CHAPTER 7

Elk Pass Obsidian and Pre-contact Band Territory in the Southern Washington Cascades

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At the landscape level, the embedded procurement strategies of hunter-gatherer-foragers may produce archaeological distributions of toolstone material that reflect the home ranges or territories of a specific group or band. Over the past decade, a number of studies have addressed this subject, among them the work of Jones and Beck (2003), looking at obsidian as an indicator of foraging territory in the Great Basin. Another study, by Brantingham (2003), proposed that the maximum transport distances of given raw material types are equivocally related to the geographic range of a forager group. The utilization range of obsidian from the Elk Pass geochemical source in Washington State provides a case study and application of these principles from the southwestern section of the Plateau region of the U.S. Pacific Northwest.

Located in the southern Washington Cascade Mountain Range, 125 km southeast of Seattle, the Elk Pass source location is one of only 12 documented geological sources of obsidian identified to date in the state of Washington (Figure 7-1). Compared to Oregon, with 134 documented sources, obsidian was obviously much less important as a toolstone resource to the north, in present-day Washington. All twelve of the Washington sources are small, in terms of the volume of raw material present at the locations today. The archaeological distribution of obsidian from these sources is apparently also very limited, especially when compared to some of the major sources in Oregon, such as Newberry Volcano obsidian, which has been identified in archaeological assemblages more than 900 km from the geological source (Hughes and Connolly 1999). In contrast, the archaeological distribution of obsidian from the Elk Pass source is limited to a distance of only 52 km from the geological source.

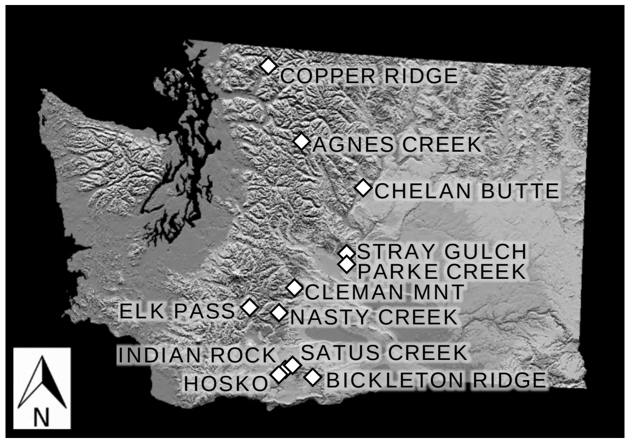

Figure 7-1. Washington obsidian sources. Adapted from "Washington Obsidian Sources" by Northwest Research Obsidian Studies Laboratory (2009). Base orthophoto courtesy U.S. Geological Survey.

The geological source of the Elk Pass obsidian has been identified as a small alpine talus field located near the crest of the Cascades in the heart of the Goat Rocks Wilderness, Gifford Pinchot National Forest, roughly 25 km south of Mt. Rainier National Park. The elevation is approximately 2,042 m above mean sea level. Obsidian nodules ranging from 7 to 20 cm in length were identified within the talus field, which is bisected by the Pacific Crest National Scenic Trail at a point just west of Elk Pass, an old trail junction. The talus field originates near the crest of a north-south trending ridge (Figure 7-2), the watershed divide between Lake Creek, on the west,

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Figure 7-2. General view of the Elk Pass Obsidian geochemical source and associated quarry site (45LE286) as viewed from Pacific Crest Trail south of the site. The view is to the north, with Mt. Rainier in the background. August 2010 photograph.

and the Clear Fork Cowlitz River, on the east. The location is 500 m west of the actual crest of the Cascade Range. Near the top of the talus field, along the crest of the ridge, are several erosional surfaces with concentrations of obsidian debitage indicating the quarrying and processing of toolstone.

Initial archaeological documentation of the obsidian source location and prehistoric quarry was conducted in 1986 and 1987, following the discovery of a reference to the site in the writings of William O. Douglas, former Chief Justice of the United States. Douglas, a life-long champion for wilderness preservation, had spent much of his youth in the Yakima area, and as a teenager had explored much of what is now the Goat Rocks Wilderness. Some of these youthful rambles are described in his memoir *Of Men and Mountains*. In a chapter entitled *Goat Rocks*, Douglas described the ridgeline tapering to the north from Old Snowy Mountain, a prominent peak along the crest of the Cascades, noting that its "farthest knob" was a hillock he had climbed "to find the obsidian rock the Indians used for arrowheads" (Douglas 1950:207). Recalling his early visits to the area ca. 1914-1918, Douglas remembered that "the obsidian lay exposed there in the sunlight, its small flaky pieces looking like bright, shiny bits of new asphalt" (1950:207). This passage is the earliest known written reference to the Elk Pass obsidian quarry, subsequently documented as archaeological site 45LE286.

During the initial archaeological investigations, conducted by Forest Service archaeologists Rick McClure and Janet Liddle, several nodules of obsidian were collected from the talus field for geochemical source characterization. The initial x-ray fluorescence (XRF) analysis of the nodules was conducted by Dr. Richard Hughes, of the Archaeological Research Facility, Department of Anthropology, University of California at Berkeley. Subsequent XRF characterization was done by Craig Skinner, Northwest Research Obsidian Studies Laboratory, Corvallis, Oregon.

Surface artifact material, consisting of debitage, shatter, and tool fragments, was observed in three non-contiguous loci, designated Area A, Area B, and Area C, where vegetation is lacking and soil erosion and deflation have occurred. It is assumed that obsidian nodules were collected from the talus field (Figure 7-3), which is comprised mainly of rhyolite material, and were then carried anywhere from 20 to 100 m to these more sheltered locations on the east side of the ridge crest for processing. Areas A through C appear to represent toolstone processing locations.

1987 field investigations at the Elk Pass site included systematic surface sampling within Area C for purposes of more detailed lithic analysis, and the excavation of a single 1-x-1-meter test excavation unit. Surface densities in Area C soil exposures average 80 obsidian artifacts per square meter, but test excavations indicate subsurface

Figure 7-3. Surface source of obsidian nodules in talus slope at the Elk Pass quarry site (45LE286). August 2010 photograph.

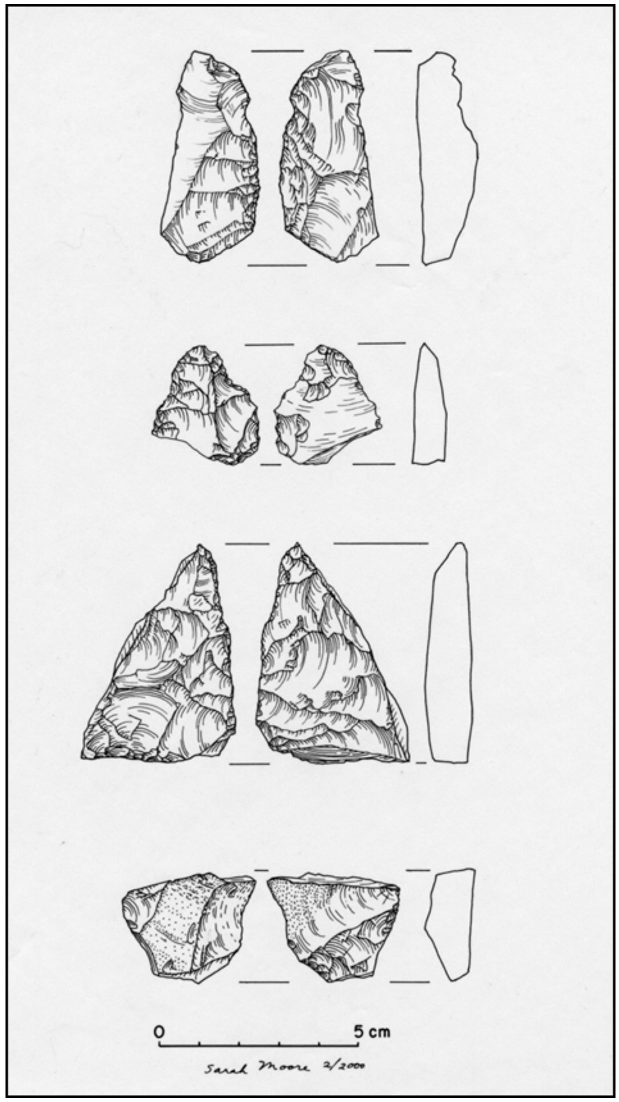

Figure 7-4. The largest of the obsidian biface blank fragments recovered in archaeological sampling at the Elk Pass quarry site (45LE286) during the 1987 field investigations. Illustration by Sarah Moore.

densities of up to 10,000 obsidian artifacts per cubic meter. A radiocarbon date of 6250 +/- 110 BP (uncalibrated) was obtained from isolated charcoal fragments found in direct association with lithic debitage at a depth of 55 cm. The vertical distribution of artifact material indicates higher concentrations of material at the lower, presumably earlier levels of the cultural deposit (Brown 2000a, 2000b:14).

Non-diagnostic debitage and shatter is by far the most common artifact category represented in the archaeological assemblage from the Elk Pass site. Lithic analysis of technologically diagnostic debitage and flaked pieces indicates obsidian core and biface reduction as the principal activities at the site, and that large flakes produced from cores were used to make bifacial blanks (Figure 7-4). There is some indication that the later stages of bifacial tool manufacture are represented in later but not in the earlier periods of site use, as indicated by the much higher frequencies of pressure flakes in the upper, presumably more recent, cultural deposits. Excessive fragmentation represented by the high counts of shatter may be attributed to the poor quality of the obsidian material (Brown 2000b:16).

Four other high elevation obsidian scatters were found within 1.6 km of the Elk Pass Quarry Site, and were recorded as separate archaeological sites. XRF sourcing confirmed the presence of Elk Pass obsidian in one of these sites, 45LE250. XRF sampling of the others has not been done, but based on proximity to the source location and visual characteristics, it is assumed that all of the surface obsidian visible at these sites is from the Elk Pass source. Ethnographic data for the local Taytnapam people indicate that traditional use of the mountain landscape in the vicinity of the quarry site was associated with the seasonal hunting of mountain goats. Many Northwest native groups of the early historic period valued mountain goats for their meat, their wool, and their horns and hooves (Lubinski and Burtchard 2004:16). The pattern may have been similar to that described for the Yakama at Mount Rainier, where the men are said to have hunted goats on the flanks of the mountain, "while their women were gathering huckleberries" each summer (Smith 2006:130). Jim Yoke, a Taytnapam elder interviewed by anthropologist Melville Jacobs in 1927, provided place-names for two locations in present-day Goat Rocks Wilderness where mountain goats were hunted, and mentioned a cave where their meat was smoke-dried (Jacobs 1934:233). Information also attributed to Jim Yoke describes an Indian "goat hunters trail" ascending Lost Lake Ridge from the upper Cowlitz River Valley (Sethe 1938). This ridge would have provided direct access to the vicinity of the Elk Pass obsidian quarry.

While archaeological samples from the alpine and subalpine sites near Elk Pass are limited, projectile points represent the dominant tool type, a pattern which tends to suggest hunting as a primary activity above treeline in this part of the Cascade

Range. Projectile points include late Holocene corner-notched arrow points and larger side-notched dart points more typical of the middle Holocene. All of the examples identified to date are manufactured from cryptocrystalline silicate (CCS) toolstone, rather than obsidian, which is the most abundant lithic raw material in evidence at this handful of high elevation archaeological sites. The ethnographic pattern of land use indicates that the hunting of mountain goats was the primary purpose for visits to this part of the Cascades. Goats remain common in the Elk Pass vicinity today. These factors suggest that procurement of Elk Pass obsidian was probably ancillary to hunting objectives.

Spatial Distribution

Archaeological investigations and XRF sourcing studies conducted to date indicate that the use of Elk Pass obsidian was confined entirely to the upper Cowlitz River watershed, west of the Cascade crest. Among the earliest archaeological investigations in this area were the preliminary reconnaissance and site documentation efforts of David G. Rice, carried out from 1963 to 1967 (Rice 1964, 1969). Documenting a private collection from archaeological site 45LE271 near the community of Packwood, Rice described three "tapered stemmed" projectile points of obsidian and suggested they were possibly derived from a local source in the Goat Rocks. Rice was aware of the reference to a possible Goat Rocks obsidian source through the writings of William O. Douglas, mentioned previously. His report provides the earliest recognition that obsidian artifact material from archaeological assemblages in the upper Cowlitz watershed may have originated from a local source in the nearby Goat Rocks Wilderness. XRF analysis would later demonstrate that obsidian from this site did indeed originate from the Elk Pass source.

XRF sourcing of archaeological obsidian in the region since 1987, when the Elk Pass material was initially characterized, has indicated a relatively limited conveyance zone for the Elk Pass obsidian. Distribution appears to be restricted entirely to the upper reaches of the Cowlitz River watershed, west of the Cascade crest. To date, a total of 104 prehistoric archaeological sites have been identified in the upper Cowlitz watershed, between the crest of the Cascades and River Mile 52, at Mayfield Dam. Of this total, 23 (22.1%) of the documented sites feature artifact material identified as obsidian. Most of the artifact assemblages are characterized by high frequencies of raw materials described as CCS, microcrystalline quartz (e.g. jasper, chert, chalcedony), or local volcanic stone, such as basalt, dacite, or andesite. XRF sourcing analysis has been conducted for at least one or more artifacts from 17 (73.9%) of the archaeological sites with known occurrences of obsidian raw materials. Results indicate that at least 12 distinct sources of obsidian are represented in the prehistoric assemblages from the area, with Elk Pass obsidian the most common at just over 61% of all sourced specimens (Table 7-1).

The overall sample size of lithic artifact material from archaeological sites in the Upper Cowlitz watershed is relatively small, and the overall size of the XRF sample even smaller (n = 160). As indicated in Table 7-1, below, the results are skewed by the larger samples from those sites that have been the focus of major data recovery excavations, such as site 45LE415. The results suggest a relationship between sample size and the number of obsidian sources represented among the lithic artifact material recovered from a given site, both in terms of volume excavated and in the number of artifacts sourced. Those sites with the largest samples usually have a greater variety of obsidian sources represented.

Archaeological assemblages from the upper Cowlitz River area are typically characterized by CCS and Cascade volcanic (basalt, andesite, dacite) toolstone, with obsidian present in much smaller quantities. Archaeological sites in closest proximity to the Elk Pass source appear to contain the highest frequencies of obsidian artifact material. While most of this material appears to have come from the Elk Pass source, other, non-local geochemical sources of obsidian are also represented.

The largest sample of XRF-sourced obsidian comes from site 45LE415, located on the floor of the Cowlitz River Valley near the community of Packwood, with about 5% obsidian represented in the lithic assemblage. Elk Pass material in the 45LE415 assemblage consists primarily of middle to late stage bifacial thinning flakes and fragments. While the majority (77%) of the obsidian sampled comes from the Elk Pass source, six nonlocal

Table 1. Obsidian sources represented in artifact assemblages from the upper Cowlitz River watershed, based on XRF analyses to date.

Site	Elk Pass	Newberry Volcano	Whitewater Ridge	Obsidian Cliffs	Glass Buttes	Glass Mtn.	Wolf Creek	Tule Springs	Quartz Mtn.	Inman Creek	Cleman Mtn.	Rimrock Spring	Unknown Source	References
45LE58				1										Hughes 1987
45LE209	1	2			1				1	1			5	Hughes 1990a; Ellis et al. 1991
45LE220	27	1	1									1	1	Hughes 1990b; McClure 1992; Skinner & Davis 1998
45LE222	5	1			2									Hughes 1990b; McClure 1992
45LE223	2	2		1										Hughes 1990b; McClure 1992
45LE249	1													Hughes 1986
45LE250	1													Hughes 1986
45LE263	1													Hughes 1986
45LE285	2													Hughes 1990b; McClure 1992
45LE271	1													Hughes 1986
45LE277													3	Hughes 1986; McClure 1988
45LE289		1												McClure 1992
45LE415	83	6	10	1			1	1			1			Hughes 1990b; Mack et al. 2010
45LE417			1		3	4							2	Hughes 1991; Flenniken et al. 1992
45LE422				5										Hughes 1992; Luttrell 1992
Warfield* #2													2	Hughes 1990b; McClure 1992
Warfield* #8		1												Hughes 1990b; McClure 1992
Totals:	**98**	**13**	**12**	**8**	**6**	**4**	**1**	**1**	**1**	**1**	**1**	**1**	**13**	**160 = XRF sample**

* - Artifacts from the Warfield collection from two sites within the drawdown zone of Mossyrock Reservoir; not yet correlated with recorded archaeological sites.

sources are represented in much smaller quantities, and likely reflect materials obtained through exchange, rather than direct procurement. These include five sources from central or southeast Oregon, and one eastern Washington source.

XRF analyses of obsidian from sites located along the Cowlitz River below and to the west of Cowlitz Falls, have identified no Elk Pass material (Figures 7-5 and 7-6). Analyses of obsidian from archaeological sites on the east slope of the Cascade Range have likewise produced no evidence for material from the Elk Pass source. A general pattern of primarily westward, downstream movement of the material is indicated, into the Cowlitz River valley and up the Cispus River, a major tributary (Figure 7-6). The sole exception to the pattern is the occurrence of Elk Pass obsidian at Tipsoo Lakes, headwaters of the Ohanapecosh River near Chinook Pass, 38 km north of the source. This would either suggest transport up the Ohanapecosh drainage, one of its tributaries, or possibly along the crest of the Cascades.

Chronology of Use

Late Holocene use of the Elk Pass obsidian quarry is indicated by the presence of sourced obsidian in several well-dated archaeological assemblages (McClure 1992:78). The youngest is a component of the *Awxanapakash* site (45LE220) associated with radiocarbon dates between 430 and 500 B.P. (uncalibrated). Hydration band measurements for the sample (n=27) of Elk Pass obsidian from this site range from 0.8 to 1.1 microns. The *Akushnesh* site (45LE285) assemblage includes Elk Pass obsidian from an occupation dated between 500 B.P. and 1100 B.P. Means derived from the series of six hydration band measurements obtained for two specimens were 1.7 microns and 1.9 microns, respectively. The Judd Peak Rockshelters

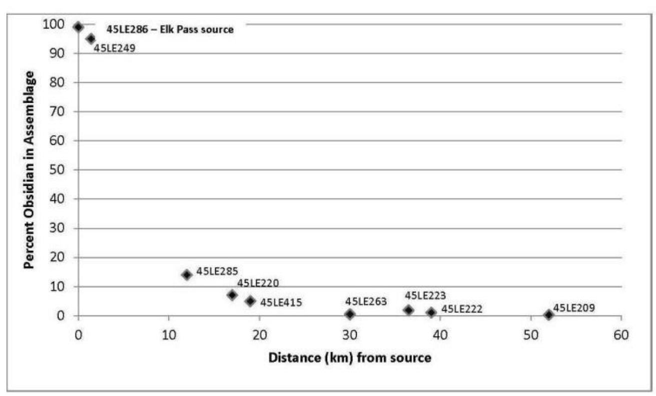

Figure 7-5. Obsidian percentages with distance from Elk Pass source (45LE286), based on excavation samples.

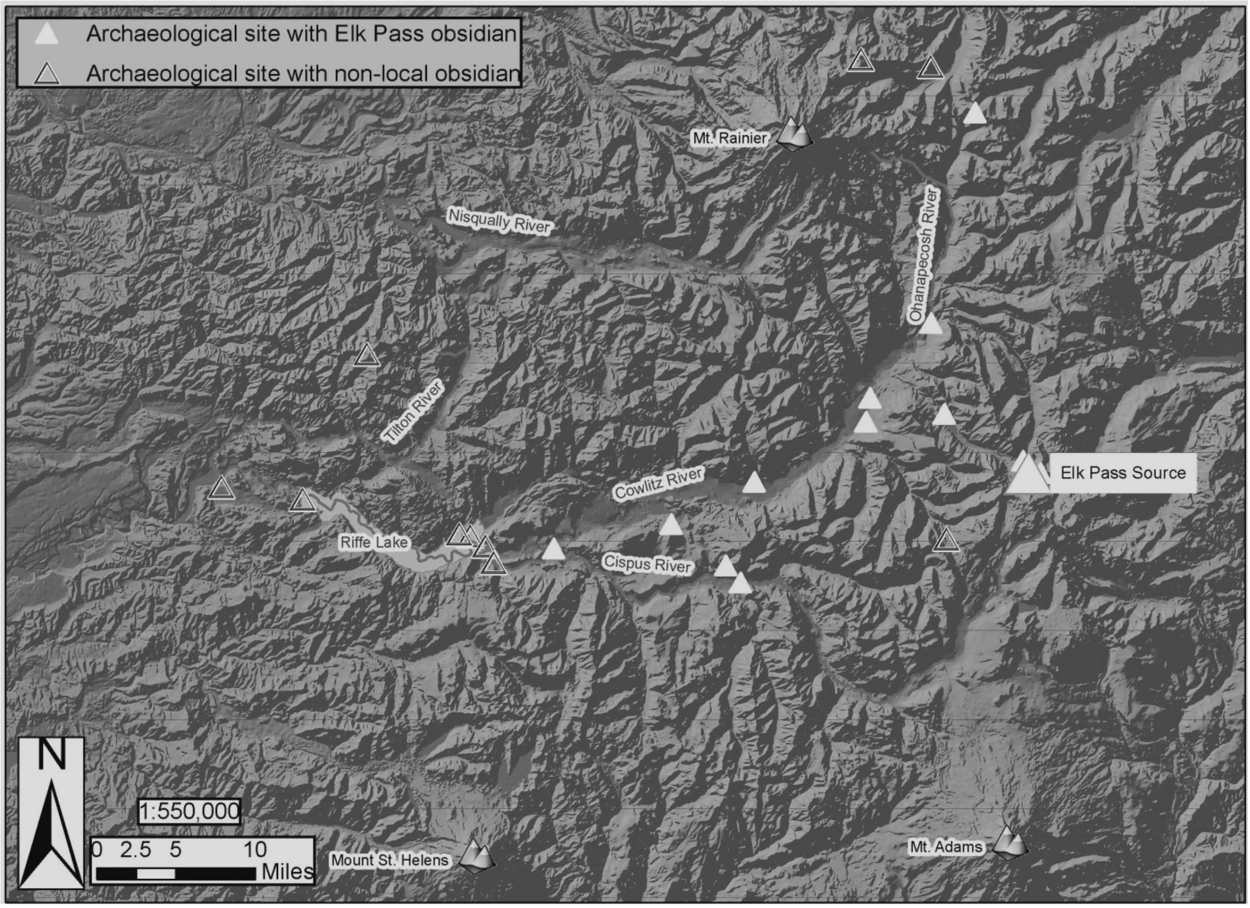

Figure 7-6. Spatial distribution of Elk Pass obsidian, upper Cowlitz River watershed. GIS map Heritage Program, Gifford Pinchot National Forest, produced by Chris Donnermeyer.

(45LE222) produced Elk Pass obsidian from a cultural stratum dating between 800 B.P. and 1100 B.P. Two pieces of debitage were subjected to hydration analysis. One specimen had no visible hydration band; the second produced two sets of measurements from different surfaces, one with a mean of 3.1 microns, the other with a mean of 4.3 microns. This artifact may represent older lithic material recycled for use by later site occupants.

Middle Holocene use of the Elk Pass quarry is indicated by the presence of sourced obsidian in Stratum II at Layser Cave (45LE223), with an associated radiocarbon date of 5200 +/- 170 B.P. (uncalibrated), and the deeper Stratum X, with an associated radiocarbon date of 6650+/- 120 B.P. (uncalibrated). Site 45LE222 produced Elk Pass obsidian from a cultural stratum dating to 5930 +/- 120 B.P., and the Elk Pass quarry itself produced a high volume of debitage in association with charcoal dating to 6250 B.P. Mean hydration band measurements from two Layser Cave artifacts were 2.5 microns and to 3.1 microns, respectively. The artifact from the earlier stratum at 45LE222 produced a mean hydration band measurement of 3.7 microns.

The earliest use of Elk Pass obsidian in the upper Cowlitz watershed is indicated from the large sample recovered during excavations at the Beech Creek site (45LE415). The early component of the site is dated to 9,200 ± 500 B.P. (Mack et al. 2010:133). Relative chronology established through obsidian hydration analysis, as well as radiometric dating, indicates very early use of both non-local and Elk Pass obsidian. Early, non-local sources include Whitewater Ridge, Wolf Creek, and Tule Springs material, all from southeast Oregon (2010:126). The frequency of Elk Pass obsidian is higher in the later components of the site, which also feature non-local obsidian from Newberry Volcano, also located in southeast Oregon. Mean hydration band measurements for the sample (n=83) of Elk Pass obsidian from 45LE415 range from 1.2 to 4.0 microns (Mack et al. 2010:130).

Elk Pass obsidian artifacts associated with radiometrically-dated components from three of the sites in the upper Cowlitz watershed (45LE220, 45LE222, 45LE223) were used to establish a tentative and approximate hydration rate for Elk Pass obsidian (Mack et al. 2010:137). The rate of hydration was calculated using the equation $M^2 = Kt$, where t is a specific point in time (e.g., radiocarbon date), M is the hydration rim thickness of an obsidian specimen from the specific dated stratum, and K is the diffusion coefficient (Michels 1973:206). A hydration rate of 1.94 microns^2/1000 years was derived from this exercise. At this rate, the hydration rim measurements for Elk Pass obsidian from site 45LE415 suggest a time span ranging from 8,224 B.P. to 758 B.P. Given the problematic variables associated with the use of obsidian hydration in absolute dating, these results at best provide a general indication that the time depth for the use of Elk Pass obsidian at this site is considerable.

Utilization Range and Group Territory

The utilization ranges for the non-local Oregon obsidians represented in upper Cowlitz assemblages are considerably greater than that indicated for the Elk Pass material. The distribution of Newberry obsidian, for example, covers much of Oregon and Washington, extending well north into British Columbia (Connelly 1999). Glass Buttes obsidian was likewise distributed throughout much of the Pacific Northwest (Steuber, this volume). In contrast, the utilization range for Elk Pass obsidian is restricted entirely to the upper reaches of the Cowlitz River watershed, west of the Cascade divide, and downstream only as far as the mouth of the Cispus River, a maximum distance of 52 km from the material source. XRF sourcing of obsidian from archaeological assemblages on the east flank of the Cascades, in the Tieton and Naches River drainages, have indicated no Elk Pass obsidian.

The utilization area for Elk Pass obsidian corresponds largely to the historic territory of the Taytnapam, a Sahaptin-speaking Plateau group that occupied the upper Cowlitz River in the early to middle 19th century. Except to the west, the boundaries of this group were largely defined by the landscape, and especially the high mountains and ridgelines that surrounded them. The western limits of the Taytnapam were in the vicinity of present-day Mayfield Reservoir, more than 50 miles up the Cowlitz River from its confluence with the Columbia. Downstream, to the west, were the Salishan-speaking Cowlitz. The farthest upriver Cowlitz villages were apparently shared with the Taytnapam (Hajda 1990:505). Three of the archaeological sites with Elk Pass obsidian correspond to historic seasonal camps or villages of the Taytnapam. These include: 45LE209, at the ethnographic site of *Koapk*, a seasonal fishing camp at Cowlitz Falls; 45LE220, at the ethnographic site of *Awxanapaykash*, a seasonal fishing camp located further upstream; and 45LE285, at *Akushnesh*, present-day Packwood Lake.

At contact, the Taytnapam were organized into eight autonomous bands (Figure 7-7). The term "band," as used by anthropologist Melville Jacobs, who worked with Taytnapam consultants in the 1920s, is perhaps best understood as simply an aggregation of family units (Jacobs 1927).

Identified bands included the *q'iyan˜*x*ła´ma*, on Kiona Creek near Randle; the *cicpacła´ma*, on the Cispus River; the *k'wpła´ma* ("falls people"), at Cowlitz Falls; the *wasała´ma* at Morton; the *lalaxła´ma*, at the mouth of the Tilton River; the *swi´ktswiktła´ma* ("horsetail people") at Nesika; the *nucnuła´ma* ("nose people") at the mouth of the Cowlitz Canyon; and the *qwє´ltła´ma*, at Mossyrock Prairie, furthest downstream, to the west (Costima 1934, Jacobs 1927). The possibility of a ninth band, upriver from the *q'iyan˜*x*ła´ma,* is indicated by the existence of the village of *cawacas* "where the present town of Packwood lies" (Smith 2006).

According to anthropologist Allen Smith (2006), each of these bands "had a recognized geographical locus, the name of which it bore." Smith argued that each band unit could be identified with a specific winter settlement within their valley section. With regard to band territory, his consultants agreed that "tribal limits corresponded to the crests of the mountain ranges" and that particular group could "more or less effectively exploit the natural resources of rugged, forested terrain on those slopes which faced their tribal center or villages." Citing Curtis (1911:160), for his study of the Yakama, Smith notes that hunting and collecting territory was often the common property of several bands.

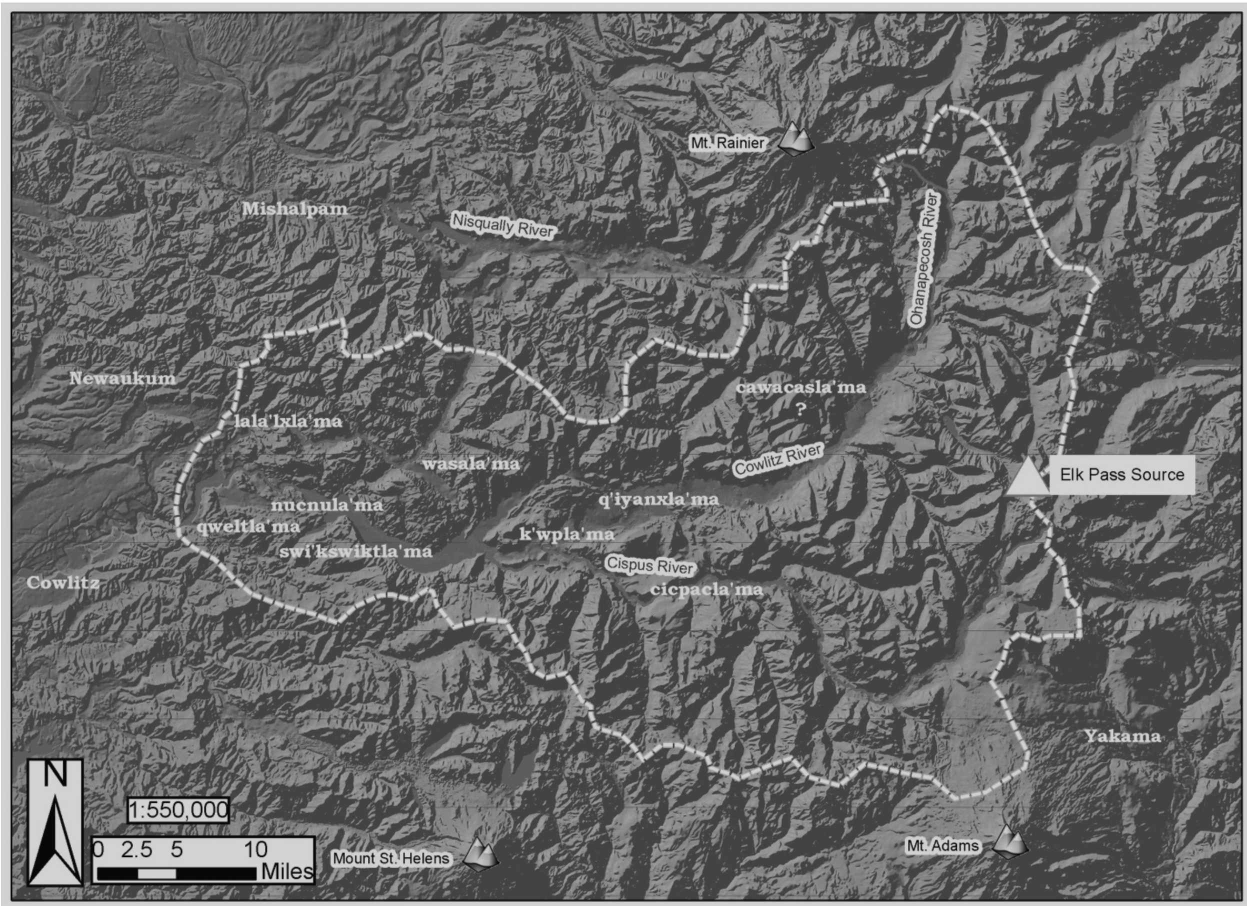

Figure 7-7. Upper Cowlitz River watershed with historic period Upper Cowlitz Taytnapam territory indicated by a dashed line. Locations of individual bands and neighboring tribal groups are also indicated. Gifford Pinchot National Forest GIS map produced by Chris Donnermeyer.

The conveyance zone for Elk Pass obsidian includes the territory of the four upriver Taytnapam bands. No Elk Pass obsidian has been identified within the territory of the other four bands, located downstream, to the west of Cowlitz Falls. The distribution of the obsidian may well correspond to the foraging territory of the ancestral population, and reflect the range of those with direct access to the source. The fact that the material does not occur within the historic territory of the four western Taytnapam bands is intriguing, and suggests the possibility that toolstone distribution may also serve an indicator of expansion or contraction of group territory through time.

On the basis of the spatial distribution pattern, two hypotheses emerge, and both merit further exploration. Both assume direct, embedded procurement as the mechanism for acquisition of the Elk Pass obsidian and simple forager/collector band organization through time. The first is that all of the upper Cowlitz area population, from Koapk (Cowlitz Falls) east and upriver, had direct access to Elk Pass obsidian throughout time, regardless of specific band affiliation. This would say something about the degree of band affinity, and perhaps group identity. The second hypothesis is that for much of the pre-contact period, the upper Cowlitz area was occupied by a single band, perhaps also suggesting lower population density and higher mobility. If populations increased in the late prehistoric period, as Burtchard (1998) has suggested, then perhaps one band eventually split to become two, then four, and eventually eight or nine by the time of contact.

The caveat, of course, in considering the relationship between historic group territory and ancestral group territory is the span of time represented by dated assemblages with Elk Pass obsidian. As we have seen, the most recent dated occurrence of Elk Pass obsidian is from ca. 430-500

B.P., about 300 years before the first historic contact with non-native people. Much can occur in three centuries' time, but there is nothing in the archaeological record, nothing in the historic record, and nothing in the oral traditions of the Taytnapam to suggest radical upheaval, population shifts, or significant changes in group composition during this period. These things would come later, in the decades after contact.

The limited spatial distribution of Elk Pass obsidian is likely related to the structure, composition, and mechanical properties of the stone. Spherulite inclusions are located throughout the matrix, and microfractures exist throughout much of the archaeological and geochemical source material observed. Preliminary replicative flintknapping experiments suggest that these physical characteristics limited the ability to control bifacial reduction, resulting in a high rate of production failure and shatter (Jeffrey Markos, personal communication 1989). These factors likely constrained utility and value. Compared to nonlocal obsidians, Elk Pass material was probably a low value lithic resource, unsuitable for trade and exchange. The general lack of finished formed tools, particularly projectile points, lends support to this material assessment.

The high value, non-local sources of obsidian represented in the area, such as Newberry Volcano, or Obsidian Cliffs, have very large ranges of utilization, and, I suspect, provide a greater challenge to the identification of direct procurement versus exchange territory. For its very differences, the Elk Pass obsidian is much more suited to the isolation of the range of a specific forager group.

Summary and Conclusions

The Elk Pass obsidian source is one of only 12 geochemically distinct primary sources of obsidian identified to date in the state of Washington. Archaeological investigations in the southern Cascade Mountain Range have shown that lithic raw material obtained from this source was used for tool manufacture throughout much of the pre-contact period. Aside from a small cluster of alpine sites near the toolstone source, Elk Pass obsidian has been identified in samples from only 11 archaeological sites, all but one of which occur within the upper Cowlitz River watershed no more than 52 km from the source location. Use of material from this source appears to have been limited. For the majority of archaeological sites where this material has been identified, obsidian represents a very small percentage of the toolstone assemblage.

The very limited investigation conducted to date regarding the distribution, character, and use of Elk Pass obsidian suggests the following as tentative conclusions: (1) Elk Pass obsidian was a low-value resource, largely unsuitable for exchange; (2) group territory within the conveyance zone of this obsidian was likely constrained by mountainous topography; (3) the source location and limited spatial distribution suggest direct access, embedded procurement by a single band or related group of bands; and (4) distribution of Elk Pass obsidian closely approximates the historic territory of the Taytnapam, and particularly the four upriver bands of this group. Although tentative, this study demonstrates the potential that similar studies of other minor sources of obsidian may offer, with respect to understanding the relationship between toolstone transport/distribution and forager/collector territory and range.

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