin Stemmed (GBS).

cause these two split stemmed points probably were made during the Late Pleistocene or Early Holocene, they may have significantly affected the results of the first Mann Whitney U test. However, the second test indicated that the 19 remaining split stemmed points and the 21 Elko series points were also from statistically different populations ($Z_u = 3.10$, critical Z_u @ $0.01 = 2.58$).

The statistical tests may indicate that throughout much of northeastern Nevada, Elko series points postdate most or all of the split stemmed points, just as Thomas (1981) argued for the western Great Basin, and as Elston and Katzer (1990) argued for the Upper Humboldt Drainage.

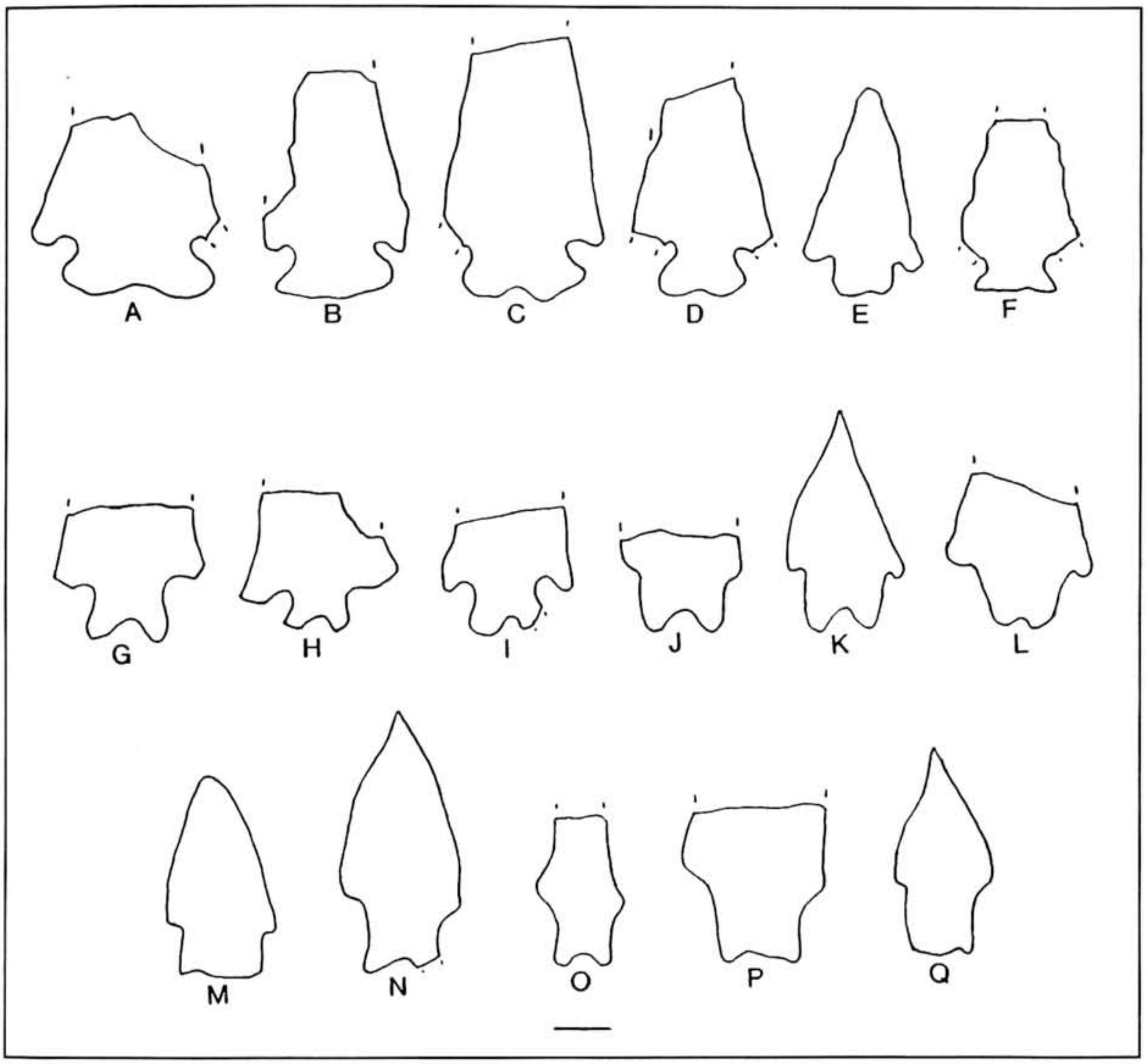

Fig. 3. Outline sketches of representative samples of Elko, split stemmed, and other Pinto-like points submitted for hydration analysis: (a-f) Elko series; (g-l, n-o) split stemmed; (m, p-q) shouldered with minimal basal notching. Scale bar represents one centimeter.

DISCUSSION

The chronological patterning just described may not apply to the western margins of the Bonneville Basin. The data presented above support diffusionary models that place the earliest Elko points in the Bonneville Basin and the latest Elko points in the Lahontan Basin (see Beck and Jones 1994 for a review). Specifically, the hydration bands on eight of the 22 Elko series points measured between 7.2μ and 8.2μ. The remaining 14 Elko points had hydration bands that measured between 3.5μ and 6.9μ. Of the eight Elko points that had hydration bands measuring 7.2μ or greater, seven (88%) were found along the western margins of the Bonneville Basin. This relative chronological ordering would be expected if Elko series points originated in the eastern Great Basin, and later diffused through northeastern Nevada to the Lahontan Basin.

Table 3
MANN WHITNEY U RESULTS OF SPLIT STEMMED AND ELKO SERIES POINTS[a]

	n_1	n_2	Z_u	Critical Z_u (0.05)	Critical Z_u (0.01)
Test 1[b]	22	22	3.17	1.96	2.58
Test 2[c]	19	21	3.10	1.96	2.58

[a] H_o = same population; H_1 = different population; to reject H_o, the Z_u value must be higher than the critical Z_u value.

[b] All 22 split stemmed points and all 22 Elko series points included.

[c] The 3.5μ reading on an Elko series point and the 2.8μ, 10.5μ, and 12.1μ readings on split stemmed points were removed from the test.

Holmer (1986:99, Fig. 9) argued that Early Holocene aged split stemmed points in northeastern Nevada are restricted to the Bonneville Basin. The split stemmed point that had a hydration band width of 10.5μ (Fig. 3o) was recovered in Pilot Creek Valley along the far western margins of the Bonneville Basin (Fig. 1i). The split stemmed point that had a hydration band width of 12.1μ (Fig. 3n), on the other hand, was recovered at Badger Spring, west of Mary's River (Fig. 1j). Both points are shouldered rather than corner notched, and in general morphology appear to fit into the Pinto type as defined by Amsden (1935:44). The Badger Spring point probably indicates that Early Holocene aged Pinto-like points are not restricted to the Bonneville Basin in northeastern Nevada. Additional OHD results obtained from Murphy (1985) and for this study lend support to this interpretation.

Amsden (1935:44) defined the quintessential Pinto point as "a projectile point with a definite although narrow shoulder and usually an incurving base." Nevertheless, in the original Pinto Basin report, Amsden (1935:47, Plate 19a, b, d, e, f, j, m, and o) illustrated eight shouldered points that exhibited slight to nonexistent incurving bases. In east-central Nevada, Beck and Jones (1990:247) called points similar to these "Pinto Group A."

Five projectile points from northeastern Nevada that each exhibited narrow shoulders but weak incurving bases were submitted for OHD analysis (for examples, see Fig. 3m, p-q). These points were labeled "Pinto-like" in Table 1, but they were included in the "split stemmed" category in Figure 2 because they probably represent subtypes of the more general Pinto and Gatecliff styles of projectile points. Two of these points exhibited very thick hydration bands. The hydration band on one of these Pinto-like points measured 12.7μ (Fig. 3p), and the other measured 11.6μ (Fig. 3q). These two points were recovered from northern Independence Valley (Fig. 1d), and both were associated with several Great Basin Stemmed points that previously were subjected to OHD analysis (Murphy 1985). The hydration bands on the six Independence Valley Great Basin Stemmed points ranged from 9.6μ to 11.2μ (see Table 1). Five of these six hydration band measurements were tightly clustered between 10.5μ and 11.2μ. Collectively, the Independence Valley and Badger Spring points indicate that Early Holocene/Late Pleistocene aged Pinto-like points are present in northeastern Nevada at least as far west as Mary's River (see Fig. 1).

Because the majority of hydration bands on the split stemmed points measured between 5.8μ and 9.5μ, the data collectively indicate that both Middle Holocene and Early Holocene/Late Pleistocene aged split stemmed points are present in northeastern Nevada. This interpretation corroborates Basgall and Hall's (1993) prediction that split stemmed points will likely exhibit a very long chronology in the northern portion of the Great Basin.

It is unclear, however, whether the split stemmed points from northeastern Nevada exhibit a continuous chronological distribution spanning the Early through Middle Holocene, or whether a hiatus existed between the Early Holocene/Late Pleistocene aged split stemmed points and those that were manufactured during the Middle Holo-

Table 4
HOLOCENE PRESENCE OF ELKO SERIES AND SPLIT STEMMED POINTS IN THE LAHONTAN BASIN, NORTHEASTERN NEVADA, AND BONNEVILLE BASIN

	Lahontan Basin		Northeastern Nevada		Bonneville Basin	
	Split Stemmed	Elko	Split Stemmed	Elko	Split Stemmed	Elko
Late Holocene	X	X	X	X	X	X
Middle Holocene	X	X	X	X	X	X
Early Holocene			X		X	X

cene. Resolving this issue would have important implications for corroborating or refuting several existing models that account for the diachronic distribution of projectile point styles across the Great Basin.

Holmer and Ringe (1986:278, Fig. 6.2-1) and Holmer (1990:53, Fig. 7) proposed that a Middle Holocene aged split stemmed point spread from the southwestern Great Basin through the central Great Basin and lastly to northeastern Nevada and southern Idaho. Holmer (1990) further suggested that this Middle Holocene aged movement of split stemmed points marks the arrival of Numic peoples into the central and northern Great Basin regions. If the split stemmed points from northeastern Nevada exhibit a bimodal chronological distribution (that is, if there is an Early Holocene variety of split stemmed point that differs chronologically and morphologically from a Middle Holocene variety), then these data may support Holmer's model. Nevertheless, before accepting this model, it must be shown that the split stemmed points from northeastern Nevada postdate those from the southwestern Great Basin.

CONCLUSION

Split stemmed points probably were manufactured in northeastern Nevada before Elko series points diffused into the area from the east. This early manifestation of split stemmed points may be related to the distribution of Pinto-like points that stretched from southern California across southern Nevada and Utah, and northward into northeastern Nevada and other parts of the northern Great Basin (see also Basgall and Hall 1993). The early manifestation of Pinto-like points in northeastern Nevada may or may not be related to the Middle Holocene aged split stemmed points from the region. If they are not related, then northeastern Nevada may have experienced two separate diffusionary influences during the Middle Holocene as split stemmed points diffused northward, and Elko series points diffused westward.

The chronological patterning of Elko series and split stemmed projectile points in northeastern Nevada does not entirely match those from either the Bonneville or the Lahontan basins (Table 4). Thus, neither the Bonneville Basin nor the Lahontan Basin by themselves are good analogues for interpretation of the ages of the projectile points from northeastern Nevada.

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