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Archaeological Investigations at Tucker Hill, Lake County, Oregon

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Tucker Hill is located in the Lake Abert-Chewaucan Marsh Basin in Lake County, Oregon. In 1995, as part of the requirements associated with the permitting process for a mining company to conduct a perlite quarrying operation, the authors conducted a cultural resources inventory of the upper slopes and top of Tucker Hill (Hutchins 1995), as well as a program of archaeological testing for 13 sites located on and around Tucker Hill (Hutchins et al. 1996). Evidence derived from archaeological survey and site testing provided what the authors believe to be a representative view of the types of sites occurring on the Tucker Hill landform. Studies of lowland sites in the Lake Abert-Chewaucan Marsh Basin have been conducted by Oetting and Pettigrew (1985, 1987), Pettigrew (1985), and Oetting (1988, 1989, 1990a, 1990b), but this investigation of Tucker Hill is one of very few archaeological studies of upland sites in this vicinity.

TUCKER HILL is a peninsula extending into the wetlands formed by the upper Chewaucan Marsh (now drained) and the lower Chewaucan Marsh (Fig. 1). Both of these shallow basins are remnants of pluvial Lake Chewaucan, a Pleistocene lake which left wave-cut terraces on the Tucker Hill landform at elevation levels of 4,370 ft., 4,460 ft., and 4,520 ft., the high water stand for Lake Chewaucan (Allison 1982). The summit of Tucker Hill is 4,984 ft. above mean sea level, well above the high water stand. Studies of paleomagnetic variation in fine-grained lake sediments have shown that the most recent high water stand (i.e., 4,520 ft.) of Lake Chewaucan occurred no earlier than 16,800 years ago (Grayson 1993:100). Since then, the oscillating lake levels have trended steadily downward, isolating smaller bodies of water, and leaving Summer Lake, Lake Abert, and the Chewaucan marshes as remnants which have persisted—perhaps with occasional periods of complete desiccation—from the Early Holocene (ca. 11,000 to 6,900 years B.P.) to the present (Allison 1982). Wetland environments can be especially productive in terms of food resources (plants, waterfowl, etc.), so the Tucker Hill landform is well situated to have accumulated cultural deposits associated with aboriginal settlement and subsistence activities from the Early Holocene until recent reclamation and agricultural activities disrupted these patterns.

ARCHAEOLOGICAL INVESTIGATIONS AT TUCKER HILL

The cultural resources inventory conducted in 1995 covered 570 acres on the upper slopes and top of Tucker Hill, as well as a corridor 18 feet wide for a haul road that connects Tucker Hill to State Route 31 (Hutchins 1995). A total of 30 archaeological sites and five isolated finds was re-

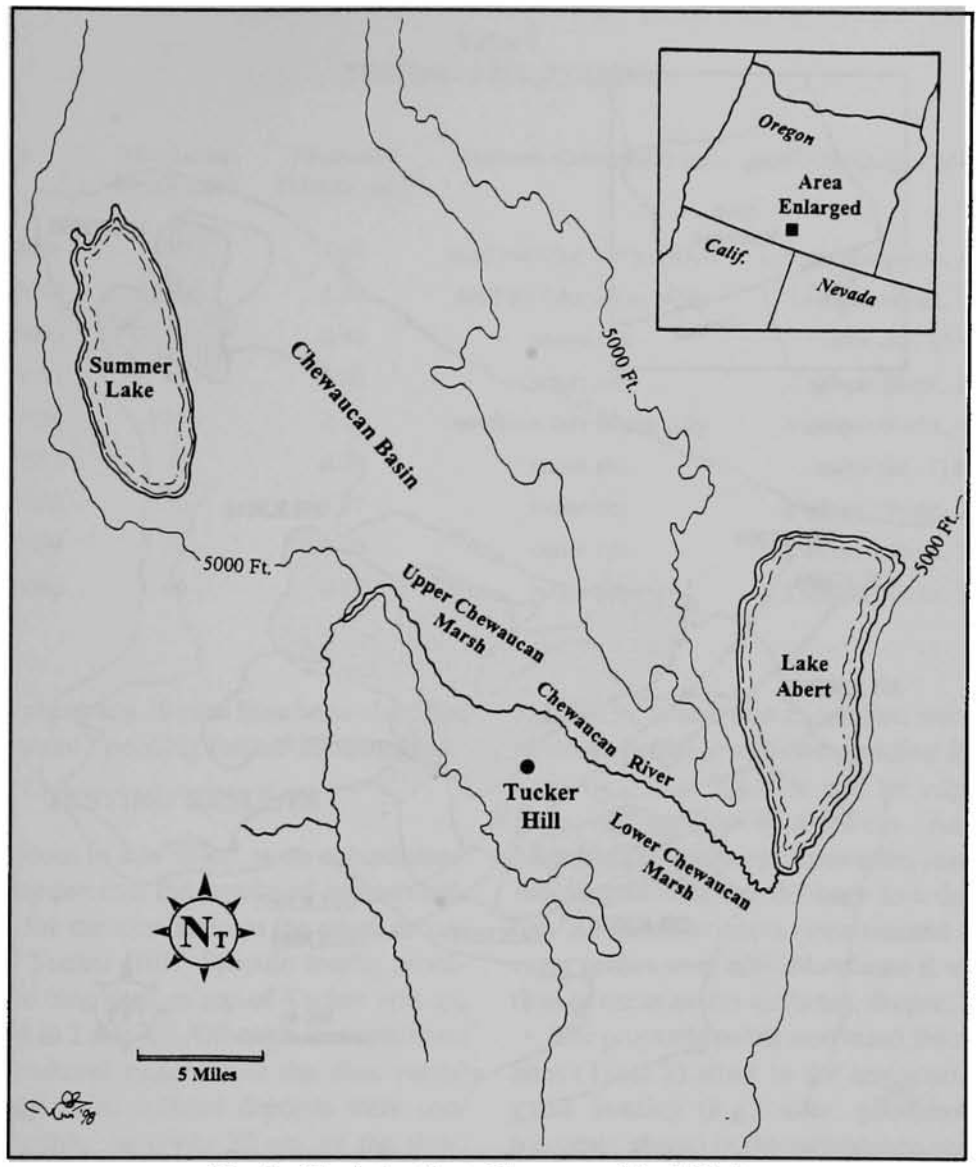

Fig. 1. The Lake Abert-Chewaucan Marsh Basin.

corded for these slopes, while five sites and three isolated finds were recorded in the corridor. All of the sites have prehistoric components, and one (35LK3056) also has a small historical component. Most of the sites are small flake scatters with no visible features and few formed tools, although several have associated cairns, stone rings, and/or short alignments of stones. Obsidian is present along the eroding margins at the top of the landform in the form of cobbles, nodules, and pebbles, and the tested portion of site 35LK3056 includes an aboriginal obsidian source quarry.

Archaeological testing was conducted for the 13 sites that were within the defined area of potential effect (Hutchins et al. 1996). Nine of these sites are on top of the Tucker Hill landform (Fig. 2): 35LK2991, -3048, -3050, -3051, -3056, -3057, -3058, -3059, and -3065. The haul road passes through four sites; 35LK3069, -3071,

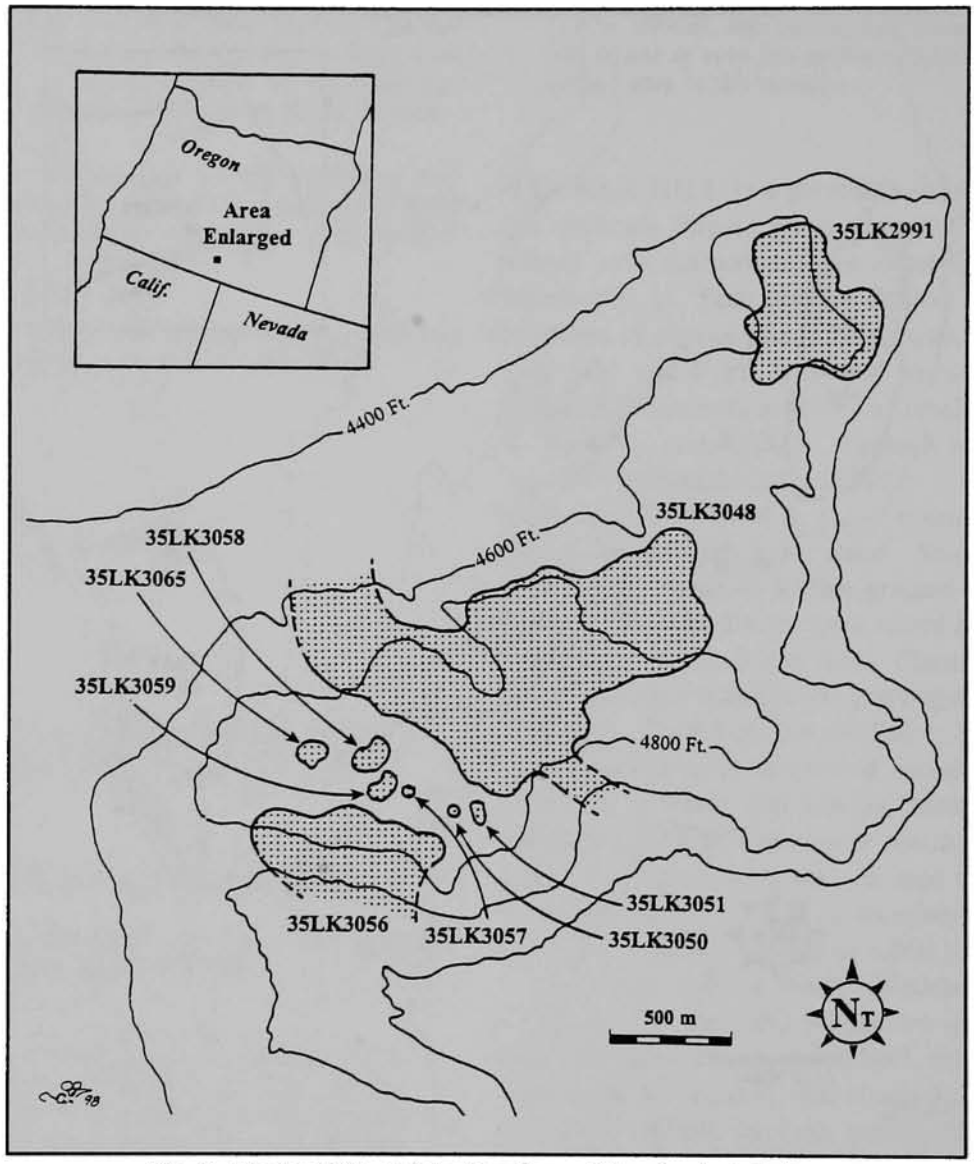

Fig. 2. Tucker Hill, and the locations of the nine tested sites.

-3072, and -3073. Testing procedures included subsurface excavation, surface collection of samples of lithic debitage, surface collection of functionally and/or temporally diagnostic artifacts, and in a few cases, collection of the entire artifact assemblage visible on the surface. A total of 174 test units, consisting of 161 shovel probes (50 cm. x 50 cm.) and 13 excavation units (1 x 1 m.), was excavated using standard archaeological procedures and techniques. The combined surface area for the test excavations was 53.25 m.^{2} Depths of test units varied from 10 to 84 cm., yielding a total volume of 17.46 m.^{3} of excavated sediment. All sediment was passed through ⅛-in. mesh.

Five of the sites are sufficiently rich in features and diagnostic artifacts to qualify for nomination to the National Register of Historic Places under Criterion D (i.e., they are likely to yield important information for local or regional prehis-

Table 1
TESTING PROCEDURES

Site	Maximum Depth (cm.)	Excavated Volume ($m.^3$)	Artifacts Collected from	Lithic Debitage Collected from
35LK2991	50	1.69	road corridor 100 m. wide	4 sample blocks, 400 $m.^2$
35LK3048	30	1.02	road corridor 20 m. wide	3 sample blocks, 300 $m.^2$
35LK3050	10	0.40	entire site	entire site, 653 $m.^2$
35LK3051	40	0.62	entire site	1 sample block, 100 $m.^2$
35LK3056	100+	2.12	northeast half of site only	4 sample blocks, 400 $m.^2$
35LK3057	10	0.35	entire site	entire site, 518 $m.^2$
35LK3058	30	1.17	entire site	2 sample blocks, 200 $m.^2$
35LK3059	30	0.70	entire site	2 sample blocks, 200 $m.^2$
35LK3065	40	0.81	entire site	2 sample blocks, 200 $m.^2$

tory). The remaining 30 sites have been classified as "unevaluated" pending further investigation.

TESTING RESULTS

As the focus in this report is on upland sites, the following presents the results of archaeological testing for the nine sites on the upper slopes and top of Tucker Hill. Specific testing procedures for the nine sites on top of Tucker Hill are summarized in Table 1. Although the maximum depths of cultural materials at the sites varied considerably, most cultural deposits were concentrated within the upper 20 cm. of the sites. Cultural materials recovered from depths greater than 20 cm. were very sparsely distributed and consisted entirely of small flakes of lithic debitage. No evidence of stratified cultural deposits was found at any of the tested sites. The presence of subsurface cultural materials at these sites seems best explained by trampling (e.g., Gifford-Gonzalez et al. 1985), bioturbation, percolation, and other natural processes. In general, then, the sites on Tucker Hill represent shallow deposits of prehistoric cultural materials. The only exception is the obsidian quarry at site 35LK3056, where two excavation units produced obsidian debitage and two obsidian flaked stone tools (a biface fragment and an edge-modified flake) at a depth of 60 to 70 cm. Auger probes placed in the bottoms of these units resulted in the recovery of obsidian debitage to a depth of 100 cm. As these two units were situated on a slope, auger probes were utilized because it was impractical to excavate the units any deeper.

The projectile points recovered from the tested sites (Table 2) attest to the importance of large game hunting (e.g., deer, pronghorn, and/or mountain sheep) in the subsistence economies of the aboriginal peoples who visited Tucker Hill. Most of the recovered points are fragments of bases, midsections, and tips, as well as edge fragments. Most of these (85%) exhibit impact fractures and impact flutes, demonstrating that the points were broken during use, rather than during manufacture. Many of the fragments (61%) lack typological characteristics, and can be classified only as small or medium size. However, several points are sufficiently complete to classify into morphological types that are temporally diagnostic. The Late Archaic Period is represented by

Table 2
PROJECTILE POINTS[a]

Site	Rosegate	Elko	Humboldt	Small untyped	Medium untyped	Site Total
35LK2991	2	7	1	8	5	23
35LK3048	3	--	2	--	3	8
35LK3050	--	--	--	--	--	--
35LK3051	2	--	--	--	--	2
35LK3056	--	--	--	1	2	3
35LK3057	--	--	--	--	1	1
35LK3058	--	--	--	1	2	3
35LK3059	--	--	--	--	2	2
35LK3065	--	--	--	--	2	2
Total	7	7	3	10	17	44

[a] Defined by Thomas (1981).

Rosegate series points, and the Middle Archaic Period is represented by Elko series points. No Late Prehistoric Period Desert series points were recovered. All of the projectile points are manufactured from obsidian. Oetting (1994) refined the date ranges for the Lake Abert-Chewaucan Marsh Basin as follows: Pre-Archaic or Initial Archaic (11,000 to 7,000 B.P.), Early Archaic (7,000 to 5,000 B.P.), Middle Archaic (5,000 to 2,000 B.P.), and Late Archaic (2,000 B.P. to Euroamerican contact).

Unfortunately, none of the nine tested sites on top of Tucker Hill yielded any faunal remains, so there is no direct archaeological evidence concerning the types of game animals hunted. The only faunal remains recovered during the testing program were 14 small bone fragments (2.3 g. aggregate weight) from site 35LK-3072 at the base of Tucker Hill in the haul road corridor. Two of these are medium-sized ungulate (probably artiodactyl) molar fragments, four are recent lagomorph long bone fragments, and the remainder are tiny, unidentified bone fragments. The two tooth fragments suggest that artiodactyls such as deer, pronghorn, and/or mountain sheep were present at the Tucker Hill locality, and were the most likely prey for aboriginal hunters.

The bifaces from the tested sites were classified according to the five-stage system of Callahan (1979), in which Stage I is an unmodified flake blank, Stage V is a finished tool, and Stages II through IV are intermediate stages of progressive biface reduction. All but three of the collected bifaces are obsidian: one is ignimbrite, one is perlite, and one is chert. The distribution of intermediate biface stages at the tested sites (Table 3) suggests that the reduction process proceeded from flake blank (Stage I) to at least the secondary thinning or "preform" stage (Stage IV). All three intermediate stages are represented, although the numbers tend to decline for each successive stage. The paucity of recovered pressure flakes (Table 4) suggests that on-site biface re-

Table 3
INTERMEDIATE STAGE BIFACES[a]

Site	Stage II	Stage III	Stage IV	Total
35LK2991	6	12	10	28
35LK3048	5	2	3	10
35LK3050	1	--	--	1
35LK3051	1	--	--	1
35LK3056	22	16	11	49
35LK3057	--	--	--	--
35LK3058	--	--	--	--
35LK3059	--	--	--	--
35LK3065	1	--	--	1
Total	36	30	24	90

[a] Defined by Callahan (1979).

duction may not have gone beyond early Stage IV. The intent of the aboriginal Tucker Hill knappers seems to have been to produce rough-outs, blanks, and occasional preforms, rather than finished artifacts. These rough-outs, blanks, and preforms could have been transported elsewhere to be finished, carried in tool kits for future use, and/or traded as a commodity.

The flakes struck from a core typically have sharp cutting edges and may be used as expedient tools "as is." The working edges of flake tools show the removal of numerous small flakes, either by deliberate retouch or through pressure and bending as a result of use. Cutting, scraping, planing, and wood shaving are tasks for which expedient flake tools would have been appropriate. Expedient flake tools often appear to have been discarded after casual use, since the working edges normally do not show extensive wear. Such tools occurred at every tested site on Tucker Hill, and all were made of obsidian. Nine of these were clearly used for scraping tasks; another 142 showed no clear patterns of use wear, and were classified simply as edge-modified flakes. Some of these edge-modified flakes may be the result of trampling, rather than use wear (Gifford-Gonzalez et al. 1985:813-815).

A sample of 76 obsidian artifacts was submitted to Geochemical Research Laboratory in California for determination of sources. The sample included all 44 projectile points, plus 29 selected bifaces and three selected expedient flake tools. The sample was selected using two criteria: (1) projectile points were considered the most likely artifacts to represent the greatest diversity of sources; and (2) within budget constraints, as many sites as possible were represented in the selection of bifaces and expedient flake tools. In retrospect, the sample data would probably have been more informative if debitage had been included and a stratified random sampling technique had been employed to select artifacts from each class regardless of site, including debitage, expedient flake tools, intermediate stage bifaces, and formed tools (i.e., the projectile points and the unidentified Stage V tool fragments).

The sample specimens were derived from 15 sources, three of which do not match any of the known obsidian sources in the Geochemical Research Laboratory data base (Table 5, Fig. 3). The majority (61.8%) of the obsidian in the sample was derived from Tucker Hill, including the expedient flake tools and all but two of the intermediate stage bifaces. Considering the abundance of obsidian available at Tucker Hill and the extent to which Tucker Hill obsidian was utilized (50% of the Stage V bifaces), it seems surprising that so many geographically dispersed and distant obsidian sources are represented in the sample. Obsidian derived from Tucker Hill and the nearby sources at the Coglan Buttes and McComb Butte accounts for 75% of the obsidian in the sample, and was most likely extracted directly at the sources. The data available at present are insufficient to determine whether the obsidian from more distant sources was acquired indirectly through exchange, or extracted directly at the

Table 4
LITHIC DEBITAGE SAMPLE[a]

Site	Flake Type					Total
	Core Reduction	Biface Thinning	Pressure	Shatter	Flake Fragment	
35LK2991	89 (12%)	110 (15%)	40 (5%)	137 (18%)	378 (50%)	754 (100%)
35LK3048	61 (14%)	92 (22%)	5 (1%)	73 (17%)	198 (46%)	429 (100%)
35LK3050	35 (34.5%)	6 (6%)	-- (0%)	15 (15%)	45 (44.5%)	101 (100%)
35LK3051	31 (37%)	7 (9%)	1 (1%)	12 (14%)	33 (39%)	84 (100%)
35LK3056	986 (3%)	3,679 (11%)	752 (2%)	7,211 (22%)	20,556 (62%)	33,184 (100%)
35LK3057	22 (23%)	11 (11%)	2 (2%)	21 (22%)	40 (42%)	96 (100%)
35LK3058	32 (20%)	25 (15%)	6 (4%)	22 (14%)	77 (47%)	162 (100%)
35LK3059	8 (16%)	6 (12%)	1 (2%)	9 (18%)	26 (52%)	50 (100%)
35LK3065	60 (20%)	41 (14%)	8 (3%)	56 (18%)	135 (45%)	300 (100%)
Total	1,324 (4%)	3,977 (11%)	815 (2%)	7,556 (22%)	21,488 (61%)	35,160 (100%)
Total except 35LK3056	338 (17%)	298 (15%)	63 (3%)	345 (18%)	932 (47%)	1,976 (100%)

[a] Nearly all collected debitage is obsidian; basalt and chert occur only in trace amounts.

sources during population movements or seasonal subsistence rounds.

During both the inventory and testing phases, ground stone was noted at only two sites on top of Tucker Hill. Site 35LK3048 has a number of large, tabular boulders with lightly abraded grinding slicks, as well as several fragments of ground stone. The only other site to yield ground stone is 35LK2991, where an unshaped, unifacial mano and a small, tabular boulder with a grinding slick were recovered from the surface during testing operations. The paucity of observed specimens and the minimal wear noted on all ground stone artifacts suggest that seed grinding was an expedient subsistence activity which occurred incidental to other aboriginal activities, such as hunting and/or obsidian quarrying.

There are more than 50 prehistoric stacked stone features on the Tucker Hill landform, which occur in a variety of forms: C-shaped structures, linear alignments, stone rings, and cairns. The C-shaped structures are several courses high, and are generally associated with lithic debitage and projectile point fragments; they appear to be hunting blinds for ambushing large game animals. The linear alignments are also several courses high and seem to be associated with the C-shaped structures; they may be control mechanisms (e.g., drift fences) for driving game animals toward prearranged ambush points. The stone rings occur in a context which seems to exclude an interpretation as house rings; they may be "prayer seats" or some other kind of structure intended for ceremonial purposes. The numerous cairns have several possible functions, and are open to a number of possible interpretations, including hunting aids, ceremonial constructions, and the remnants of coyote traps (see below).

Table 5
OBSIDIAN SOURCES

Obsidian Source	Distance (km.)	Direction (azimuth)	Expedient Flake Tool	Biface Stages[a]				Source Total
				II	III	IV	V[b]	
Tucker Hill	Local	-	3	7	4	6	27	47 (61.8%)
Coglan Buttes	12	28°	--	--	--	1	6	7 (9.2%)
McComb Butte	15	273°	--	--	--	--	3	3 (4.0%)
Drews Creek/Butcher Flat	44	220°	--	--	--	--	4	4 (5.3%)
Spodue Mountain	67	270°	--	--	--	--	1	1 (1.3%)
Silver Lake	73	310°	--	--	--	--	1	1 (1.3%)
Guano Valley	87	128°	--	--	--	--	2	2 (2.6%)
Sugar Hill	87	172°	--	--	--	--	2	2 (2.6%)
Buck Mountain	96	171°	--	--	--	--	2	2 (2.6%)
Beatys Butte	97	108°	--	--	--	--	2	2 (2.6%)
Glass Buttes	116	15°	--	--	--	--	1	1 (1.3%)
Quartz Mountain	127	340°	--	--	--	--	1	1 (1.3%)
unknown	--	--	--	--	--	1	2	3 (4.0%)
Total	--	--	3	7	4	8	54	76

[a] Defined by Callahan (1979).
[b] Includes projectile points, as well as unidentified formed tool fragments.

Throughout the western Great Basin, stone cairns are often associated with hunting (e.g., Elston 1986:138; Fowler 1986:79, 1989:19; Pendleton et al. 1988:11). The hunting function of the cairns was twofold: (1) they served as control mechanisms to channel driven game animals toward prearranged ambush points or toward a culde-sac (either natural or constructed) where the animals could be trapped; and (2) they provided a place of concealment where hunters could hide until their quarry came within the effective range of their weapons. Typically, these cairns (often called "stone soldiers") were arranged in a line, either relatively straight or slightly curved, to channel the driven game animals in the desired direction. Linear arrangements of cairns occur at three sites on top of Tucker Hill. Two of these sites also have the C-shaped stone structures, and one of these sites is near talus pits which may have functioned as hunting blinds (e.g., Bowen 1986). At least some of the cairns at Tucker Hill, then, were probably associated with hunting.

Another common interpretation of cairns, especially in the northwestern Great Basin, is that they had a ceremonial function. For example, among the ethnographic Klamath and Modoc peoples, stone cairns were sometimes erected to assist in personal quests for esoteric knowledge or power (Ray 1963:23, 27; Minor et al. 1979:114-115).

> Certain crises in the life of the individual were occasions for observance of a quest involving fasting, isolation, strenuous artificial activities, and ritual bathing. The occasions for such ritualization were puberty, the birth or death of one's

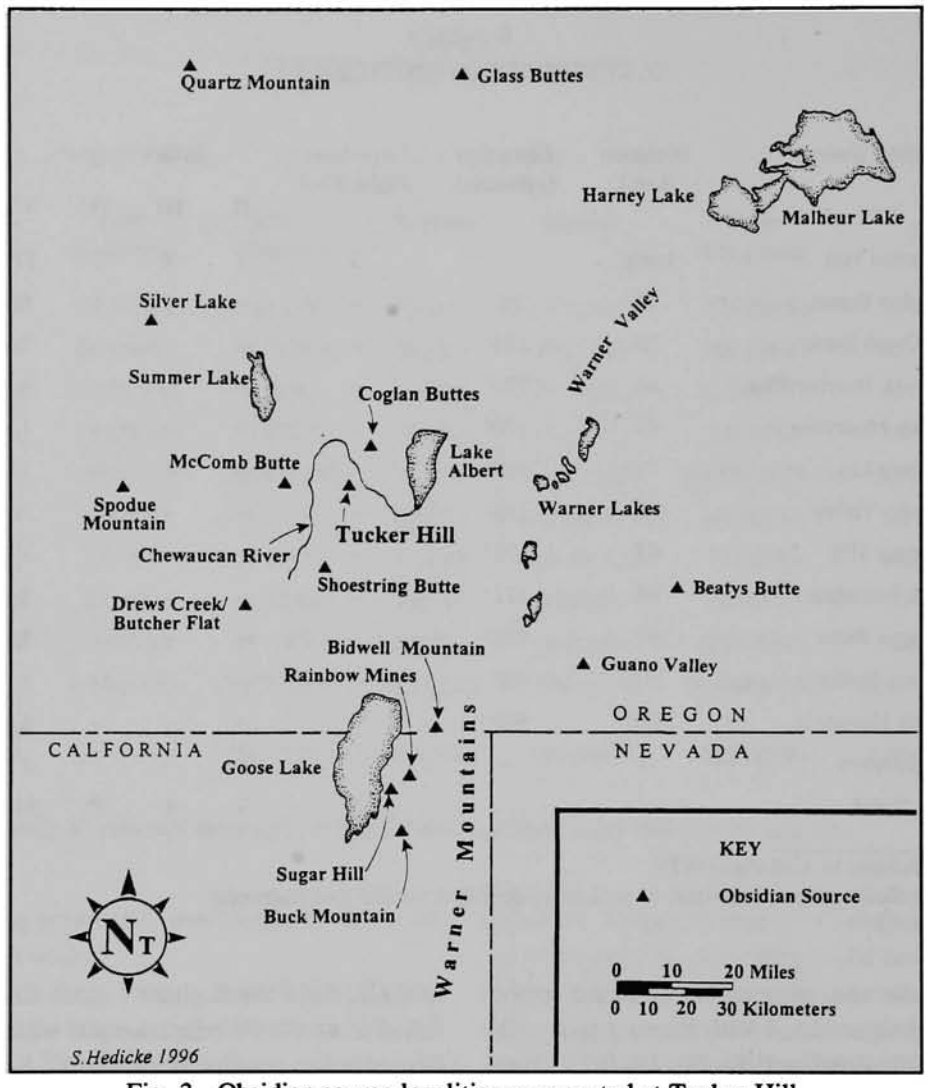

Fig. 3. Obsidian source localities represented at Tucker Hill.

child, and consistent and serious losses in gambling; also, occasionally, chronic illness, or the death of one's spouse. The basic ritual pattern was identical for all. . . . The framework of the ritual was a quest in which the individual wandered about the woods and hills in areas isolated from human settlements. That which was sought in the quest was a prophetic and satisfying dream. This was achieved by engaging in energy-consuming but economically worthless activities (such as piling rocks), followed by a short period of sleep [Ray 1963:77].

After such cairns were constructed, other individuals regarded them as places of power, and would make offerings (usually food) and say prayers at cairn locations. As Aikens (1993:36) pointed out, these cairns (often called "offering cairns") typically occur as relatively isolated features, rather than in linear arrangements. Unaligned and somewhat isolated cairns occur at four sites on top of Tucker Hill, and they were probably associated with ceremonial activities, such as personal vision quests.

Yet another interpretation of stone cairns in the western Great Basin is that they are the remnants of coyote traps. The ethnographic North-

ern Paiute constructed ingenious stone arrangements held up by a stick attached to a dead animal (e.g., a rabbit), which would collapse and pin a coyote that attempted to take the bait (Fowler 1989:26). The remnants of these coyote traps would be indistinguishable from a collapsed stone cairn. It is possible that some of the isolated cairns at Tucker Hill are the remains of coyote traps, since the ethnographic Northern Paiute formerly utilized the area encompassing Tucker Hill (Fowler and Liljeblad 1986:437, Fig. 1).

DISCUSSION

The results of archaeological investigations at Tucker Hill provide evidence for several inferences regarding the activities of the aboriginal peoples who utilized the floral, faunal, and lithic resources there. Upland hunting was an important subsistence activity conducted at Tucker Hill during both the Middle Archaic and Late Archaic periods. Procurement of obsidian raw material and manufacture of knapped rough-outs, blanks, and preforms were other important activities well attested by the numerous intermediate stage obsidian bifaces and nearly ubiquitous surface distribution of early stage obsidian debitage. Ceremonial activities involving cairn construction, such as personal vision quests, seem to be another important aspect of aboriginal utilization of the Tucker Hill landform. Although some seed processing took place on Tucker Hill (assumed from slicks), it appears to have been an incidental activity, probably to provide expedient meals while engaged in other activities.

The duration and extent of prehistoric visits to the Tucker Hill landform were limited by the lack of permanent or ephemeral sources of drinking water on Tucker Hill. No springs or seeps are currently active, no spring mounds or concentrations of organically rich soil are present to indicate that springs or seeps were active in the past, and drilling reports associated with evaluation of mining claims indicate that no subsurface pools or aquifers are present to depths of at least 400 ft. (122 m.). This sharply contrasts with the well-watered eastern Chewaucan Basin lowlands surrounding Tucker Hill (Allison 1982:16-22), obviating the likelihood of sustained logistical base camps or other modes of aboriginal habitation on the Tucker Hill landform. The conspicuous lack of drinking water, as well as the nature of the artifact assemblages, indicate that the Tucker Hill sites were aboriginal activity loci. Although some of the sites seem very large, they are best explained as palimpsests comprised of many small activity loci concentrated in favored areas, rather than as base camps.

The activity loci at Tucker Hill are generally similar to the sites at nearby Coffeepot Flat, approximately 16 km. (10 mi.) to the west (Aikens and Minor 1977). Coffeepot Flat is a large mountain meadow bounded on the north by Coffeepot Creek, a tributary to the Chewaucan River. The average elevation is about 4,950 ft. above mean sea level, which is comparable to the elevation of Tucker Hill. The presence of a creek is the major environmental difference between Tucker Hill and Coffeepot Flat, and undoubtedly accounts for the three base camps recorded at the latter site. A total of 47 activity loci was recorded as well. Like Tucker Hill, the upland floral, faunal, and mineral resources available at Coffeepot Flat included abundant obsidian nodules, and obsidian debitage is nearly ubiquitous at the sites. Aikens and Minor (1977:27-28) concluded that these upland sites were utilized during the warmer months by aboriginal people who probably wintered at the Chewaucan Marsh. The projectile point types include Gunther Barbed, Rose Spring Corner-notched, Elko Corner-notched, Elko Eared, Elko Side-notched, Northern Side-notched, Bare Creek Eared, Humboldt Basal-notched, Black Rock Concave-base, and a possible Scottsbluff point. Using projectile point chronology (no other datable materials were recovered), Aikens and Minor (1977:22) inferred a date range from historical times to at least 3,000 B.P., possibly as early as 8,000 B.P.

Tucker Hill is very similar to Far View Butte in the Silver Lake Valley (Aikens 1993:35-36; Paul-Mann 1994), a high, prominent, flat-topped butte with a panoramic view of the surrounding Fort Rock Basin and Cascade Range. Far View Butte is situated in the Connley Hills just north of Silver Lake and east of Paulina Marsh, approximately 69 km. (43 mi.) northwest of Tucker Hill. Like Tucker Hill, there is abundant evidence of aboriginal big game hunting on Far View Butte, as well as some indications of plant food gathering. Projectile point types include Rosegate series, Elko series, Northern Side-notched, Cascade, and Great Basin Stemmed, indicating a potential date range extending from historical times to the Western Pluvial Lakes period (11,000 to 7,500 B.P.). The most striking similarity with Tucker Hill, however, is the abundance of stone cairns. More than 250 cairns are widely distributed over the top of Far View Butte. Many of these occur in alignments along the southern and eastern edges of the butte, strongly suggesting that they were associated with hunting (Aikens 1993:36). Many other cairns, especially the larger ones, occur as single, relatively isolated piles of stone. Aikens (1993:36) and Paul-Mann (1994) have interpreted these cairns as visible remnants of personal vision quests (also see Ray 1963:77). The hunting and vision quest interpretations of the cairns at Far View Butte seem equally applicable to the cairns at Tucker Hill.

Oetting's (1989, 1990b) model of aboriginal occupation of the Lake Abert-Chewaucan Marsh Basin involves a fission-fusion settlement pattern from about 4,000 B.P. until shortly before Euro-american contact (i.e., during the Middle Archaic and Late Archaic periods), with dispersion to exploit and collect food resources during the warm months, followed by aggregation in winter villages. The numerous activity loci on Tucker Hill, as well as temporally diagnostic projectile points from the Middle Archaic and Late Archaic periods, indicate that the upland resources of Tucker Hill were included in this seasonal resource procurement cycle. Seasonal exploitation of upland resources during the Middle Archaic and Late Archaic periods seems to have occurred at Coffeepot Flat as well. While the portion of the Chewaucan River extending eastward from the Lower Chewaucan Marsh to the south end of Lake Abert became a focal point of village settlements during this time, several villages were located at the periphery of the marsh around the base of Tucker Hill. Subsistence resources, however, were not the only attraction at Tucker Hill. The unobstructed, panoramic view from the top of Tucker Hill can be justifiably described as inspiring; and the many unaligned, relatively isolated cairns provide visible evidence that spiritual enrichment was most likely an important aspect of Tucker Hill's resources.

ACKNOWLEDGEMENTS

We sincerely thank the anonymous reviewers, Robert Kautz, Thomas Layton, and Albert (Chip) Oetting for their comments and suggestions on a draft of this paper. The art work was done by Jerry Oothoudt and Sandra Hedicke. Thanks to Richard Hanes of the Bureau of Land Management, and to Carla Burnside, Bob Musil, and Chip Oetting of the Association of Oregon Archaeologists, for their assistance in resolving some difficult issues related to the project.

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Petroglyph Manufacture by Indirect Percussion: The Potential Occurrence of Tools and Debitage in Datable Context

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Petroglyph manufacture probably often involved indirect percussion, especially for carefully made lines and edges of larger figures. Experimental replication shows that during indirect percussion, debitage is produced from the chisel-stone that should be recoverable in archaeological context at rock art sites. Following experiments that demonstrated how the debitage is produced, this report describes its characteristic shape and provides suggestions as to what sorts of contexts might contain this evidence.

RECENT professional rock art literature has focused on traditional archaeological recovery methods and techniques at rock art sites to recover data that frequently have importance for placing rock art motifs in a chronological context or otherwise interpreting the images (Loendorf 1994). The results of such work have yielded important information for a variety of sites (Steinbring MS; Whitley et al. MS; Brink 1979; Loendorf 1990; Park 1990; Frison and Van Norman 1993). Certainly the most romanticized of these discoveries is the exposure of art images buried by dated sediments (Buchner MS; Cannon and Ricks 1986; Walker and Francis 1989), but a potentially more common and probably more useful result is the possibility of finding rock art manufacturing tools in datable context in association with rock art panels. Evidence of manufacturing activities in the form of tools and related items that have been recovered in the archaeological record include engraving implements, hammerstones, abraders (or possibly pigment applicators), and actual splatters of pigment (Brink 1979; Bahn and Vertut 1988: 57; Loendorf 1990; Bednarik 1998).

Unfortunately, only a handful of North American rock art site excavations have focused on the retrieval of archaeological materials associated with the production of rock art, and for those few that have, the effort of the investigator was often focused on searching for obvious manufacturing tools that might have worn out and been left behind. Obviously, finding such specimens requires at least three fortuitous occurrences: (1) the exhaustion of a tool at the site; (2) the discard of that tool in the immediate area of the art image; and (3) the archaeologist recognizing and recovering the tool. Even if a tool became worn past its point of functional utility, it may have been saved for