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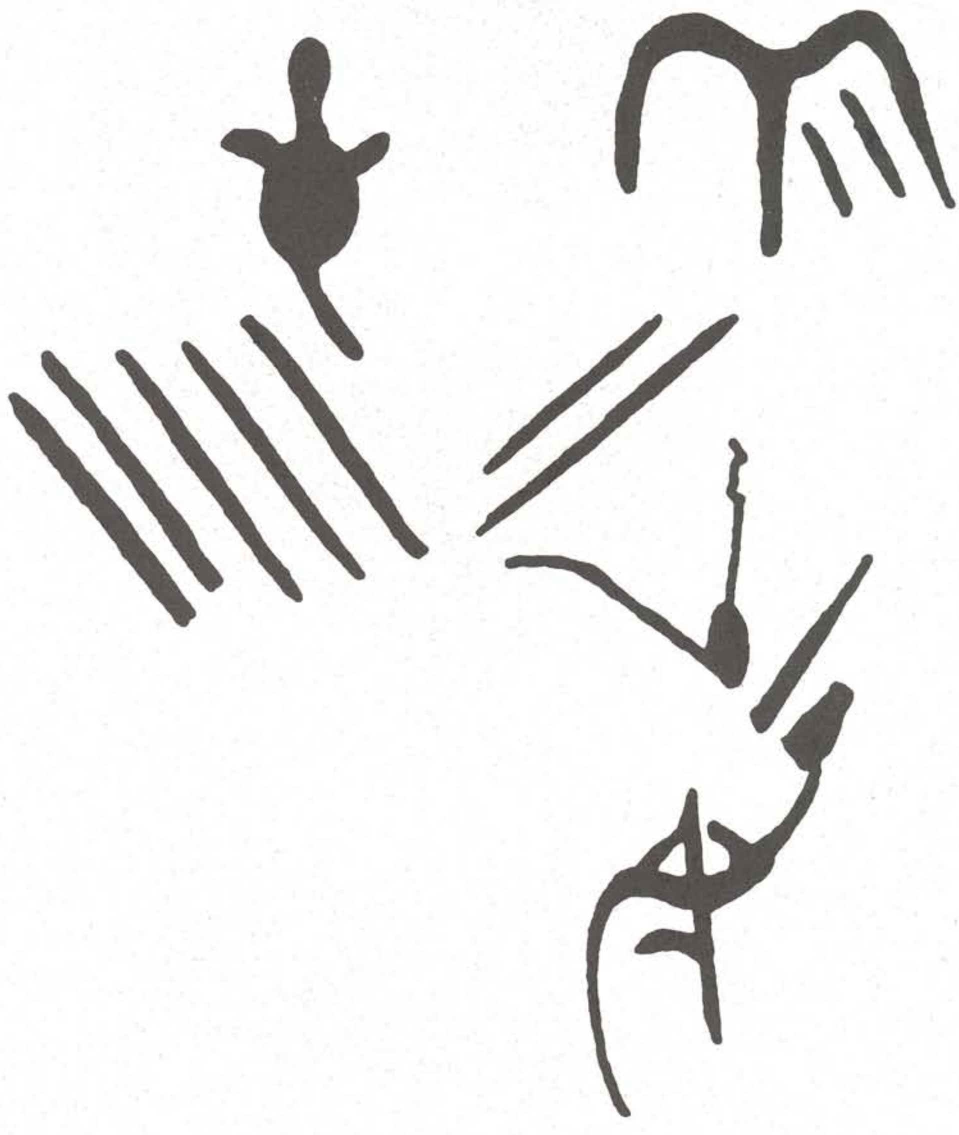

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Cover: Owyhee Petroglyphs

CONTENTS

ARTICLES AND REPORTS

SHORT CONTRIBUTIONS

ARTICLES AND REPORTS

DISTRIBUTION OF ROCK ART ELEMENTS AND STYLES AT THREE LOCALITIES IN THE SOUTHCENTRAL OWYHEE UPLANDS

Mark G. Plew
Boise State University

INTRODUCTION

Beginning in 1975, intensive archaeological investigations were conducted in the south central Owyhee Uplands of Idaho (see for summary Plew, 1980, 1985). These investigations resulted in the description of a 6,000 year chronology and settlement-subsistence pattern (see Plew 1985). In the course of the investigations large numbers of petroglyph sites were recorded. Three of these sites represent large and extensive individual panels at Big Springs, Camas, and Pole Creeks which are located within an area of roughly thirty square miles (see Figure 1). A complete inventory of these sites was completed during the 1980 field season. The present report is a descriptive synthesis of these data.

BACKGROUND

The study of aboriginal rock art has an extended history. Early works dealing with native rock art include Mallory (1893) as well as distributional studies of petroglyphs by Steward (1937), Tatum (1946) and Heizer and Baumhoff (1962). Broader syntheses have remained relatively less common though Whitley and Loendorf's (1996) edited volume on Hunter-Gatherer rock art research provides substantive insights regarding contemporary perspectives on the place of rock art studies in archaeological research.

Important to the study of Idaho rock art are a number of investigations in the Northwest, the Great Basin, and Western Plains. In Washington, these include Cain (1950) and Smith (1946). In Oregon, Cressman (1937) has documented petroglyphs, as has Renaud (1936) for Wyoming and Colorado. Schaffsma (1971, 1986) has provided an excellent descriptive/ interpretive study of the rock art of Utah as has Castleton (1979, 1984; Castleton and Madsen 1981). The greater focus of the later studies is upon Fremont rock art.

Regional syntheses, for the Northwest and the Great Basin, provide important interpretations of relevance to rock art in Idaho and surrounding areas. Boreson (1976:90), using historic and ethnographic data, attempts to place the rock art of the Pacific Northwest into the spatial and temporal framework of the Salishan expansion hypothesis. In the Great Basin, Heizer and Baumhoff (1962) provide an extensive stylistic/distributional study of Nevada and Eastern California rock art. Their work focuses on the functions of rock art and its potential relationship to the Numic expansion. Lee and Hyder (1991) use rock art as an indicator of cultural interaction and tribal boundaries in southcentral California while Whitley (1982, 1987, 1992) has investigated the role of mythology and shamanism in the interpretation of rock art in California and western North America. Recently, Keyser (1992) has provided an excellent overview of the Indian rock art of the Columbia Plateau and Leen (1988) has reviewed the rock art of Hells Canyon.

Rock art studies in Idaho have been relatively limited. The earliest contribution is Erwin's (1931), which provides a general descriptive account of prominent Idaho sites and Tuohy (1963:25-29) who discussed a number of petroglyph sites in eastern Owyhee County, Idaho. More recently, Nesbitt (1966) described stylistic locales along the Snake River, while Tobias (1981) provided extensive descriptions of the Guffy-Swan Falls petroglyphs. Curtis (1990 examines regional differences in petroglyphs in an attempt to identify cultural affiliations and boundaries. Descriptive efforts of lesser magnitude have been provided by Metzler (1969), Plew (1978), and Tuohy (1963:25-29) for the areas of Gooding County and the

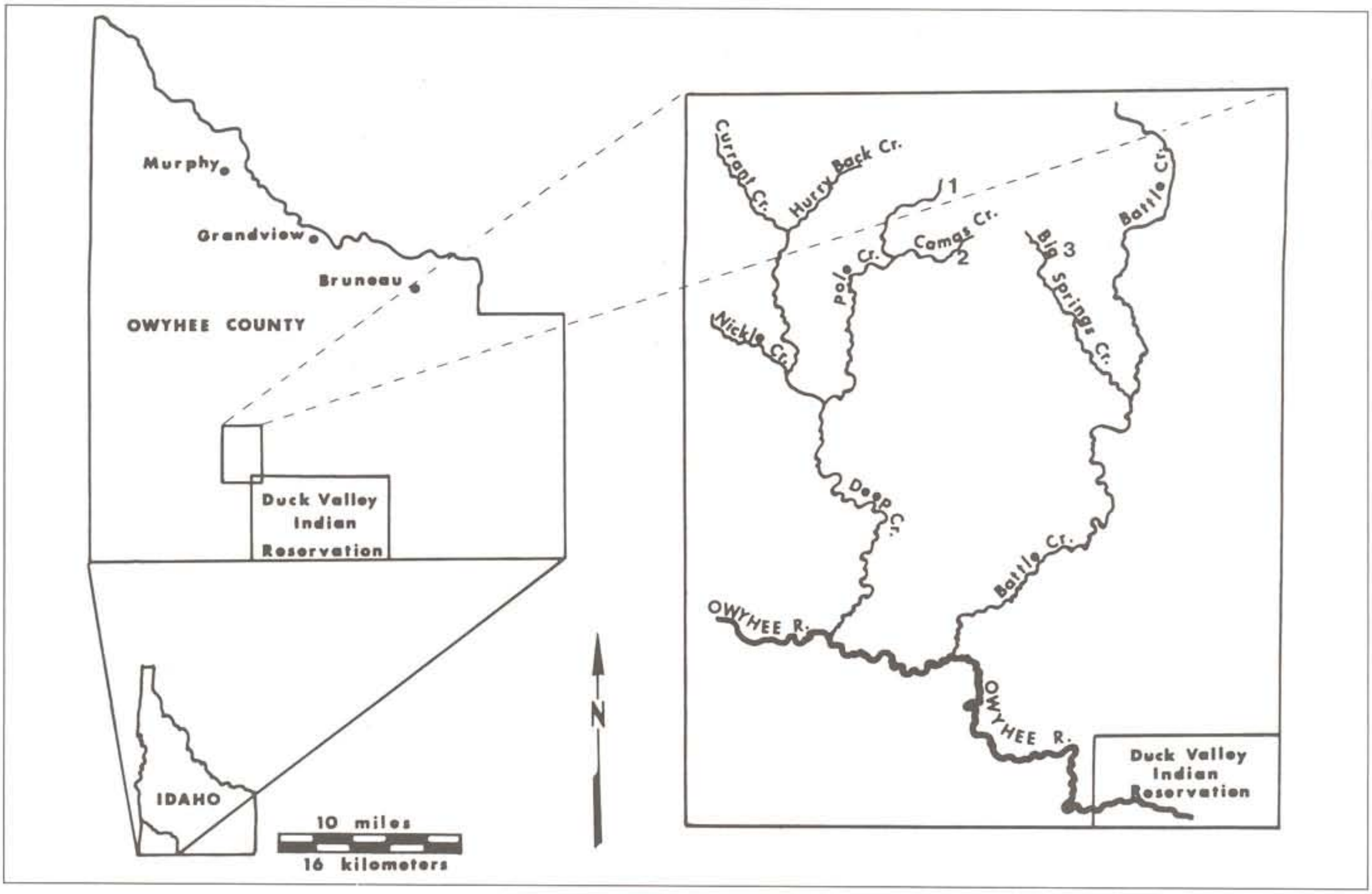

Figure 1. Map Showing the Location of the Petroglyph Localities Discussed in the Text. 1, Pole Creek; 2, Camas Creek; 3, Big Springs Creek.

Owyhee Uplands respectively. Pavesic and Studebaker (1993) provide a brief review of some of the more spectacular rock art localities in southern Idaho. In addition, several papers concerned with the distribution of the shield motif have significance for the distribution of elements in Idaho (Keyser 1975; Plew 1976; Wormington 1955). During the past decade Murphey has contributed major studies on the rock art of the Bruneau and Jarbidge deserts (1987; 1991, 1994). Murphey has documented pictographic and petroglyphic art depicting a much wider range of motifs than commonly reported by other writers. His most important contributions are the establishment of a rock art chronology and the description of Fremont-like motifs in southwestern Idaho.

His discussion of the Jarbidge rock art site proposes a four period chronology based upon variation in colors and combinations of motifs dating after A.D. 850 (Murphey 1991). In a more recent treatment of the rock art of the eastern Bruneau desert, he extends the chronology to A.D. 1, positing a developmental sequence of motifs with Fremont influence greatest between A.D. 500 and A.D. 1,000 (Murphey 1994). The most significant Fremont-like motifs are located within the Jarbidge area.

Traditionally the study of rock art has involved the description and distribution of design elements within restricted areas. This has been and is in large part due to our inability to explain fully its nature and function. Mallory (1893), using native informants, was unable to determine if rock art was a system of picture writing. Later writers, including Steward (1929), continued the use of the historical-comparative method. Yet the use of native informants again proved of little value as most historic Indian groups of the Great Basin disclaimed direct knowledge of rock art (Heizer and Baumhoff 1967:14).

Heizer and Baumhoff's (1967) important survey of Nevada and Eastern California argued that rock art is functional. Using Steward's (1938) ethnographic model of Great Basin subsistence, the authors argued that the harshness of the Basin environment would preclude the effort required to produce the prolific quantities of petroglyphs found throughout Nevada and Eastern California, unless rock art were directly related to the procurement of food (Heizer and Baumhoff, 1962:7-8). In this regard, petroglyphs of different types were associated with different subsistence activities, e.g. game trails and hunting. They further suggested magico-religious significance to petroglyphs as ritual devices to insure successful hunts, and observed that habitation sites were frequently removed from petroglyph locations (1962:13; see also Whitley 1987).

Though rock art may have magico-religious significance, the determinist premise upon which the proposal was based has been challenged by archaeologists (see e.g., Heizer and Napton 1970; Napton 1969) and ethnographers (e.g., Lee 1969).

METHODOLOGY AND DESCRIPTION

Petroglyph sites recorded during the course of six field seasons in the south central Owyhee Uplands were of two types. Isolated petroglyphs or small groups of petroglyphs located on a single rock surface were considered sites as were rock art panels which were assigned single site numbers. Panels were defined as extensive configurations of elements or motifs over relatively large contiguous surfaces. Only four such panels were recorded. These include two at Camas Creek and one each at Big Springs and Pole Creeks. Panels were drawn by imposing a two-meter grid unit over the areas under investigation and recording all distinguishable elements. Elements too badly weathered or vandalized to be clearly discernable were not recorded. Units were numbered consecutively to maintain arbitrary horizontal control. Elements were defined as individual designs, whether abstract or representational. Heizer and Baumhoff's (1962:83) table of fifty-eight design elements were used as a basis for generating an element list for the Owyhee Uplands (see Table 2). Some items were not present in the Owyhee locales and were deleted from the list, including spoked circles, spoke concentric circles, connected dots, radiating dashes, birds, many-legged insects, horned kachina figures, white men, and fish. Atlatls and arrows are extremely rare in Heizer and Baumhoff's (1962) study and are not included in the Owyhee list though two elements from Camas Creek (see Figure 3c) are suggestive of these elements.. Added to the element list are horses, mounted riders, phallic representations, shield figures, stars, straight lines, trapezoids and spears, rectangular grids, bird tracks, rakes, and cross-hatching (see Table 2).

ANALYSIS

Analysis of the recorded data included separating elements and assigning them to specific Basin styles as defined by Steward (1929; Heizer and Baumhoff 1962; and Baumhoff, Heizer and Elsasser 1958). These include the Great Basin Pecked Style with sub-types, Great Basin Representational and Great Basin Abstract. The Great Basin Abstract substyle is further divided into Curvilinear and Rectilinear substyles. The Great Basin Pecked Style refers to the method by which the petroglyphs were made. This is in contrast to a particular substyle representing a set of elements. The Great Basin

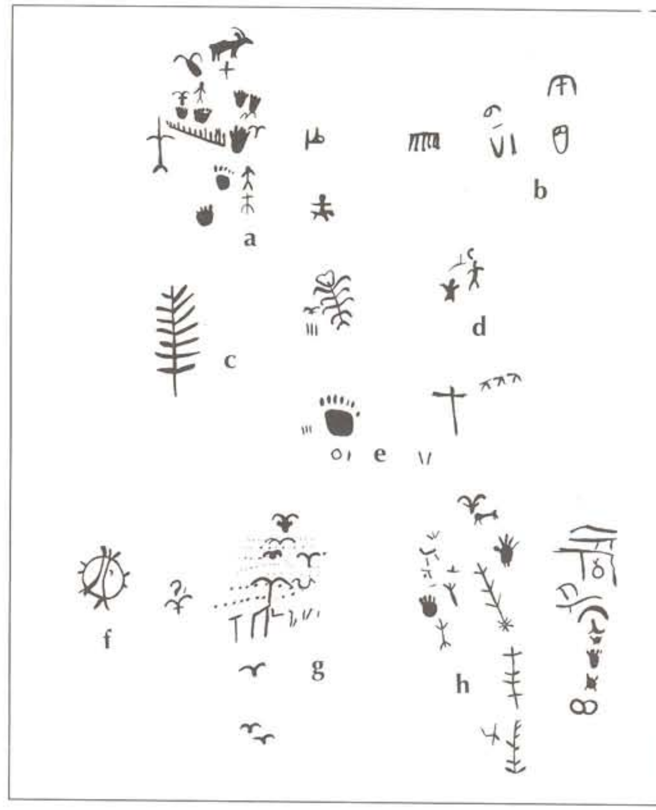

Figure 2. A-H, Representative Rock Elements from Camas Creek.

Representational substyle includes mountain sheep, quadrupeds, feet, hands, human figures, shield figures, deer, lizards and hoofs. The Abstract Curvilinear substyle includes circles, circle chains, sun discs, stars, snakes and Curvilinear meanders. The Great Basin Abstract Rectilinear substyle includes dots, rectangular grids, bird tracks, rakes, straight lines, cross-hatching, and triangles (see Table 1).

The distribution of recorded elements is of interest. The greater numbers and diversity in elements marks a clear distinction between those sites at Camas Creek and the locales at Pole and Big Springs Creeks. Though the association between rock art sites and habitation/special use sites is highly speculative, the general locations at Camas Creek appear far more utilized than those at Pole and Big Springs Creeks. Major rock alignment complexes are associated with 10-OE-602 and 10-OE-717 at Camas Creek. Thirty-eight percent (38%) belong to the Great Basin Rectilinear Abstract (GBRA) substyle while the Great Basin Curvilinear Abstract (GBCA) substyle constitutes 33% of the total elements. The Great Basin Representational (GBR) substyle represents 27% of the total elements. At Pole Creek, sites 10-OE-1253-1261 and 10-OE-1285 are characterized by a smaller assemblage with distributions of 39% GBRA, 29% GBCA and 31% GBR. At the Big Springs location (10-OE-196), the

GBRA constitutes 52% of the total elements, while 33% represent the Curvilinear substyle. Only 13% of the total elements are of the Great Basin Representational substyle. The distribution of elements and styles as well as a pattern of scattered petroglyphs and more concentrated panels corresponds to Tuohy's (1963:25-29) observations

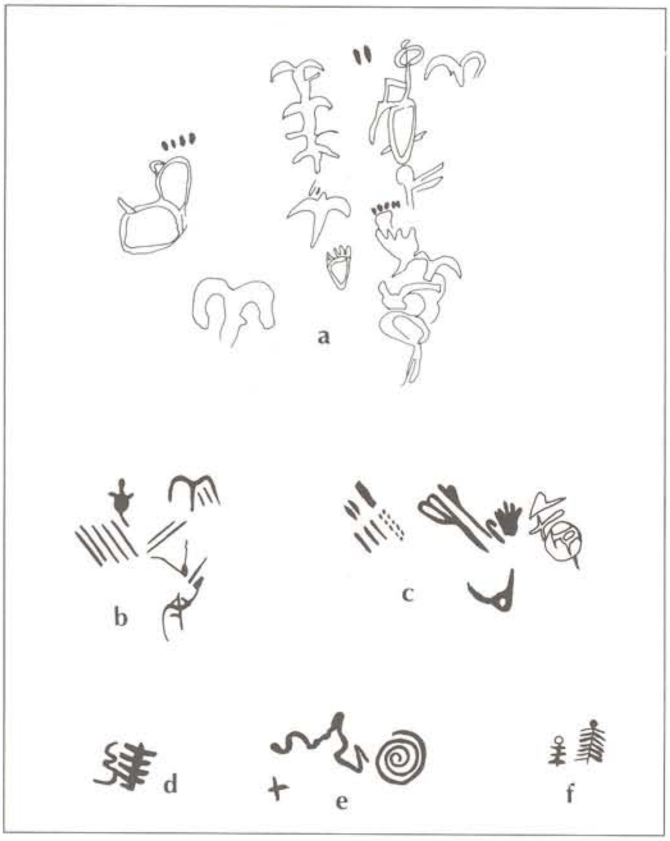

Figure 3. A-f, Representative Rock Art Elements from Pole Creek.

in eastern Owyhee County and Humboldt County, Nevada. The extent to which this represents temporal variation in the production of petroglyphs remains uncertain though most of the sites within each drainage appear to be of Late Archaic age.

DATING AND CHRONOLOGY

The number of individual elements and panels considered in this paper are certainly too small to adequately address historic origins and distributions. However, many of the elements discussed are those commonly associated with Shoshonean peoples in the Great Basin. Of these elements, many are widely distributed and should not be viewed as good indicators of historical relatedness. Most of the rock art localities in the south central Owyhee Uplands are physically associated with archaeological sites dating ca. 600-1200 A.D. (see Plew 1980, 1985). If archaeological and linguistic models of the Numic expansion are correct, the Owyhee rock art may very well predate a Shoshonean presence in the area. A recent occupation is supported by the presence of mounted rider petroglyphs at two locations on Pole Creek. These most certainly postdate A.D. 1750.

Relative dating of the Owyhee rock art by superimposition or accumulation of deposits was not possible. Though some superimposition occurs, it represents in all cases, superimposition of the same style with, in some instances, substyle variation. The number of elements from each site location sample are insufficient to determine the significance, if any, of these substyle superimpositions. No instances were found in which rock art could be relatively dated by accumulation of deposits.

The rock art of the south central Owyhee Uplands most probably postdates A.D. 600 but may be earlier. The Great Basin Curvilinear is believed to date ca. 1000 B.C. - A.D. 1500 in California and Nevada. The Great Basin Rectilinear Abstract and Great Basin Representational substyles are believed to have the same terminal date but somewhat earlier initial dates (Heizer and Baumhoff 1962:233). The Owyhee sites most probably fall within the later end of this range as their association is consistently in relative association with the intensive aboriginal use of the area during the A.D. 600-1200 period. This would correspond in part to Murphey's (1994) chronology which begins around A.D. 1.

Murphey dates shield figures (including pictographs) between c. A.D. 850 and A.D. 1750-1810. This is of interest as shield figures occur at each of the Owyhee locations and would again suggest a relatively more recent time period. Also noteworthy is Murphey's contention that most of the petroglyphic art in the adjacent Bruneau-Jarbidge areas post-date A. D. 1000.

CONCLUSIONS

The rock art of the south central Owyhee Uplands as represented by three petroglyph localities discussed in this report belong to the Abstract and Representational substyles of the Great Basin Pecked Style as discussed by Heizer and Baumhoff (1962:197-207). The Abstract substyle is most common, with a greater emphasis placed upon rectilinear variation. This is notable as the distribution of California and Nevada rock art sites are generally characterized by a higher percentage of Great Basin Curvilinear elements (see Heizer and Baumhoff 1962:200-201;338). Common rectilinear elements include dots (N=66), bird tracks (N=24), straight lines (N=27) and rectilinear designs (N=40). The most common Curvilinear designs are circles (N=46) and Curvilinear meanders (N=91). The Great Basin Representational substyle elements appear somewhat

TABLE 1
Description of Great Basin Styles and Elements

Style	Method of Application	Characteristic Elements
Great Basin Representational	Pecking	Mountain sheep, foot, hand, human, mounted rider, shield figures
Great Basin Curvilinear Abstract	Pecking	Circles, connected circles, chain of circles, sun disc, curvilinear meanders, stars, snakes
Great Basin Rectilinear Abstract	Pecking	Dots, rectangular grids, bird tracks, straight lines, rakes, ladders, trapezoids

After Heizer and Baumhoff, 1962:200.

better represented, constituting almost equal distributions with the GBCA substyles at Camas and Pole Creeks. These include mountain sheep (N=9), mountain sheep horns (N=27), bear paws (N=40), human hands and figures (N=34), and plant designs (N=22). Mountain sheep and deer are among the most common elements reported by Heizer and Baumhoff (1962). Though mountain sheep and sheep horns are common in the Uplands, only a single deer petroglyph was recorded. In contrast, the presence of human hands and plant designs are relatively more common. In general, elements are similar to those recorded by Tuohy (1963:25-29). The greatest density of motifs are at the Camas Creek locations, while Pole Creek and Big Springs Creek contain fewer elements. The physical distributions are somewhat more scattered. Murphey (1991:19) provides motif distributions for the Jarbidge country but not for the Bruneau locations. At Jarbidge, a significantly greater number of representational forms occur while geometric motifs show less variation than in the Owyhee country. In the Bruneau area, representational and curvilinear elements seem relatively more common than the rectilinear designs common in the southcentral uplands.

Heizer and Baumhoff (1962:11) and Thomas (1976) have suggested that rock art may have had magico-religious importance related to hunting activities. They (1962:11; 1976) point to the common association of hunting alignments and rock art at numerous locations throughout the Great Basin and California. The association of zoomorphic elements near rock alignments and modern game trails is paralleled by the south central Owyhee localities. Their association with water and possible corralling areas further fits the Nevada/California

TABLE 2
Distribution of Design Elements, South Central Upland Locations

	Camas Creek		Pole Creek		Big Springs
ELEMENTS	10-OE-602	10-OE-717	10-OE-1253-1261	10-OE-1285	10-OE-196
Circle	18	18	5	1	4
Bisected Circle	1	1			6
Sectioned Circle	1	6			1
Tailed Circle	5	2			
Circle and Dot	1	3			
Connected Circles		6			
Chain of Circles		1			
Spiral		3			
Curvilinear Meander	58	29	3		1
Convoluted Rake		1			
Dots/Dot Designs	22	28	8	1	7
Wavy Lines	1	3			
Cross	10	2		1	1
Bird Tracks	22	1			
Parallel Straight Lines	22	6			1
Triangles	2				
Zig-Zag Lines	3				
Ladder—One Pole	1				
Ladder—Two Poles		1			
Rake	5		4	2	2
Rectilinear Design	17	16	1		6
Plant Designs	19	3			
Lizard	6	1		2	
Mountain Sheep	8	1			
Sheep Horns	27				
Foot/Paw	31	9			
Hands	5				3
Humans	14	6	2	2	2
Deer	1				
Filled Circles	19	2			
Single Lines	14	5	6	1	2
Shield Figures	2	13	8		
Mounted Rider	2	1	2		
Stars				1	
Phallic Representation				1	
Hoofs			2		

pattern. Notably, the largest petroglyph sites or panels in the south central uplands are physically associated with habitation and rock alignment or hunting stations. This contrasts with the distribution discussed by Heizer and Baumhoff (1961). It is not possible to determine if the manufacture of the rock art was by the same or different groups of people or whether it represents use of the same areas for a variety of purposes over an extended period of time.

An additional hypothesis proposed by Heizer and Baumhoff (1962:243) and addressed by the present study is the distribution of rock art sites by availability of suitable media. Heizer and Baumhoff observed that many of the Nevada petroglyphs occurred on what they termed a "chocolate colored basalt." In areas where such material was limited or absent, few petroglyphs occurred. The investigations in the south central Owyhee Uplands observe a similar pattern. In addition to locations near habitation and hunting sites, petroglyphs are found in isolation when chocolate colored basalts are present. Isolated motifs represent the range of elements found throughout the area. The importance of this observation, beyond its extension of the pattern into southern Idaho, is

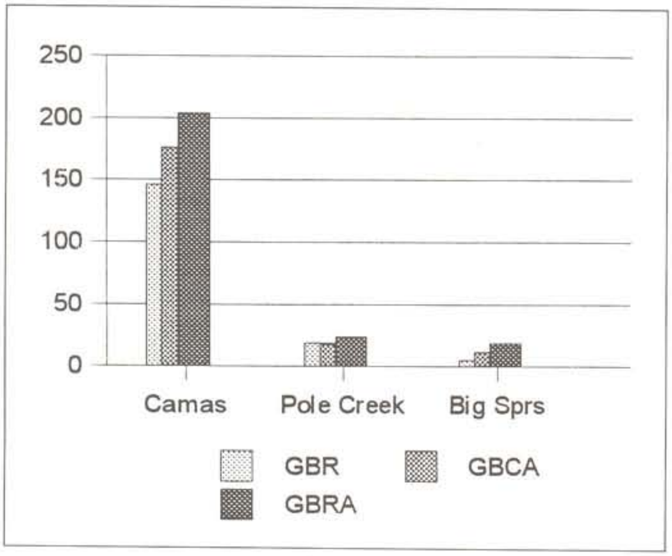

Figure 4. Great Basin Rock Art Styles in the Southcentral Owyhee Uplands.

recognition that the distribution and function of rock art may reflect a variety of conditions.

An additionally interesting pattern is the presence of plant representations. The investigations have recorded a significant number of what appear to be plant elements in the south central Owyhee Uplands. These elements closely resemble camas flowers (see Figure 2 and 3). The motifs consist of a stem with parallel flowers. In some instances, a solid or open circle is found at the end of the stem. Historically, camas and other root crops constituted a major portion of the native diet of the Indians of Idaho. A number of areas within the south central Uplands are characterized by high site densities associated with camas meadows and biscuitroot fields. In Nevada, where high yield root crops did not constitute a dietary staple, plant elements are relatively rare compared to other elements. The presence of plant elements in the rock art of southern Idaho may mark areas in which such crops occurred. Magico-religious significance is not suggested, rather a practical marking of resource areas, as some game petroglyphs may mark trails. The presence of similar elements in areas such as Camas Prairie may assist in determining if such a pattern exists or whether it is a restricted phenomenon.

The findings from the three petroglyph localities reported here suggest broad similarities between the rock art of the south central Owyhee Uplands and other areas of the Great Basin (see Heizer and Baumhoff 1962; Cressman 1937). Interestingly, the petroglyphs from the uplands do not generally resemble the materials from the eastern Bruneau and Jarbidge areas (Murphey 1991, 1994). Similarities are limited to common geometric elements. The elaborate anthropomorphic and pictographic styles are absent. Notable also are the relatively greater and more naturalistic zoomorphic representations. Beyond the presence of highly generalized shield motifs the south central Owyhee Upland petroglyphs do not generally reflect the level of Fremont influence discussed by Murphey (1994). Further, the rock art which is associated with numerous Late Archaic (post A.D. 1,000) sites having probable Shoshoni associations does not accurately fit the chronology proposed by Murphey (1994). This may reflect greater local diversity in petroglyphs or a more intrusive Fremont presence in the eastern Bruneau area as Murphey posits (1994). The extent and nature of the influence remains in question. Generally, the south central upland petroglyphs represent what may be a variety of functions including the marking of important resource areas. The age of the rock art is most probably late Archaic, though the presence of mounted riders indicate the manufacture of rock art beyond the middle of the 18th century.

ACKNOWLEDGEMENTS

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Short Contributions

X-RAY FLUORESCENCE AND OBSIDIAN HYDRATION RESULTS FROM THE ANALYSIS OF A TURKEY-TAIL BIFACE FROM THE WATERHOUSE COLLECTION

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The Waterhouse collection, an impressive assemblage of Western Idaho Archaic Burial Complex (Pavesic 1985; hereafter referred to as WIABC) flaked and groundstone artifacts, was originally donated to the Idaho State Historical Society in the 1920's by a Weiser physician. The WIABC (as defined by Pavesic [1985]) is characterized by elaborate burial practices which include multiple semi-flexed and flexed human interments, large "turkey-tail" bifaces and cache "blades," large side-notched points, marine shell beads and stone pipes, canid burials, and use of red ocher believed to date to approximately 4,000 B.P. and confined to the region of western Idaho. Although the Waterhouse collection has been previously analyzed (Pavesic 1985), neither material sourcing nor obsidian hydration analysis had been conducted on the one obsidian artifact in the collection, a large turkey-tail biface (catalog number 10-WN-X-141). In an effort to determine the quarry source of the raw material and see how the obsidian hydration data compare with materials from other western Idaho Archaic sites, this specimen was submitted for x-ray fluorescence and obsidian hydration analysis to Pacific Legacy, Inc. in Aptos, California[1]. The results of these analyses are presented below.

THE SPECIMEN

The Waterhouse obsidian turkey-tail was possibly recovered from the Braden or Galloway Street site in Weiser, Idaho (Pavesic 1985) (Fig. 1). The obsidian turkey-tail biface represents the single example of an obsidian biface out of 13 specimens that are part of the Waterhouse collection. The distal third of the specimen is missing, the result of a bending fracture. The biface has been thinned by percussion flaking with minimal pressure flaking used to straighten the margins of the biface (Fig. 2); this flaking pattern is consistent with "cache blades" and other bifaces from different collections that comprise the WIABC. The metric attributes of this specimen are presented in Table 1.

TABLE 1
EDXRF Trace Element Values for Waterhouse Obsidian Turkey-Tail

ELEMENT	PPM
Fe	665.9
Pb	34.2 ± 2.6
Th	14.5 ± 3.3
Rb	186.0 ± 2.9
Sr	17.2 ± 6.0
Y	45.1 ± 1.6
Zr	63.9 ± 4.6
Nb	39.0 ± 1.6

X-RAY FLUORESCENCE ANALYSIS

Characterization of the trace elements for the Waterhouse specimen was accomplished using a Spectrace 440 dispersive x-ray fluorescence spectrometer and was conducted by Dr. Thomas Jackson of Pacific

Legacy, Aptos, California. The spectometer used is equipped with a Rh X-ray tube powered by a 50 kV X-ray generator. The x-ray tube operates at 30 kV, .20 mA, using a 0.127 mm Rh filter under vacuum. The artifact was scanned for 250 seconds live-time for the elements Fe, Zn, Pb, Rb, Sr, Y, Zr, and Nb. The EDXRF system uses a Tracor X-ray Tx 6100 X-ray analyzer and Tracor reduction software run on an IBM PC microprocessor (Jackson 1994). The values for each trace element (reported as parts-per-million) can be seen as Table 2.

The trace element composition of the Waterhouse specimen is consistent with that of obsidian from the Timber Butte source, located approximately 50 km northeast of present-day Weiser. Previously, nine obsidian bifaces from the Braden site (10-WN-117) and six from the Rosenberger site (no trinomial), and sites productive in WIABC artifacts, all exhibited trace element ratios matching the Timber Butte source. Recent analysis of numerous obsidian samples from the Hetrick Site (10-WN-469), a deep, early Archaic site also located in Weiser, indicate that 26% (n = 18) of the 69 samples submitted key to the Timber Butte source (Terry Rudolph, personal communication, 1995).

TABLE 2
Metric Attributes of the Waterhouse
Turkey-Tail Biface

ATTRIBUTE	MEASUREMENT
Length	86.8 mm (incomplete)
Maximum width	46.4 mm
Neck width	20.2 mm
Base width	26.8 mm
Maximum thickness	10.2 mm
Weight	38.6 g (incomplete)

OBSIDIAN HYDRATION DATA

The mean hydration value from seven separate readings for the Waterhouse turkey-tail biface is 5.3 microns, with a standard deviation of 0.1. This value is significantly greater than those taken from several WIABC artifacts analyzed from the Braden and Rosenberger sites in western Idaho, where the mean values were found to be 3.08 microns (Braden) and 3.28 (Rosenberger)(Pavesic 1985: Table 3.1). The Waterhouse value is more in line with the hydration rind measurements found on obsidian bifaces and projectile points from the Hetrick site (10-WN-469). This site was recently excavated (1994-1995) by Science Applications International Corporation as part of a mitigation project for a future highway right-a-way. A single cryptocrystalline turkey-tail biface (catalog number 682) was found in a stratum (IIId), 215 cm. deep, associated with several obsidian biface and projectile points also sourced to Timber Butte (Rudolph 1995). The mean obsidian hydration measurement for seven Timber Butte obsidian biface/projectile points from between 200 and 220 cm. in depth is 5.45 microns. The hydration values in microns for artifacts from this stratum are presented in Table 3. Interestingly, the radiocarbon dates and other projectile point types from this level are considerably older than would be expected for the WIAB complex, which is thought to be somewhere in the neighborhood of 4,000 to 6,000 years B.P. Associated projectile points (from stratum IIId) include Cascade and Windust points, and two radiocarbon assessments that are 9,730 +/- 60 B.P. (Beta-78722; CAMS-17780) and 9,850 +/- 110 B.P. (Beta-78880). The calibrated results of these dates at two sigma values range from 10,670 to 11,560 B.P., nearly twice the currently accepted age for the WIABC.

Unfortunately, at present, there exist only three radiocarbon assessments from professionally excavated WIABC sites. Two are from the Braden site, one "on some bone collected by Betty Patterson," (Butler 1980), presumably from one of the burials which dated to 5,790 ± 120 (WSU-1487); the other is a recent date on dog bone from Burial 6 which is 6,590 ± 90 B.P. (Beta-90555) (Yohe and Pavesic 1996). A third is a bone date of 5,965 ± 120 B.P. (WSU-1487)(Green et al. 1986) from the DeMoss site (10-AM-193) near New Meadows. Based on associations with both large side-notched points and Late Cascade Phase material, Green et al (1986) suggest an estimated range of 5,000 to 8,000 years for the DeMoss site. One might wish to argue that the occurrence of the turkey-tail biface in stratum IIId at the Hetrick Site is due to vertical movement resulting from bioturbation; however, this would have to be true for all obsidian artifacts from this portion of stratum III. Although Rudolph (1995) concludes that this stratum may span several thousand years, the similarity between the hydration levels of Timber Butte obsidian artifacts from the lower portion of this same stratum hints at relative contemporaneaity.

The data, though scant at this point, may suggest that the tradition of producing turkey-tail bifaces could have been of longer duration in the region of southwest Idaho than previously considered, perhaps greater than 6,000 years B.P. Both the lack of extensive obsidian hydration rate studies for Idaho obsidian sources and the scarcity of data from contextually sound WIABC sites make any

TABLE 3

Hydration Values for Timber Butte Obsidian Artifacts, 10-WN-469
(Extracted from Rudolph 1995)

Catalog Number	Artifact	Stratum	Depth (cm)	Rind Width[1]
583	biface	IIId	210	5.5
659	biface	IIIc	197	4.7
661	proj. pt.	IIIc	194	5.0
664	biface	IIIc	193	5.3
683	Windust point	IIId	219	6.5
759	Gatecliff point	IIId	198	5.7

[1]All S.D. values per observation are less than 0.1.

such conclusions premature if not imprudent. The variables that need to be considered when evaluating obsidian hydration data, such as site-specific effective air and ground temperature, relative humidity, intrinsic water content of the obsidian, and sub-source trace element variability are not available for the Waterhouse specimen. Furthermore, a significantly larger sample size would be necessary to make a strong case for any comparisons with radiocarbon "confirmed" hydration values. However, the evaluation of this one artifact from the Waterhouse collection does raise some potentially interesting questions concerning the early Archaic culture history of the northern Great Basin and southern Plateau.

NOTES

[1] Although obsidian studies in southern Idaho are not new (Sappington 1981a, 1981b, 1984), few such studies have been conducted in recent years, especially in southwestern Idaho.

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CORRECTIONS TO "FUNGAL CONTAMINATION OF STORED SEEDS: IMPLICATIONS FOR ABORIGINAL CACHING STRATEGIES"

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In the fall 1995 issue of the Idaho Archaeologist an error occurred in the publication of my paper describing a series of experiments intended to examine levels of fungal contamination of raw and parched seeds. The experiments constituted a "middle range" exercise developed to generate empirical data usable in applications of optimal foraging. The error occurred in Figure 2, a chart showing the percentage of raw and parched seeds at harvest and stored. This note corrects the error.

The relatively incomplete archaeological record of the region has led to two interpretations of the recent prehistory. Cultural historians have posited organized collection forays from semi-permanent camps similar to the collector strategy hypothesized by Binford (1980). A more recent interpretation argues for groups of foragers moving constantly with the seasonal availability of resources (Gould and Plew 1996).

These strategies should be archaeologically identifiable. An important area of concern is food storage and preservation. The processing and storage of seeds is key to understanding how long they will remain usable. The value of seeds storable for only a short time would be reduced in terms of cost benefit returns and might well influence the types of strategies utilized seasonally and within certain areas.

Figure 2. was intended to graphically demonstrate that the while the difference in raw seeds before and after storage is minimal, the difference in parched seeds is drastic. Only 4% of parched seeds were contaminated by mold prior to storage. After 4 months 91% exhibited fungal contamination. The experiment demonstrates that parching effectively destroys fungal inoculum at harvest but in ground storage allows recontamination. The results imply that parching, so commonly described in the ethnographic record, is an effective fungicide only if seeds are harvested for near immediate consumption and not long term storage.

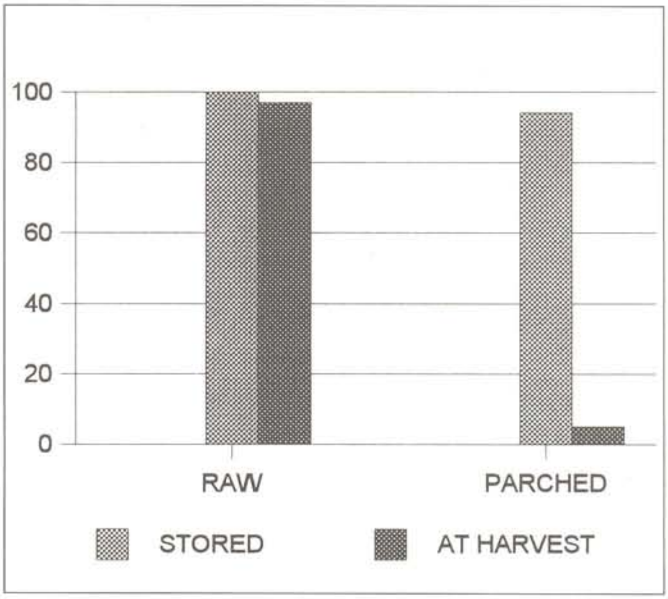

Figure 2. Percentage of Raw and Parched Seeds at Harvest and Stored.

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