Chapter 4. Linking the Archaeology and Ethnobotany: An Interpretation of Ancient Plant Remains from Stk'emlupsemc Traditional Territory

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Abstract

This chapter analyses charred plant assemblages from the archaeological site EeRb 140, a Late Period open-air site situated on mid-altitude terraces along the South Thompson River. Over 30 taxa of plants were recovered from two hearth features, many of them edible, including five types of berries, two types of nuts and an edible root, as well as a variety of species that were most likely used as fuel and matting. To interpret the human activities represented at EeRb140, we compared and contrasted the assemblages with the ethnobotanical record as well as with archaeobotanical assemblages from other Late Period archaeological sites in the region, while bearing in mind the distinct characteristics and associated artifacts (e.g., lithic and faunal) of the hearths. The patterns suggest that EeRb 140 was a multi-purpose, seasonally employed work area, probably used by women from a nearby pit-house village in the spring and summer for preparing, and possibly preserving, roots and berries.

Keywords: *Paleoethnobotany, macrobotanical assemblages, plant-processing sites, women's activities, Secwepemc, Plateau archaeology*

Introduction

This chapter discusses plant remains recovered from the archaeological site EeRb 140 (860 ± 60–160 ± 50 BP uncal), an archaeobotanical assemblage that is unique in the prehistory of the Canadian Plateau in terms of its species composition and archaeological contexts. Radiocarbon dates indicate that EeRb 140 was used by repeatedly by hunting-gathering-fishing peoples between approximately 900 and 100 years ago. More than 30 taxa of plants were recovered here, many of them edible and known (ethnographically) to have been im-

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portant foods of recent Plateau peoples, including five types of berries, two types of nuts, and the charred tissue of nodding onion (*Allium cernuum*). In combination with the associated features, artefacts, and the location of the site itself, the remarkable range and particular species and plant parts recovered here suggest a new type of site in Plateau archaeology, one in which women's seasonal activities, including berry and root processing activities, are highly visible (Wollstonecroft 2000, 2002). From the proximity of the site to the contemporaneous pit-house village EeRb 77, in conjunction with the characteristics of the EeRb 140 plant assemblage as well as the fauna and lithic components, it appears that the site served as a seasonal work area and/or camp site that was used throughout the spring and summer by the residents of EeRb 77. It is likely that women from the pit-house village used the site to process and preserve berries and other edible plants before taking them to the winter village to store. Several other types of specialised activities are evident from the artefact and faunal materials including animal food processing, food storage, and the manufacture of lithic and bone fishing tools.

In this chapter, we present an archaeobotanical interpretation of plant assemblages from two hearth features found at EeRb 140. Charred plant macroremains are the subject of our analysis, including seeds, conifer needles, charcoal, and non-wood plant tissue. Our objectives are to interpret the types of plant-related activities that ancient people performed at this site based on: plant taxa, plant parts (e.g., fruit, stem, tuber) and quantities of each recovered, their contextual integrity, and their consistency with other aspects of the archaeological record. We also take into account Plateau ethnobotanies and ethnohistories to explain the plant-related activities that were likely carried out at the site.

We begin with a short introduction to site EeRb 140 that describes its environmental setting and situates it temporally into the archaeological sequence of the region. We then briefly review the archaeobotany on the Canadian (British Columbia) Plateau (also known as the Southern Interior) to establish a general framework for the types of plants that commonly occur at archaeological sites in this region and the archaeological contexts in which they have been found. Subsequently we explain the archaeological methods used to excavate EeRb 140 and describe the archaeological components (features and artefacts). We then explain our archaeobotanical methods of sampling and laboratory analyses. Because our interpretations are highly informed by ethnographic analogy, before presenting the results and interpretation, we diverge to explain our approach to the use of ethnographic analogy; we present two ethnobotany frameworks for interpretation that summarise the plants that were probably available in the region at the time that the site was occupied, and the reported uses of those plants. Then, we compare the archaeobotany of EeRb 140 with these archaeological and ethnographic frameworks to interpret the types of plant-related activities and the seasons and ecological zones represented by the plant assemblage.

EeRb 140: Background Information

The Environmental Setting

EeRb 140 is situated within the Interior Plateau, an inland region of western North America that extends from the 54th parallel, within the Canadian province of British Columbia, down to southern Oregon in the United States and is bordered on the west by the Coast Mountain range and on the east by the Columbia Mountains. The terrain is comprised of remarkably diverse physical geography, climate, ecosystems, and vegetation, with elevations ranging from lowlands at 100 meters (m) above sea level (asl) to alpine regions at over 3,000 m asl. Three major river drainage systems traverse the Plateau: the Fraser, Thompson, and Columbia Rivers. Local climate and precipitation conditions differ from east to west and north-south, but common throughout are extremes in climate, with very hot dry summers and cold winters, with as much as 220 days of frost annually; snow is common in the higher country until April but sparse in the river valleys (Parish et al. 1996; Tisdale 1947).

EeRb 140 (50°41'04"N 120°17'28") is located on the Thompson Plateau, near the present-day town of Kamloops, on lands belonging to the Kamloops Indian Reserve No. 1, the ancestral home of the Stk’emlupsemc, the Kamloops division of the *Secwepemc*, whose traditional territory encompasses the Mid Fraser-Thompson Drainage and surrounding Plateaus and mountain ranges (see Ignace 1998; Ignace and Ignace 2004; Ignace and Ignace this volume). This is a dramatic landscape, characterised by rolling hills that peak at almost 1,100 m asl and descend abruptly to vast river valley floors at 345 m asl. Treeless grass and sagebrush (*Artemisia* spp.) steppe lands and open coniferous forests and grasslands characterise the low and mid-altitudes, while more closely packed coniferous forests characterise the uplands.

The site is on one of the many xeric grassland and sagebrush mid-altitude terraces that demark the north and south boundaries of the South Thompson River floodplain in the vicinity of the present-day city of Kamloops. These terraces are composed of glaciolaucustrine silts and sands that were originally laid down during the Late Pleistocene by the retreating Cordilleran Ice Sheet and re-deposited by wind and erosion during the Holocene (Palmer 1975b; Tisdale 1947). Moist gullies, created by run-off from higher elevations, separate these terraces from each other on their east and west sides. EeRb 140 is located on one of the terraces on the north side of the river. The summit of this terrace, at 425 m asl, overlooks the river flood plain by about 80 m. On its north side, which we refer to as the “back”, this and the other terraces merge into a hilly incline, which in turn merges into the steeper hillsides of two mountains, Peter and Paul Peaks.

Throughout the Plateau, elevation significantly affects ecological conditions such that precipitation, temperature, soils, and vegetation vary considerably over the different altitudes. Consequently, from the river basins up through the low, mid and high elevations, diverse populations of plants and animals are found within a few kilometres. Aspect also affects the distribution of habitats, such that adjacent but opposite slopes frequently vary in climate and vegetation. Winds are another factor, especially in the higher, exposed grasslands where they prevent forest growth (Tisdale 1947).

Nine distinct ecosystems are found in *Secwepemc* territory, three of which are present in the South Thompson Valley: the Bunchgrass, Ponderosa Pine, and Interior Douglas-fir zones. EeRb 140 and the surrounding terraces are within the Bunchgrass (BG) zone, an ecosystem that is unique to the hotter and dryer southern regions of BC, where it spans valley bottoms, occasionally to up to elevations as high as 1,000 m asl. This ecosystem is predominantly shrub-steppe, grass meadowlands; numerous types of wetlands are also found in this zone (although none in the area that includes EeRb 140). It is primarily composed of xeric-adapted meadowland plants, of which 60% are bunchgrasses (*Agopyron spicatum*, *Poa sandbergii* and *Stipa comata*) and 15% shrubs, particularly sage (*Artemisia frigida and A. tridentata*) and common rabbit-brush (*Chrysothamnus nauseosus*); alkali saltgrass (*Distichlis stricta*) dominates saline meadowlands; trees are rare except for the occasional Ponderosa Pine (*Pinus ponderosa*) or Interior Douglas-fir (*Pseudotsuga menziesii* var *glauca*); mosses and lichens (*Tortula ruralis* and *Cladonia* spp.) are common and ferns are widespread at higher altitudes or in damper areas; wetland species include water birch (*Betula occidentalis*) and cattail (*Typha latifolia*) (Nicholson et al. 1991; Parish et al. 1996).

The BG vegetation that covers the EeRb 140 terrace is dominated by scattered clusters of bluebunch wheat grass (*A. spicatum*) and dense stands of sagebrush. Prickly-pear cactus (*Opuntia fragilis*) occurs here and in the nearby BG meadows where numerous geophytes also grow, such as the desert parsleys (*Lomatium* spp.) and several lilies, including mariposa lily (*Calochortus macrocarpus*), yellowbell (*Fritillaria pudica*), fool's onion (*Brodiaea hyacinthina*), and death camas (*Zigadenus venenosus*). Steep gullies on the east and west sides of the terrace, which separate it from the adjacent terraces, are home to more mesic-adapted herbaceous plants and shrub species.

The Ponderosa Pine (PP) ecosystem is restricted to hotter and dryer latitudes of British Columbia that are south of 51°N. PP zones typically span areas between the BG and Interior Douglas-fir ecosystems. Xerophytic species are also common here. On the hillsides above EeRb 140, the PP zone is characterised by open Ponderosa Pine (*Pinus ponderosa*) woodlands and bluebunch wheatgrass meadows. Berry producing shrubs such as Saskatoon (*Amelanchier alnifolia*) and numerous perennial Asteraceae are frequently found here, including balsamroot (*Balsamorhiza sagittata*) and slender hawksbeard (*Crepis atrabarba*) (Hope et al. 1991a; Parish et al. 1996).

On the uplands, above the PP zone, is the Interior Douglas-fir zone (IDF). The IDF ecosystem is also unique to the south-central regions of the province, occurring in low- to upland elevations at latitudes below 52°N. The uplands of the South Thompson River are classified within a subzone known as the Very Dry Hot IDF ecosystem, composed of open-to-closed Douglas-fir (*Pseudotsuga menziesii*) forests interspersed by pinegrass (*Calamagrostis rubescens*) meadows. Hazelnut (*Corylus cornuta*), which is presently rare within the Kamloops area, and numerous geophytes including balsamroot, spring beauty (*Claytonia lanceolata*), and nodding onion (*Allium cernuum*) are typical of this ecosystem (Hope et al. 1991b).

Significantly, according to Hebda (1995) the climate and vegetation of the South Thompson River valley have been relatively unchanged over the past 3,000 years, so the present day composition of natural vegetation is probably similar to the period when EeRb 140 was occupied. However, there has been a decrease in the distribution and abundance of many species since European contact, especially economically important root foods. Bitterroot (*Lewisia rediviva*), for example, said to be once plentiful in the Kamloops locality in the early 1900s, is no longer found in the South Thompson region (Palmer 1975a; Teit 1909). This depletion of species is largely due to the discontinuation of Native management strategies and the introduction of cattle and foreign plants (Parish et al. 1996; Peacock et al. this volume; Thomas et al. this volume; Tisdale 1947; Turner and Turner 2008). Overgrazing by cattle, for example, has in many areas lead to a loss of moisture and shifts in the floral composition to more xeric plants, typically species that can withstand cattle grazing, e.g., sagebrush (*Artemisia tridentata*). Although many of the plants that were present in the Late Period continue to thrive in this locality, it is therefore unlikely that their present-day distribution is identical to that of the Late Prehistoric period.

The Temporal Setting

Plateau archaeology is characterised as having three major cultural periods, an Early, Middle, and Late (Table 1). Little is known about the Early and Middle periods other than that people followed highly mobile, generalised, and opportunistic hunting and gathering practices based on primarily terrestrial upland resources (Carlson 1995, 1997; Stryd and Rousseau 1996). A shift to the semi-sedentary pit-house settlement systems and logistical (radiating) mobility strategies (Binford 1980), which characterised the Late Prehistoric and Historic periods, occurred between the final Middle period and early Late Period. In this paper we follow the local chronological scheme for the Late Period of the Mid-Fraser-Thompson Riv-

Table 1. Archaeological sequence for the Mid-Fraser-Thompson River drainage area (after Stryd and Rousseau 1996:Fig. 2; Palaeoclimate after Hebda 1995).

^{14}C years BP	ARCHAEOLOGICAL PERIOD	ARCHAEOLOGICAL UNITS	CLIMATE PERIOD	PALAEOCLIMATE
1200–200	LATE	Kamloops Horizon	Post-hypsithermal	modern climate
~2400–1200		Plateau Horizon		
~3500–2400		Shuswap Horizon		
~5000–3800~	MIDDLE	Lochnore Phase		
~6000–4500~		Lehman Phase		cooling trend and increase in moisture; warmer than today
~7200–5500~		Early Nesikep		
~11,000–7200	EARLY	Mixed early cultural traditions	Hypsithermal	hot and dry; warmer and drier than today
				cold and moist

er drainage area defined by Stryd and Rousseau (1996) that classifies the period into three archaeological horizons known as the Shuswap (3500–2400 BP), Plateau (2400–1200 BP), and Kamloops (1200–200 BP) (Table 1). This chronological scheme roughly corresponds with the general scheme of three broad archaeological Late Prehistoric sequences suggested by Chatters and Pokotylo (1998): Late Prehistoric I (ca. 4500–2500 BP); Late Prehistoric II (ca. 2500–1500 BP); and Late Prehistoric III (ca. 1500–200 BP). Site EeRb 140 dates from the Kamloops Horizon (Late Prehistoric III).

During late Middle Period/early Late Period significant changes in settlement patterns and demographic distributions occurred, with populations aggregating in the valley bottoms where they established pit-house base-camps. These new settlement patterns are attributed to socioeconomic re-organisation and diversification of the subsistence base. New hunting, fishing, and plant exploitation strategies were implemented that permitted people to obtain a greater range of resources within more geographically limited territories. Logistical mobility was one of these strategies; it permitted improved seasonal exploitation of the many different plant and animal habitats between the uplands and the river valleys, necessitated socioeconomic re-organisation. Dividing into specialist-led task groups, probably according to gender, age, and abilities, communities were able to exploit concurrently available resources (although it is not clear when groups began to divide their work among specialist-lead task groups and/or practice a gender division of labour). These new strategies, including the constructing of semi-subterranean permanent houses for winter occupation, intensified harvesting of seasonally-available anadromous salmon from the rivers, increased production of and reliance on stored plant and animal foods, particularly edible geophytes (dryland plant storage organs such as tubers, bulbs, corms, taproots) and became the hallmark of the Late Period Plateau Pit-house tradition (Richards and Rousseau 1987).

Late Period groups followed similar hunter-gatherer-fisher patterns but there were significant regional and local differences in demography and group socioeconomic structure (and probably language). Along the Fraser River and Upper Columbia River watersheds, villages were small, with not more than five pit-houses and probably composed of unstratified extended family groups. But villages located in the Mid-Fraser, Upper Chilcotin, Slocan, and parts of the South Thompson rivers, had as many as 130 pit-houses, some of them large, as well as relatively socially and economically stratified large populations (Morin et al. 2008; Hayden 2000).

Likewise, the diet varied among Plateau groups, with north-south and east-west differences in staple foods, due probably to ecological as well as historic differences. Stable-carbon isotope analyses on human remains from the Late Period show that, from east to west on the Canadian Plateau there were significant differences in the proportion of marine resources in the diet, with groups in the West consuming the greatest amount and groups in the east the least (Chisholm 1986: Richards and Rousseau 1987). Ecological differences undoubtedly influenced mobility patterns and some groups were probably more nomadic than others (see Teit 1909 and Palmer 1975a). Temporal developments also vary on the Plateau, e.g., the intensification of root processing began about 3,100 years ago on the Canadian Plateau, a trend that began somewhat earlier (c. 3,500 years ago) on the Columbia Plateau, although the use of pit-cooking technology in that region dates from much earlier (Peacock 2002; Thoms 1989, 2008, 2009).

The subsistence system observed at European contact is thought to have developed during final phase of the Late Period, the Kamloops Horizon (1200–200 BP) (Alexander 1992b; Rousseau and Richards 1985; Teit 1900, 1909). This period is characterised by population dispersals into smaller socioeconomic units and an apparent disintensification, resulting in a re-organization of the labour force and redirecting of labour. Large villages were permanently abandoned and smaller village communities were established again along the rivers. Economic and social practices continued from the previous period, including the logistical resource procurement strategies. From the feature and artefact evidence, we know that pit-oven processing of roots and meats continued but with some modifications (Alexander 1992b; Frieberg and Stenholm 1991; Pokotylo and Froese 1983; Turner 1997). Pit-oven features, for example, continue to occur but are fewer and smaller, averaging one meter in diameter compared with the large features found in Shuswap and Plateau Horizon sites (Frieberg and Stenholm 1991; Lepofsky and Peacock 2004; Peacock 1998).

Plateau Archaeobotany

Given the ethnobotanical and ethnohistorical evidence that plants were integral to the economies and traditions of Plateau peoples (see the authors in this volume as well as Dawson 1891, 1875–1878; Hill-Tout 1899–1911; Ignace 1998; Palmer 1975a; Teit 1900, 1909; Turner 1992, 1997; Turner et al. 1980; Turner et al. 1990), it is not surprising that whenever Plateau archaeological sites are sampled for plant remains, more often than not, they are found to contain rich and diverse assemblages (Table 2). Yet, up to recently, Canadian Plateau archaeologists typically assumed that plant remains could not be recovered from archaeological sites on the Northern Plateau, and therefore rarely sampled for them (for a discussion, see Lepofsky 2004). In fact, systematic archaeobotanical sampling, first implemented in the late 1980s with Hayden and Lepofsky's work on the Keatley Creek pit-houses (Lepofsky et al. 1996), continues to be rare in this region. Archaeologists more often infer plant gathering and processing from the presence of secondary (proxy) evidence such as digging sticks and pit-oven features.

The earliest proxy evidence of plant collecting and processing is from the Shuswap Horizon. Pecked and ground-stone pestles are found in various sites, and a small pit-oven of 1 m in diameter was found at the Parker Site in the Oregon Jack Creek valley, approximately 100 km west of present-day Kamloops. Dating from 3130 BP, this pit-oven provides rare

Table 2. Plant taxa recovered from other BC plateau archaeological sites. Key: ch = charcoal, n = conifer needle, s = seed, v = vegetative tissue.

POTENTIAL PLANT USES[1]	ARCHAEOLOGICAL CONTEXTS				
	BERRY PROCESSING[2]	PIT-OVEN SITES[3]			WINTER VILLAGE[4]
	Big Meadow	**Upper Hat Creek**	**White Rock Springs, Hat Creek**	**Keatley Creek ovens**	**Keatley Creek pit-house floors**
FOOD	*Vaccinium* (s)	*Allium* (v) Asteraceae Liliaceae (v)	*Arctostaphylos uva-ursi* (s) cf. *Berberis aquifolium* (s) cf. *Rosaceae* (s) *Rubus* (s) *Shepherdia canadensis* (s)	*Allium* (v) Ericaceae (s) *Lomatium* (v) unid. parenchyma	*Amelanchier alnifolia* (s) *Ar. uva-ursi* (s) *Cornus stolonifera* (s) Ericaceae (s) *Opuntia* (s) *Prunus* (s) *Pseudotsuga menziesii* (s) *Ribes* (s) *Rosaceae* (s) *Rubus* (s)
MEDICINE			cf. Ranunculaceae (s)		*Phacelia* sp. (s) *Silene* sp. (s)
TECHNOLOGY	Cyperaceae (s)	unid.conifer (n)	Cyperaceae (s) Poaceae (s) *Picea gluaca* (n) *Pinus ponderosa* (n) *P. contorta* (n) *P. menziesii* (n)	unid. conifer (n)	Cyperaceae (s) Poaceae (s) *Pinus* (n) *P. menziesii* (n)
MULTIPLE USES			cf. *Achillea* (s) *Chenopodium* (s)	*Chenopodium* (s) *Smilacina racemosa* (s)	Boraginaceae (s) *Chenopodium* (s) *S. racemosa* (s)
FUEL	*Populus/Salix* (ch) *P. menziesii* (ch)	unid. conifer (ch)	cf. *Alnus* (ch) cf. *Betula* (ch) *Picea glauca* (ch) *Pinus* (ch) *Populus* *P. menziesii* (ch) cf. *Salix* (ch) unid. dicot (ch) unid. conifer (ch)	cf. *A. uva-ursi* (ch) unid. conifer (ch) unid. wood (ch)	*B. papyrifera* (ch) *Pinus* (ch) *Populus/Salix* (ch) *P. menziesii* (ch)

[1] References for plant uses: Palmer 1975a; Parish et al. 1996; Teit 1900, 1909; Turner 1992, 1997, 1998; Turner and Peacock 1995; Turner et al. 1980; Turner et al. 1990; Turner et al. In Press.
[2] Frieberg and Stenholm 1991.
[3] Hayden and Cousins 2004; Nicolaides 2010; Pokotylo and Froese 1983.
[4] Lepofsky et al. 1996.

evidence of earth-oven technology and the use of upland resources in the early Prehistoric period (Lepofsky and Peacock 2004; Peacock 1998; Richards and Rousseau 1987).

Evidence of the intensification of root processing, beginning during the late Shuswap (Late Period 1) and Plateau (Late Period II) Horizons on the Canadian Plateau, has been inferred from increases in the number of pit-oven sites found in the uplands, increases in the number of pit-oven features at each site, the massive size of some of these features (up to seven meters in diameter), and evidence of their frequent re-use (Lepofsky and Peacock 2004; Peacock 1998, 2002; Pokotylo and Froese 1983). These pit-oven sites appear to have been situated adjacent to root-harvesting grounds and to have been used to mass process the edible roots, probably species in the Liliaceae and Asteraceae plant families.

Intensification is suggested by the labour organisation and concentration of labour that was necessary to construct and maintain the ovens and for the mass collecting and processing of the root foods as well as for the collecting of other materials required for pit-cooking, such as fuel, rocks, and vegetation for lining the pit and wrapping the foods (Peacock 1998). Mass collecting and processing of root foods has been inferred from the number of features found at each site, e.g., more than 100 ovens occur within 38 sites in the Oregon Jack Creek Valley, 84 within 44 sites in the Upper Hat Creek Valley (near Oregon Jack Creek) and 102 within 35 sites at the more northerly Potato Mountain. Of particular relevance here is *Ck'emqenétkwe* (*"Komkanetkwa" or* Scheidam Flats), an upland valley on Stk'emlupsemc lands located about 8 km from Kamloops and site EeRb 140. Here, 61 root processing sites, containing a total of 170 earth ovens, were identified in a series of survey carried out between 1969 and 1995 (Peacock 1998, 2002). Peacock (2002) reported that the *Ck'emqenétkwe* pit ovens are typically 1.5 to 4 m or more in diameter and have a depth of 25–80 cm.

The first direct evidence of plant use on the Canadian Plateau was Ketcheson's (1979) archaeobotanical identifications of charred plant materials from the Upper Hat Creek Valley pit-oven sites, which were excavated by Pokotylo and Froese (1983). Ketcheson identified several bulbs as *Allium* species and seeds of Asteraceae and Liliaceae. Other charred botanical materials identified by Ketcheson include the needles and branches of an unidentified conifer, which she interpreted as fuel or pit-oven lining (Table 2).

A recent rise in interest in pit-ovens has resulted in several new archaeobotanical studies of Canadian Plateau pit-oven sites. They include Peacock and colleagues' on-going investigations at the root processing site known as White Rock Springs (EeRj 226) site in the Upper Hat Creek Valley (Peacock et al. 2007; Peacock et al. 2009; Peacock et al. 2014; Pokotylo et al. 2008) and Nicolaides' (2010) archaeobotanical analysis of three earth ovens there, as well as analyses of eight pit ovens at the Keatley Creek winter village (Hayden and Cousins 2004) and six ovens at *Ck'emqenétkwe* (Peacock 1998, 2002). The results of these archaeobotanical analyses (Table 2) are surprising in that few root foods were recovered: Hayden and Cousins (2004) tentatively identified *Lomatium* spp. and *Allium* spp. tissue from the Keatley Creek pit-ovens. This pattern may be due to the fact that, according to the ethnographic information (Turner et al. 1990; Turner et al. forthcoming), Plateau people typically wrapped food items before they were placed in the pit-ovens, reducing the likelihood of spills. This pattern may also reflect taphonomic and preservation problems. Charred plant tissue is fragile and vulnerable to mechanical damage such as the re-use of the pit-oven during prehistory and/or recently during archaeological recovery (Hather 1993).

Among the other plant remains identified from the pit oven sites, charcoal from the White Rock Springs and *Ck'emqenétkwe* sites was identified as *Populus* spp., Douglas-fir, and pine, which in this part of the Plateau were most common woods used for fuel (Lepofsky et al. 1996; Wollstonecroft 2002). A variety of seeds were also recovered from the White Rock Springs and Keatley Creek pit-ovens (Table 2); only *Chenopodium cf. capitatum* seeds were recovered from *Ck'emqenétkwe* (Peacock 2002).

Another pit-oven site that is of relevance here is Lucky Break on Lake Wenatchee in the Cascades of Washington State, analysed by Frieberg and Stenholm (1991). Dating from 500 to 600 BP, this Late Prehistoric III feature is temporally more contemporaneous with our site than the pit-ovens discussed above. Compared with the size and depth of the massive Plateau Horizon (late Prehistoric II) pit-ovens, the Lucky Break pit-oven was notably shallow, measuring less than a meter in diameter and 7–10 cm deep. Frieberg and Stenholm (1991) interpreted this site as a roasting pit for biscuitroot (*Lomatium* spp.), which they based on the recovery of two possible foods, *Lomatium* root and a lily (*Allium* spp.) seed. From the charcoal they identified Saskatoon, alder and an unknown coniferous wood, which they interpreted as fuel, and coniferous branches and needle fragments as pit-oven lining.

Except for the present study (see below), few other types of Plateau plant-processing sites have been sampled for archaeobotanical remains. The best example is the berry-processing site of Big Meadow Camp in the Cascade uplands of Washington State. Here, Mack and McLure (2002) recovered the seeds and fruit tissue of blueberry or huckleberry (*Vaccinium* spp.), seeds and stems of a sedge (*Scirpus validus*), which they interpreted as matting, and fragments of willow and Douglas-fir charcoal, which they interpreted as fuel. Significantly, Mack and McLure interpreted the plant assemblage as representing a specialised berry-processing site, based on their previous ethnobotanical studies of berry processing by Native groups in the area.

Winter villages would be expected to produce a highly diverse plant assemblage, compared with specialised root- and berry-processing sites, given that a range of routine activities probably took place in and around the pit-houses. Indeed Lepofsky's (Lepofsky et al. 1996) analysis of flotation samples from the roof, rim, and pit-house floors of three of the Keatley Creek winter village pit-houses resulted in the recovery of more than 80 plant taxa from seeds, needles, buds, charcoal, and bark (Table 2). Of the identified plants, most are known ethnographically to have been of economic and cultural significance to Plateau First Peoples, including the *Nlaka'pamux* (Thompson), *Secwepemc and St'at'imc First Peoples* (Turner 1992, 1997; Turner et al. forthcoming), whose traditional territories meet in the Keatley Creek area. The seed assemblages recovered from the pit-houses provided evidence for the gathering edible berries, including Saskatoon (*Amelanchier alnifolia*), cherry (*Prunus* spp.), wild rose (*Rosa* spp.), Solomon's seal (*Maianthemum* spp.; syn *Smilacina* spp.), kinnikinnik (*Arctostaphylos uva-ursi*), red-osier dogwood (*Cornus stolonifera*), gooseberry/ *current (Ribes* spp.) and blackberry/thimbleberry (*Rubus* spp.). The seeds of prickly-pear cactus (*Opuntia fragilis*) were also identified. The pads of prickly-pear cactus are known ethnographically to have been used as foods by Plateau groups, however, Lepofsky interpreted the *Opuntia* seeds, along with non-food seeds of grasses (Poaceae), sedges (Cyperaceae), Chenopodium, *Silene* spp., *Phacelia* spp., and stoneseed (*Lithospermum ruderale*) as having been unintentionally introduced. Douglas-fir and Ponderosa Pine (*Pinus ponderosa*) needles were distributed around the periphery of the pit-house floors, which Lepofsky et al. (1996) interpreted as sleeping areas. Most of the grass and chenopod seeds were also found in those areas. Fuel wood was identified from the charcoal as pine, cottonwood (*Populus* spp.), and Douglas-fir (*Pseudotsuga menziesii*). Each of the examined pit-houses, which differed in size and artefact assemblages, produced significantly different plant (and fauna) assemblages in terms of species richness, which accorded with Hayden's interpretation of the Keatley Creek Village community as a highly socially stratified society (Hayden 1992, 2000; Lepofsky et al. 1996).

Table 2 summarises the plant assemblages from Upper Hat Creek, White Rock Springs, the pit-oven and domestic contexts of Keately Creek and the Big Meadow berry processing sites. We return to this table later (below) and to compare our results from EeRb 140 with the plant assemblages from these five sites.

The Archaeological Components of EeRb 140

Site EeRb 140 is one of 60 archaeological sites identified on the terraces in the 1990s by George Nicholas, which are discussed in detail by Nicholas and Westfall (Chapter 3, this volume). Some of these sites were first reported more than 100 years ago by Harlan I. Smith (1900) who, employed by Franz Boas as part of the Jessup Expedition, travelled through this region in 1897. Smith carried out surface collecting of artefacts at various sites on the terraces and found objects dating from the early and middle parts of the Late Prehistoric Period (c. 3,800–1000 years ago), including a decayed cedar canoe, burials covered in matting, a birch-bark dish, bone tools, stone pipes, and beads.

Radiocarbon dates indicate that EeRb 140 was used repeatedly during the final part of the Kamloops Horizon of the Late Prehistoric, between approximately 900 and 100 years ago. However the presence of diagnostic artefacts from the two earlier Late Prehistoric Period horizons (the Shuswap and Plateau), combined with an apparent mixing of the cultural stratigraphy, suggest that the site was used repeatedly from c. 3,500 years ago up to recent times. Moreover, even earlier Middle Prehistoric Period (7,200–3,800 years ago) occupations have been inferred from the presence of microblades, notched cobbles, and diagnostic points (Nicholas and Tryon 1999).

The site covers an area of about 45 x 50 m. In field seasons from 1991 and 1996, George Nicholas and his teams of field school students excavated thirty-five square meters of the area (Figure 1). They excavated in 1 x 1 m units, which were dug in five centimetre arbitrary levels, with the exception of deeper cultural strata of some features that were excavated in natural layers. The "front" of the terrace, i.e., south part that overlooks the river floodplain, appeared to have been more heavily used because *in-situ* features were found here including the Units 30 and 32 features, which are the subjects of this chapter.

The artefact and faunal assemblages suggest that several types of specialised activities were routinely carried out at EeRb 140 including the manufacturing of lithic and bone tools, animal food processing, and food storage. Among the bone artefacts were needles and a large bone point. Dentalia shell from the coast, birch bark rolls, and shell and bone beads were also found here. Lithic (primarily basalt) artefacts and debitage were found at EeRb 140 in significant numbers, suggesting that both the manufacture and use of stone and bone tools were carried out here (Nicholas and Tryon 1999). The lithic assemblage included hafted and hand-held drills, retouched flakes, and hammerstones, the latter are thought to have been associated with stone tool manufacture. Among the other stone artefacts were unifacial and bifacial tools are thought to have been used for bone working, key-shaped scrapers for making arrow-shafts and endscrapers possibly for hide working and notched cobbles, which were probably used as fishing net-sinkers. Features were found in the south (front) of the site. Two *in-situ* features were identified in the upper levels of the Unit 30 and Unit 32 excavation squares and one in the lower levels of the Unit 30 excavation square.

The Unit 30 excavation square contained two nested features, a hearth in the upper levels (5–35 cm below the surface (bs) and bark-lined pit in the lowest levels (50 to 85 cm bs), which were separated by a narrow "transition zone" (Figure 2), at 35–50 cm bs, that contained some rock and birch bark, although the latter appeared to be an intrusion from the feature below. Horizontally, the Unit 30 hearth (upper feature), which is the subject of the present discussion, covered an area of approximately 80 cm in diameter (Figure 3). Excavation of this feature produced charcoal, partially burned wood, and fire-altered rock as well as a dentalium shell, a basalt core, a roll of birch bark, and numerous fragments of deer bone.

The Unit 30 lower feature, a bark-lined pit, contained the articulated vertebrae of a fish, thin wooden sticks, small birchbark rolls and large sheets of birch and Ponderosa Pine bark, and fire-altered rock at the base. The side walls were lined with birch and Ponderosa Pine bark strips. Significantly, there was no evidence of an *in situ* fire within this feature. Nicholas (1996 and in Nicholas and Tryon 1999) inferred that it had initially been created for storage and later used for rubbish.

The other feature of interest here, the Unit 32 hearth (Figure 4), was located approximately two meters south of the Unit Hearth, closer to the south edge of the terrace (Figure 1). This square was excavated to a depth of 40 cm below surface (bs) and three layers were identified, with the hearth situated in Layer II. Compared with the Unit 30 hearth, the Unit 32 hearth was shallow, with a thickness of only 5 cm extending between 15–20 cm bs. Horizontally it covered a horizontal area of about 40 x 50 cm. It contained a relatively high concentration of

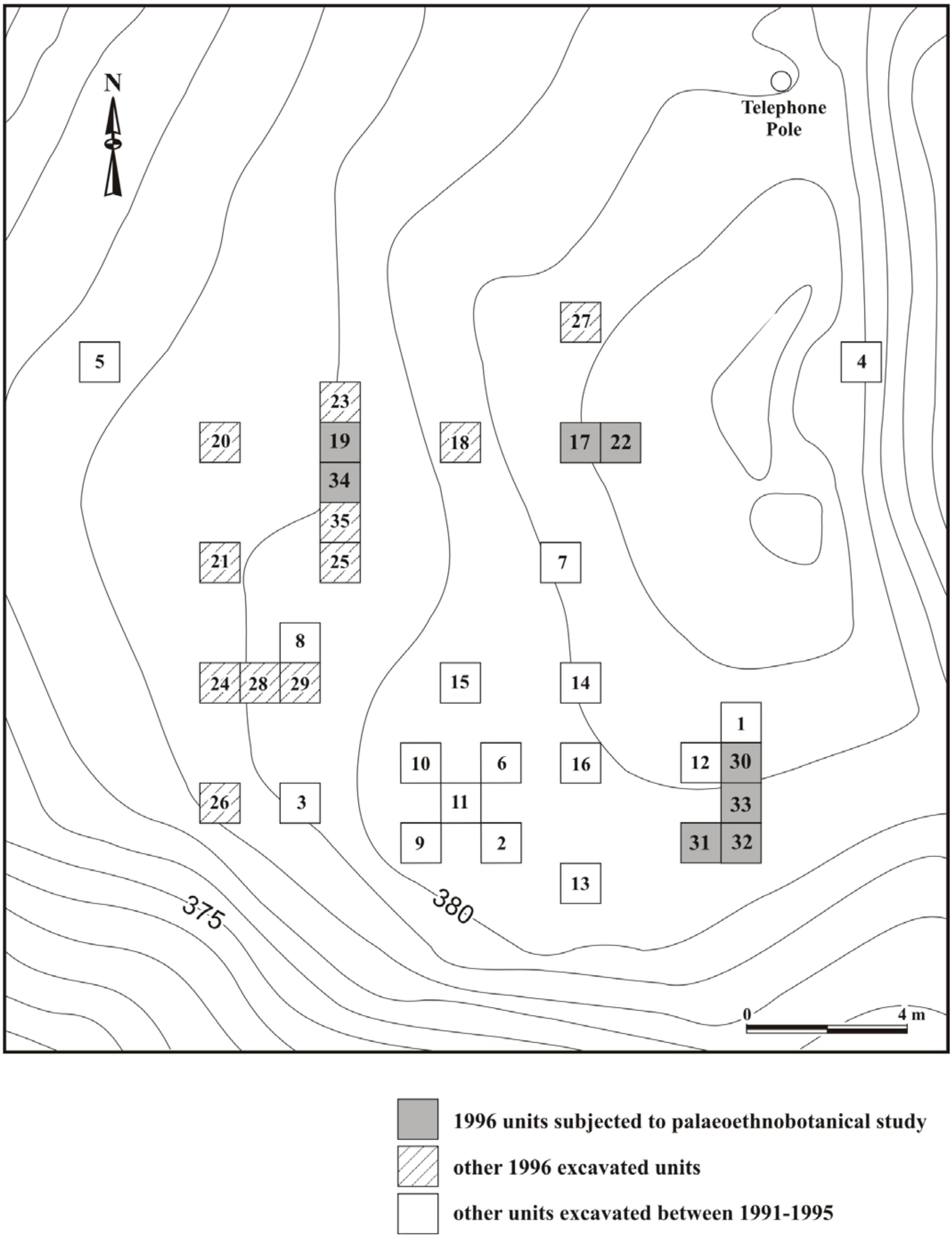

Figure 1. EeRb 140 site map (after Nicholas 1996).

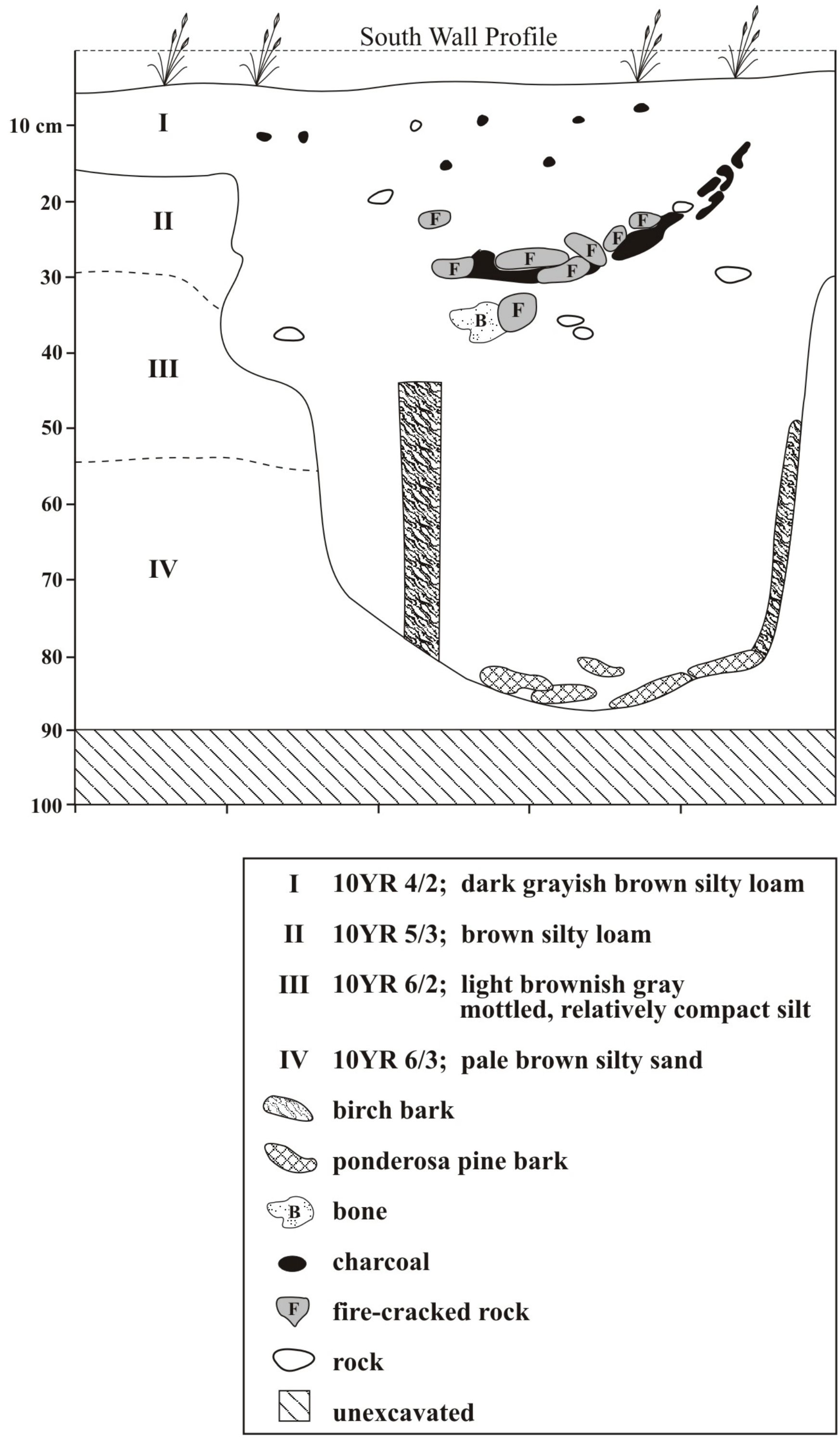

Figure 2. Profile of the Unit 30 features, upper (hearth) and lower (bark-lined pit), as seen from the south wall profile of Unit 1 (after Nicolas 1996).

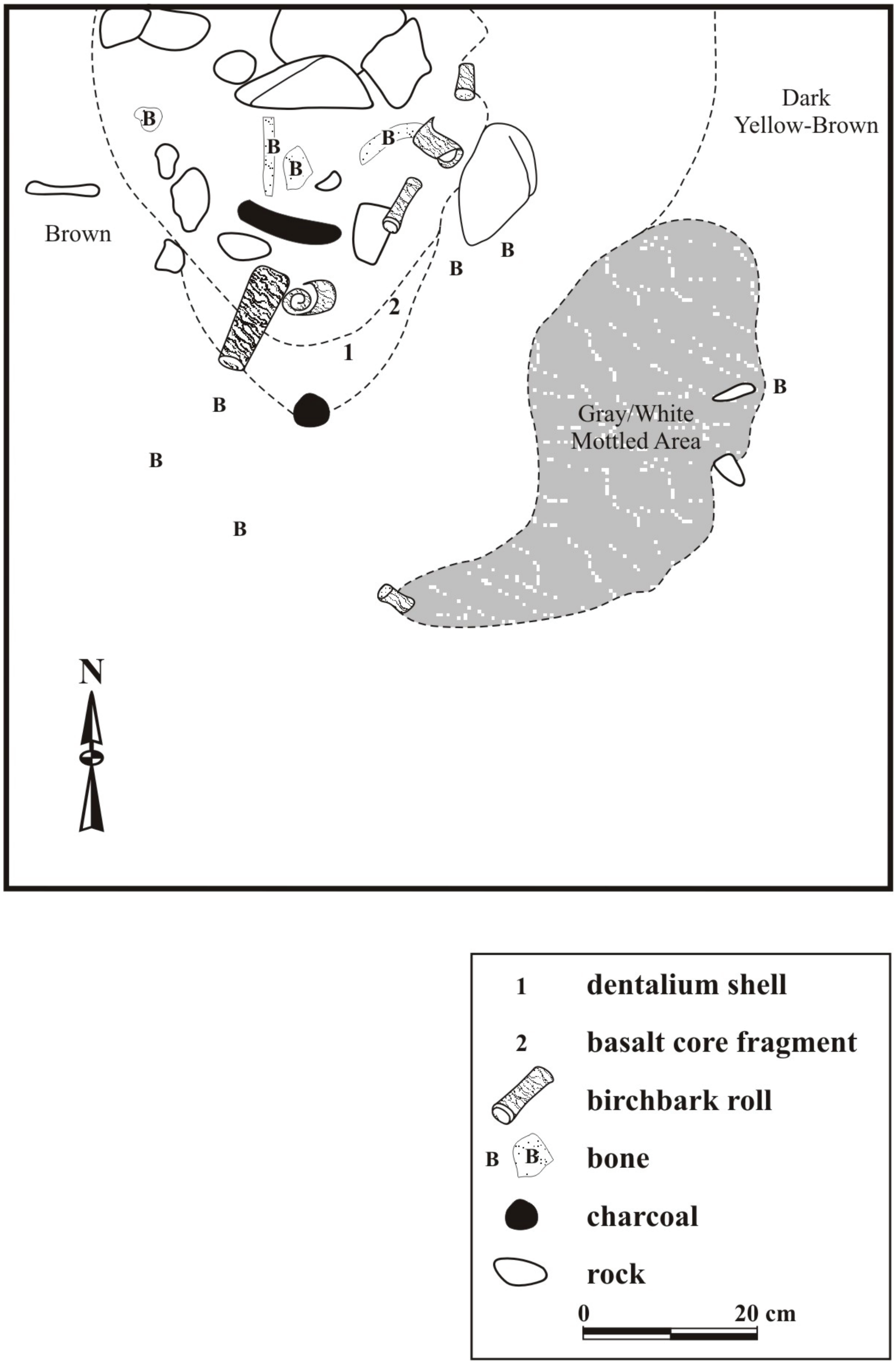

Figure 3. Plan view of the Unit 30 hearth (upper feature) at 15 cm bs (after Nicholas 1996).

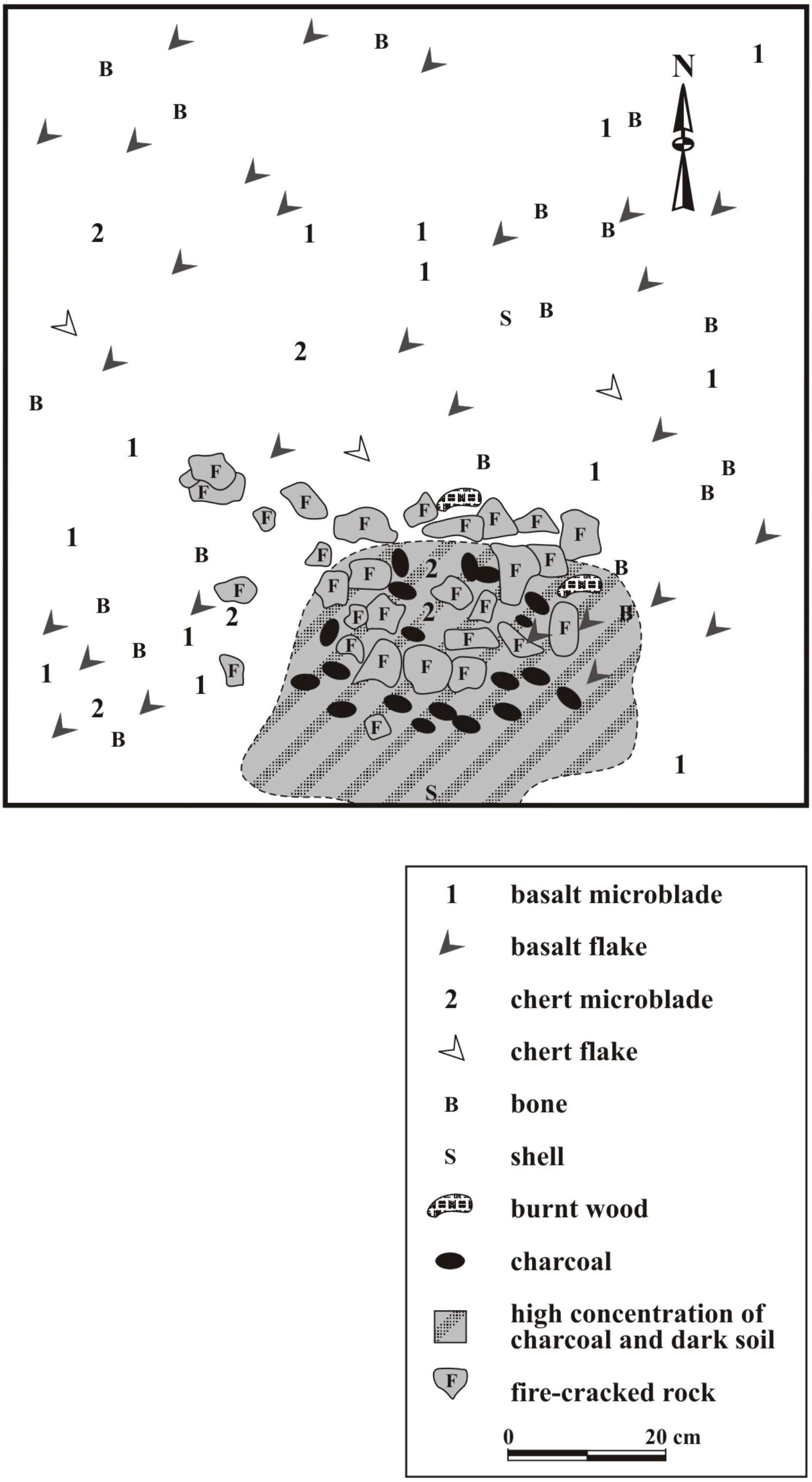

Figure 4. Plan view of the Unit 32 hearth at 10-15 cm bs (after Nicholas 1996).

charcoal and charcoal-stained soil, as well as partly burnt wood and fire-altered rock. Above the hearth, in Layers I and II, animal bone and an uncharred birchbark roll were recovered. Chert and basalt microblades were found scattered around this hearth.

EeRb 140: Archaeobotanical Field and Laboratory Methods

Archaeobotanical sediment sampling and flotation were carried out in the 1996 field season. We processed and analysed sediment from each of the eight 1 x 1 units that were excavated in that season. The archaeobotany of the six non-feature units are explained by Wollstonecroft (2002, 2002) and is not repeated here. From the Unit 30 and 32 feature contexts, all sediment was collected for flotation. From Unit 30 a total of 20 flotation samples were collected: nine from the upper (hearth) feature, with a total volume of almost 34 litres (L); three from the transition zone, with a total volume of 11 L; and eight from the lower (pit) feature, with a total volume of 30 L. From Unit 32 a total of eight samples, with a total volume of 33 L were collected, four of them from in and immediately around the hearth. Sediment samples were processed with bucket flotation, using a geological sieve with a mesh size of 425 μ.

Laboratory analysis was conducted in the Archaeology Department of Simon Fraser University (Burnaby, Canada) in 1997 using standard palaeoethnobotanical techniques. Meiji EMZ-TR binocular light microscope with a magnification range of 10–60X was used to sort the flotation samples, to identify the seeds, and to distinguish morphological features of the charcoal and non-wood plant tissue. A Zeiss metallurgical microscope with magnifications of 100–500X was used to distinguish the anatomical features of the wood charcoal. A Hitachi S-570 scanning electron microscope (SEM) at the UCL Institute of Archaeology (London, England) was used to study the anatomy of the non-wood plant tissue and to photograph some of the seeds and conifer needles.

Seed identifications were made from the characteristics of the external and/or internal seed morphology; criteria for identification followed guidelines set out by Martin (1946), Martin and Barkley (1961), Montgomery (1977), Berggren (1969, 1981), and Anderberg (1994). Wood charcoal identifications followed standard methods set out by Hoadley (1990), Panshin and de Zeeuw (1980), and Pearsall (1989). The identification of vegetative plant tissue (also called "archaeological parenchyma") followed methods designed by Hather (1993). Seeds, needles, vegetative tissue, and charcoal were also compared with modern specimens from comparative collections housed at the Simon Fraser University Archaeology Department, in Burnaby, BC (Canada) and the UCL Institute of Archaeology, in London (England), as well as specimens collected by the authors in the Kamloops vicinity in 1996.

The results and our interpretations of the plant assemblages from the Units 30 and 32 features are presented in the final sections of this paper. Because our interpretations are highly informed by ethnographic analogy, the next sections of this chapter explain our theoretical approach to the use of analogy in this study and present two ethnobotany-based interpretative frameworks.

The Use of Ethnographic Analogy in Archaeobotanical Explanation

Ethnographic analogy is the comparison of archaeological evidence with observed ethnographic data such that unobserved human behaviour can be inferred from archaeological evidence. Over the past 40+ years the history and problems with uncritical uses of ethnographic analogy for archaeological explanation, beginning with the incompleteness of the ethnographic record itself, have been extensively discussed and debated in a range of well-known articles including those by Binford (1967), Gould and Watson (1982), Hodder (1982), Trigger (1982), Watson (1999), Wylie (1982, 1985), and Stahl (1993). These will not be repeated here except to say that we (the authors) regard ethnographic analogy as indispensible in archaeobotanical interpretation because it can provide "base lines against which to compare evidence from the past" (Hodder 1982:26).

It has been argued by Plateau archaeologists that ethnographic models are applicable for at least the 3,000 to 4,000 years in this region (Peacock 2002; Pokotylo and Mitchell 1998). We are of the view that there is high relevance for comparison of the plant assemblage from EeRb 140 (c. 900–200 years ago) with Plateau ethnobotanies, and for several reasons. The site dates from the Kamloops horizon (c. 1,200–200 years ago), which is the period in which the social organisation and subsistence systems observed at contact were developed (Alexander 1992b; Rousseau and Richards 1985; Teit 1900, 1909). Furthermore, because together, the pollen record and archaeofauna data indicate that sequential generations of hunting-gathering-fishing people who lived in the South Thompson Valley over the last 3,000 years had access to a similar range of plants, animals and ecosystems as in early historic times. Finally, from the artefact, feature, and fauna records, we also know that over the last 1,000 years people in this region exploited their environments in similar ways and using similar techniques and technologies as were reported in Plateau ethnographic data pertaining to the early 1800s to early 1900s, and by Plateau elders during the twentieth century, i.e., after European contact (Ignace and Ignace this volume; Teit 1900, 1906, 1909, 1930; Turner et al. 1990; Turner et al. forthcoming). These include the exploitation of the vertical zonation of habitats, pit-cooking of root foods, and intensive seasonal harvesting of anadramous salmon.

On the other hand, the ethnographic record is not complete because along with environments, the subsistence practices of Plateau peoples undoubtedly changed over the past 1,000 years. Some plant-exploitation practices may have been discontinued due to changes in species selection preferences or to the demise of certain species. For example, as we noted earlier, bitterroot (*Lewisia rediviva*) and hazelnut (*Corylus cornuta*) disappeared from the Kamloops area by the early 1900s. Likewise, some plant-related activities may not have been observed by ethnographers.

But we believe that, through the careful use of *relational analogies*, we can highlight differences as well as similarities between the archaeobotany and the ethnobotanies. Relational analogies are models that consider the relevance of comparison between the analogy and the archaeology. In this case, "relevance" refers to the significance of the similarities between ecology, economy, and/or technology; Relational analogies are applied in a contrastive manner to identify the cause-and-effect relevance of the similarities between ecology, economy, and/or technology (Hodder 1982; Wylie 1985). The significance of the similarities is assessed by identifying the underlying principles and processes that cause similarities between the ethnographic example and the archaeological record.

The Ethnographic Pattern

According to Plateau ethnographies and ethnohistories, at contact Plateau people consumed diets typically composed of both riverine and land-based resources including fruit, roots, greens, fish, mammals, and birds. Dietary diversity was maintained through radiating mobility, the division of work among task groups, the exploitation of the vertical zonation of habitats, seasonal scheduling, preservation, storage, and exchange. Dietary diversity was supported by resource specialisation, i.e., technological, biological, and ecological knowledge and efficient task groups (Ignace and Ignace 2004; Palmer 1975a; Teit 1909; Turner et al. 1980; Turner et al. 1990; Turner et al. forthcoming.)

Plant foods, particularly berries, nuts, greens, edible roots, are thought to have provided between 30–50% of the total calories (Spier 1938; Turner 1997). Keeley (1980) estimated that on the Columbia Plateau plants comprised as much as 60% plant foods, of which 48% were roots and 12% fruit. Sanger (1969) and Palmer (1975a) argued that at European contact, the eastern *Secwepemc* were more dependent on root foods than western Secwepemc because there were fewer salmon available in the eastern part of the territory.

Plants also provided essential raw materials for fuel, medicine, dyes, gums, and adhesives and the manufacture of tools, utensils, shelter, and clothing and were important in the symbolic and social structure of Plateau societies, having a role in gender relations, oral history, religion, mythology, trade, and linguistics. It is thus not surprising that the Okanagan-Coleville named more than 250 plant species, the Nkla'pamux (Thompson) more than 350 species and the Secwepemc over 200 species (Dawson 1891, 1875–1878; Hill-Tout 1899–1911; Ignace 1998; Ignace and Ignace Chapter 2, this volume; Palmer 1975a; Teit 1900, 1909; Turner 1992, 1994, 1997; Turner et al. 1980; Turner et al. 1990; Turner et al. forthcoming)

The Ethnobotany Frameworks

We constructed two ethnobotany frameworks to facilitate comparisons of the plant assemblage from EeRb 140 with the ethnobotanies of the Plateau. Ethnobotany Framework 1 (Table 3) lists economically and culturally important Plateau plants that were probably available to the residents of site EeRb 140. Based on the likelihood that the biogeoclimatic zones that occur in the South Thompson Valley are similar to those of the Kamloops Horizon, when the site was occupied (and that people exploited their environments in similar ways (see above), Ethnobotany Framework 1 classifies the economically useful species that currently grow in

Table 3. Ethnobotany framework 1: plants and environments that were likely available in the South Thompson River valley during the period that EeRb 140 was occupied. Table summarises the ecological zones and habitats where the plants are most commonly found and based on Plateau ethnographies, the reported plant parts used, uses and months of harvest.

1	2										3	4	5
	Biogeoclimatic Zones and Plant habitats[2]												
	Bunchgrass (BG)				BG/PP overlap	Ponderosa Pine (PP)	PP/DF overlap		Douglas fir (DF)				
Economically significant Plateau plants occurring in the Kamloops region[1]	meadowland	shrub-steppe	creekside	marsh	swales, depresssions, gulleys, ravines	fir woodland	meadowlands alkaline ponds	gullies, ravines	upland meadow	upland forest	Plant part(s) used[3]	Traditonal Plateau uses[3]	Months harvested by Plateau peoples[3]
LICHENS AND MOSSES													
black tree lichen (*Bryoria fremontii*)										x	ST (“hair”)	f	some people June, some year-round
wolf lichen (*Letharia vulpina*)						x					ST	d	not reported
TREES													
Rocky Mountain maple (*Acer glabrum*)			x								C, L, T, W	t	C, May–June; W, year round
green alder (*Alnus crispa*)			x	x							BK, W	fl, m, t	year-round
water birch (*Betula occidentalis*)			x	x							W	f	year-round
paper birch (*B. papyrifera*)										x	BK	fl, t	spring & autumn
Rocky Mountain juniper (*Juniperus scopulorum*)						x		x		x	F, BG	f, fgt, m, t	year-round?
Engelmann spruce (*Picea engelmannii*)										x	BK, R, W	fl, m, t	April–Oct.
lodgepole pine (*Pinus contorta*)										x	BG, C, S, W	f, fl, m, t	C, April–June; W, year-round
ponderosa pine (*P. ponderosa*)					x	x		x			BG, F, N, S, W	f, fl, m, t	S, May–Sept.; W, year-round
cottonwood (*Populus balsamifera*)			x	x		x				x	buds, C, L, W	f, fl, m, t	year-round
trembling aspen (*P. tremuloides*)			x	x	x			x	x	x	buds	fl, m, t	year-round
Douglas fir (*Pseudotsuga menziesii*)					x	x		x	x	x	BG, N, S, sugar, T, W	f, fl, m, t	S, autumn; sugar, summer; W, year-round;
willows (*Salix* spp.)			x	x						x	BK, T	m, t	year-round

[1] References for economically significant plants reported as occurring in the Kamloops region: Angrove 1981; Meidinger and Pojar 1991; Palmer 1975a; Tisdale 1947; Teit 1909; Turner and Peacock 1995; Turner et al. In Press.

[2] References for biogeoclimatic zones and plant habitats: Alexander 1992a; Hebda 1995; Hitchcock et al. 1955, 1959, 1961, 1964, 1969; Meidinger and Pojar 1991; Parish et al 1996; Turner and Peacock 1995.

[3] References for plant parts used, traditional Plateau uses and months harvested: Alexander 1992a; Palmer 1975a; Parish et al. 1996; Teit 1900, 1909; Turner 1992, 1997, 1998; Turner and Peacock 1995; Turner et al. 1980; Turner et al. 1990; Turner et al. In Press.

Table 3 continued.

1	2										3	4	5
	Biogeoclimatic Zones and Plant habitats[2]												
	Bunchgrass (BG)				BG/PP overlap	Ponderosa Pine (PP)	PP/DF overlap		Douglas fir (DF)				
Economically significant Plateau plants occurring in the Kamloops region[1]	meadowland	shrub-steppe	creekside	marsh	swales, depresssions, gulleys, ravines	fir woodland	meadowlands alkaline ponds	gullies, ravines	upland meadow	upland forest	Plant part(s) used[3]	Traditonal Plateau uses[3]	Months harvested by Plateau peoples[3]
SHRUBS													
Saskatoon (*Amelanchier alnifolia*)			x		x	x		x	x	x	FT, BG	f, m, t	June–Aug.
kinnikinnick (*Arctostaphylos uva-ursi*)									x	x	FT, L	f, m, tob	Aug.–Nov.
northern wormwood (*Artemisia frigida*)		x									BG, L	fgt	not reported
big sagebrush (*A. tridentata*)		x									BG, BK, L, W	fgt, fl, m, t	year-round
Oregon-grape (*Berberis aquifolium*)			x		x	x		x	x	x	BK, F, L, R, T	d, F, m	Aug.–Sept.
rabbit brush (*Chrysothanmnus nauseosus*)		x									L, ST	m	April–May
white clematis (*Clematis ligusticifolia*)			x	x							BG, BK, L, ST	fgt, m, t	summer?
western clematis (*C. occidentalis*)			x	x							L, S	m	summer?
red-osier dogwood (*Cornus stolonifera*)			x	x	x				x	x	BG, BK, C, FT,T, W	f, m, t, tob	Aug.–Oct
black hawthorn (*Crataegus douglasii*)			x	x							FT, BK	f, m, t	July–Aug.
dwarf juniper (*Juniperus communis*)									x	x	BG, BK	fgt, m	year-round
black twinberry (*Lonicera involucrata*)									x	x	T, L	d, m	July–Sept.
choke cherry (*Prunus virginiana*)			x		x			x			BK, F, T, W	f, m, t	Aug.–Sept.
squaw currant (*Ribes cereum*)		x									FT	f	June–July
wild gooseberry (*R. inerme*)			x	x		x			x	x	FT	f	July–Aug.
swamp gooseberry (*R. lacustre*)						x			x	x	FT	f, m	July–Aug.
prickly wild rose (*Rosa acicularis*)			x	x		x			x	x	FT? BG	f, m, t	Aug.–March
wood's rose (*R. woodsii*)			x		x	x		x			FT? BG	f, m, t	Aug.–March
wild raspberry (*Rubus idaeus*)			x	x		x					FT, L, R, ST	f, t	July–Sept.
red elderberry (*Sambucus racemosa*)				x		x					BK, FT, R, ST	f, m	July–Nov.
soapberry (*Shepherdia canadensis*)					x			x	x	x	FT, L, T	f, m	July–Sept.
flat-topped spirea (*Spirea betulifolia*)					x			x	x	x	L, R (rhizomes)	b,m	not reported
waxberry (*Symphoricarpos occidentalis*)			x	x		x			x	x	L, ST	m, t	Aug.–Sept.
highbush cranberry (*Viburnum opulus*)			x	x							BG, FT, T	f, m, tob	Oct.–Nov.

Table 3 continued.

1	2										3	4	5
	Biogeoclimatic Zones and Plant habitats[2]												
	Bunchgrass (BG)				BG/PP overlap	Ponderosa Pine (PP)	PP/DF overlap		Douglas fir (DF)				
Economically significant Plateau plants occurring in the Kamloops region[1]	**meadowland**	**shrub-steppe**	**creekside**	**marsh**	**swales, depresssions, gulleys, ravines**	**fir woodland**	**meadowlands alkaline ponds**	**gullies, ravines**	**upland meadow**	**upland forest**	**Plant part(s) used[3]**	**Traditonal Plateau uses[3]**	**Months harvested by Plateau peoples[3]**
HERBACEOUS PLANTS													
yarrow (*Achillea millefolium*)		x				x			x	x	L, W	fgt	spring, to Sept
mountain dandelion (*Agoseris glauca*)		x									L, R, S	m	not reported
bluebunch wheat trass (*Agopyron spicatum*)	x	x								x	ST	t	year-round
nodding onion (*Allium cernuum*)		x	x		x	x		x	x	x	R (bulb)	f	April, May, July
arnica (*Arnica cordifolia*)						x				x	L?	m	not reported
tarragon (*Artemisia dracunculus*)		x									L, S?	m	not reported
showy aster (*Aster conspicuus*)			x					x		x	L, R, W	m	Aug.
balsamroot (*Balsamhoriza sagittata*)		x							x	x	L, R (taproot), S	F	Mar, Apr, July–Oct.
pinegrass (*Calamagrostis rubescens*)										x	ST	t	July–Sept.
mariposa lily (*Calochortus macrocarpus*)		x				x				x	R (bulb)	f	April–June
calypso (*Calyposa bulbosa*)						x					R (corm)	f, m	not reported
swamp hay (*Carex* spp.)				x							ST	t	summer & autumn
spring beauty (*Claytonia lanceolata*)					x	x			x	x	R (corm)	f	May–June (some to August)
slender hawksbeard (*Crepis atrabarba*)						x					L, ST	m	not reported
delphinium (*Delphinium nuttallianum*)											FL	d	not reported
alkali saltgrass (*Distichlis stricta*)			x	x	x						ST	t	July–Sept.
giant wild rye grass (*Elymus cinereus*)		x	x		x						ST	t	July–Sept.
fireweed (*Epilobium angustifolium*)			x								ST	f, m, t	May–June
common horsetail (*Equisetum arvense*)			x								ST	m, t	March–Oct
branchless horsetail (*E. hyemale*)			x								ST	m, t	year-round
wild strawberry (*Frageria virginiana*)			x		x	x				x	BG, F?, L	f	May–July
chocolate lily (*Fritillaria lanceolata*)						x			x	x	R (bulb)	f	May–August
yellowbell (*F. pudica*)		x									R (bulb)	f	late spring
bedstraw (*Galium* spp.)		x									R	d	not reported
rattlesnake plantain (*Goodyera oblongifolia*)						x					L?	m	not reported
cow-parsnip (*Heracleum lanatum*)			x								SH, ST	f, m	S, spring; R, year-round
alumroot (*Heuchara cylindrica*)											L, R (rhizome)	m	not reported

Table 3 continued.

1	2										3	4	5
	Biogeoclimatic Zones and Plant habitats[2]												
	Bunchgrass (BG)				BG/PP overlap	Ponderosa Pine (PP)	PP/DF overlap		Douglas fir (DF)				
Economically significant Plateau plants occurring in the Kamloops region[1]	**meadowland**	**shrub-steppe**	**creekside**	**marsh**	**swales, depresssions, gulleys, ravines**	**fir woodland**	**meadowlands alkaline ponds**	**gullies, ravines**	**upland meadow**	**upland forest**	**Plant part(s) used[3]**	**Traditonal Plateau uses[3]**	**Months harvested by Plateau peoples[3]**
HERBACEOUS PLANTS (continued)													
Indian tea (*Ledum* spp.)												b, m	April–August
bitterroot (*Lewisia redivida*)*	x	x									R (taproot)	f, m	May
tiger lily (*Lilium columbianum*)						x			x	x	R (bulb)	f	Nlaka'pamux & Stl'atl'imx spring; Secwepemc, Okanagan, Ktunaxa, late summer, autumn
stoneseed (*Lithospermum ruderale*)		x									R (taproot)	d, f?, m	not reported
chocolate tips (*Lomatium dissectum*)					x	x					R (taproot), SH		R, May; ST March-Apr
desert hog-fennel (*L. macrocarpum*)		x									R (taproot)	f, m	April–June
Canada mint (*Mentha arvensis*)			x	x							L	b, m	May–Nov.
prickly pear cactus (*Opuntia fragilis*)		x									ST	f	Apr.–June, sometimes winter
sweet cicely (*Osmorhiza chilensis*)						x					ST	f	March–April
shrubby penstemon (*Penstemon fruticosus*)								x			L, ST	d, m	spring–summer
wild caraway (*Perideridia gairdneri*)					x						R (tuber)	f	May–June
miscellanous wild grasses (*Poaceae* spp.)	x	x					x		x		ST	t	May–Oct.
silverweed (*Potentilla anserina*)			x				x				R	f	spring, autumn
sagebrush buttercup (*Ranunculus glaberrimus*)		x									whole plant	m, p	spring
tule (*Scirpus acutus*)				x			x				ST	t	August
water-parsnip (*Sium suave*)			x	x							R	f	spring, summer
star-flowered Solomon's-seal (*Smilacina stellata*)								x			FT, R (rhizomes), SH	f	FT, July; R, summer; SH, spring
cattail (*Typha latifolia*)			x	x							FL, L, R (rhizomes), seed fluff, ST	f, t	FL, summer; L, autumn; R, spring; seed fluff, latesummer
stinging nettle (*Urtica dioica*)			x								L, S	f? M, t	April–Sept.
death camas (Zigadenus venenosus)		x									R (bulb)	p	not reported

this area according to their Latin and common names, biogeoclimatic ecosystem and habitat preferences, plant parts reported to have been used, type of traditional use by Plateau groups, and reported seasons of harvest. No comprehensive ethnobotanical study has yet been published for the South Thompson River Valley locality surrounding EeRb 140 so this framework draws heavily on studies of the Secwepemc made by Teit (1909), Palmer (1975a), and Turner et al. (forthcoming) as well as Turner et al.'s (1990) ethnobotany of the Nlaka'pamux (Thompson people), Turner's (1992) study of Stl'atl'imx (Lillooet people) plant uses, and Alexander's 1992a/b models of Stl'atl'imx and Secwepemc land-use and ecosystems.

The objective of this framework (Table 3) is to provide a baseline for comparison with the plant assemblage from EeRb 140, to facilitate insights into prehistoric land-use and seasonal scheduling, i.e., where and when people situated themselves at different times of the year. Likewise, comparisons of the list of taxa from the site with Ethnobotany Framework 1 (Table 3) was expected to help us identify economically significant taxa that are absent from the assemblage ("missing plants" as per Hillman 1989:218). Additionally, by comparing and contrasting the list of taxa from EeRb 140 with this ethnobotany framework, we may identify plants that were not locally available, and therefore indicative of trade or long-distance travel. Again, although the immediate Kamloops locality is comprised of three biogeoclimatic zones, nine environmental zones are found in *Secwepemc* territory and were accessible to the Stk'emlupsemc through travel and/or exchange among themselves and with neighbouring groups (e.g., the Thompson and Lillooet). Moreover, the Stk'emlupsemc had access to and routinely used more distant ecosystems, e.g., the Engelmann Spruce-Subalpine Fir (ESSF) at Mount Lolo, Mount Harper, and Mt. Tod, located approximately 1–2 days walk from Kamloops (Turner et al. forthcoming).

Ethnobotany Framework 2 (Table 4) summarises the ethnographically-reported routine fire-related activities of the Plateau. The point of this framework is to provide a baseline for assessing how specific plants may have come into contact with fire and become charred and deposited in Plateau sites. It also provides a means of identifying the range of species that would be expected to be found in association (together) when subjected to specific fire-related activities and conditions, e.g., Plateau groups used particular species for their leaves and boughs, with specific properties, to line pit-ovens and wrap foods, because they helped to retain the heat, protect foods, and/or did not impart an unpleasant smell (Turner 1997, 1998; Turner et al. 1990).

Results

A list of the recovered plants is presented in Table 5 and some of the seeds, needles, and nodding onion plant tissue are illustrated in Figures 5 through 15. More than 30 species were identified from the Unit 30 hearth feature, including 12,820 (n) charred seeds, more than 900

Table 4. Ethnobotany framework 2: ethnographically-reported[1] Plateau plant uses that may have resulted in plant parts becoming charred and deposited in site.

1	2				3		4	5		6	7		
	ACCIDENTAL INTRODUCTION TO HEARTH							INTENTIONAL INTRODUCTION TO HEARTH					
	During food preparation				Preparation of medicine		During other activities	In food preparation		Fuel	Other		
Economically significant Plateau plants occurring in the Kamloops region	**Pit-cooked**	**Boiled or steamed**	**Roasted or dried over fire**	**Basketry, matting**	**Boiled, inflused as beverage or for bathing**	**Roasted**	**While boiling plant materials to produce dyes**	**Lining of pit oven**	**Condiment or aromatic for smoking fish or meat**	**Tinder or fuel**	**Tobacco**	**Fumigant, vaporisre or insect repellent**	**Rubbish: discarded materials and objects e.g., cooking waste, broken & worn out tools**
LICHENS													
black tree lichen (*Bryoria fremontii*)	ST												
wolf lichen (*Letharia vulpina*)					ST		ST						
TREES													
Rocky Mountain maple (*Acer glabrum*)				C	C, L	L, T		L?					S digging sticks, fishing tools
green alder (*Alnus crispa*)		BK			BK		BK	BG, BK		W		BK	?W structures
water birch (*Betula occidentalis*)													T baby carrying frames
paper birch (*B. papyrifera*)				BK						BK, W			BK containers
Rocky Mountain juniper (*Juniperus scopulorum*)		FL			BG							BG	
Engelmann spruce (*Picea engelmannii*)				BK	C					W			R basketry
lodgepole pine (*Pinus contorta*)			FT		BG, C				BG, W	W			BG bedding
ponderosa pine (*P. ponderosa*)			FT		BG, C		pollen	BG, N		W		BG	BG bedding
cottonwood (*Populus balsamifera*)		buds			buds, C, L	buds			W	T, W			
trembling aspen (P. *tremuloides*)					Buds								W drying racks, tent poles
Douglas fir (*Pseudotsuga menziesii*)		N,T			T			BG/N		BK, W			B bedding
willows (*Salix* spp.)				BK, T	BK, T				L, T				L & T mats for food
SHRUBS													
Saskatoon (*Amelanchier alnifolia*)	FT	FT	FT	T	BG			T					BG tools
kinnikinnick (*Arctostaphylos uva-ursi*)		FT	FT		L				F		L		
northern wormwood (*Artemisia frigida*)					BG, L							BG, L	
big sagebrush (*A. tridentata*)					BG, L					BK, W		BG, T, L	BK clothing, woven mats
Oregon-grape (*Berberis aquifolium*)		F			BK, L, R, T		R						
rabbit brush (*Chrysothanmnus nauseosus*)					L, S								
white clematis (*Clematis ligusticifolia*)					L, S							BG	BK woven mats
western clematis (*C. occidentalis*)					L, S								
red-osier dogwood (*Cornus stolonifera*)			FT	T	BG, BK, C			BG	BG	W	BD		T used as rope
black hawthorn (*Crataegus douglasii*)		FT			BK, FT								W tools

Table 4 continued.

1	2				3		4	5		6	7		
	ACCIDENTAL INTRODUCTION TO HEARTH							INTENTIONAL INTRODUCTION TO HEARTH					
	During food preparation				Preparation of medicine		During other activities	In food preparation		Fuel	Other		
Economically significant Plateau plants occurring in the Kamloops region	**Pit-cooked**	**Boiled or steamed**	**Roasted or dried over fire**	**Basketry, matting**	**Boiled, inflused as beverage or for bathing**	**Roasted**	**While boiling plant materials to produce dyes**	**Lining of pit oven**	**Condiment or aromatic for smoking fish or meat**	**Tinder or fuel**	**Tobacco**	**Fumigant, vaporisre or insect repellent**	**Rubbish: discarded materials and objects e.g., cooking waste, broken & worn out tools**
SHRUBS continued													
dwarf juniper (*Juniperus communis*)		BG			BG, BK							BG	W bows & spears
black twinberry (*Lonicera involucrata*)					BG, L		FT						
choke cherry (*Prunus virginiana*)		FT, T	FT		BK, FT								BK & W implements
squaw currant (*Ribes cereum*)		FT	FT?										
wild gooseberry (*R. inerme*)		FT	FT?										W combs
swamp gooseberry (*R. lacustre*)		FT	FT?										
wild roses (*Rosa* spp.)		F?			BG, FT			BG			BK, L		BK/W arrows
wild raspberry (*Rubus idaeus*)		FT	FT		L, R			L?					
red elderberry (*Sambucus racemosa*)		FT			BK, R				L, T				
soapberry (*Shepherdia canadensis*)		FT	FT		FT, T								BG soapberry whipper
flat-topped spirea (*Spirea betulifolia*)					L, R								
waxberry (*Symphoricarpos occidentalis*)					L, S								BG used as broom
highbush cranberry (*Viburnum opulus*)		FT			BG, T						BG		
HERBACEOUS PLANTS													
yarrow (*Achillea millefolium*)													
mountain dandelion (*Agoseris glauca*)													
nodding onion (*Allium cernuum*)													
arnica (*Arnica cordifolia*)													
tarragon (*Artemisia dracunculus*)													L, S?
showy aster (*Aster conspicuus*)					L, R, W								
balsamroot (*Balsamhoriza sagittata*)	R	S?			L, R								
mariposa lily (*Calochortus macrocarpus*)	R?	R											
calypso (*Calyposa bulbosa*)	R?				R?	R?							R medicine
spring beauty (*Claytonia lanceolata*)	R	R	R										
slender hawksbeard (*Crepis atrabarba*)													
sedges (Cyperaceae)				ST						ST			ST matts

Table 4 continued.

1	2				3		4	5		6	7			
	ACCIDENTAL INTRODUCTION TO HEARTH							INTENTIONAL INTRODUCTION TO HEARTH						
	During food preparation				Preparation of medicine		During other activities	In food preparation		Fuel	Other			
Economically significant Plateau plants occurring in the Kamloops region	**Pit-cooked**	**Boiled or steamed**	**Roasted or dried over fire**	**Basketry, matting**	**Boiled, inflused as beverage or for bathing**	**Roasted**	**While boiling plant materials to produce dyes**	**Lining of pit oven**	**Condiment or aromatic for smoking fish or meat**	**Tinder or fuel**	**Torches**	**Tobacco**	**Fumigant, vaporisre or insect repellent**	**Rubbish: discarded materials and objects e.g., cooking waste, broken & worn out tools**
HERBACEOUS PLANTS (continued)														
delphinium (*Delphinium nuttallianum*)					?		FL							
fireweed (*Epilobium angustifolium*)		ST			ST			L, ST						ST eaten raw, used as string
Horsetail (*Equisetum* spp.)					ST	ST						?		Raw ST used for polishing
wild strawberry (*Frageria virginiana*)			FT?		L, R, S			L, St?						
chocolate lily (*Fritillaria lanceolata*)	R	R												
yellowbell (*F. pudica*)	R	R												
bedstraw (*Galium* spp.)							R							
rattlesnake plantain (*Goodyera oblongifolia*)					L?									Raw L medicine
cow-parsnip (*Heracleum lanatum*)		ST			R								R	L cover for berries
alumroot (*Heuchara cylindrica*)					R	R								
Indian tea (*Ledum* spp.)		L			L									
bitterroot (*Lewisia redivida*)	R													Raw R medicine
Canby's lovage (*Ligusticum canbyi*)											R			Raw R medicine
tiger lily (*Lilium columbianum*)	R				R									
stoneseed (*Lithospermum ruderale*)					R		R							S as decorative beads
chocolate tips (*Lomatium dissectum*)	R	FL, L												
desert hog-fennel (*L. macrocarpum*)	R	R			R									
Canada mint (*Mentha arvensis*)		L			L									
prickly pear cactus (*Opuntia fragilis*)	ST	ST												Spines used as fishooks
sweet cicely (*Osmorhiza chilensis*)	R	R												Raw R used medicinally
shrubby penstemon (*Penstemon fruticosus*)		L, ST			BG		L, S	L, S	L, S					
wild caraway (*Perideridia gairdneri*)	R?	R?												
miscellanous wild grasses (Poaceae spp.)				ST				ST		ST				
silverweed (*Potentilla anserina*)	R													
sagebrush buttercup (*Ranunculus glaberrimus*)					Whole									Plant as poison for arrowtips
water-parsnip (*Sium suave*)		R												
star-flowered Solomon's-seal (*Smilacina stellata*)									SH					
cattail (*Typha latifolia*)	R		R											
stinging nettle (*Urtica dioica*)					L, R									ST used as string
death camas (*Zigadenus venenosus*)					R									R as poison for arrowheads

Table 5. Results from the Unit 30 and 32 Hearths. Seeds, needles and berries are represented by counts (n), charcoal, vegetative tissue and birch bark by weights (g).

	TAXON	UNIT 30 HEARTH	UNIT 32 HEARTH
	Saskatoon (*Amelanchier alnifolia*)	684	12
	Artemisia	105	
	Asteraceae (Sunflower family)	1	
	Brassicaceae (Mustard family)	179	3
	Chenopodium cf. *capitatum*	10,904	3
	Red-osier dogwood (*Cornus stolonifera*)	6	
	Hazelnut (cf. *Corylus*)	5	
	Sedges (Cyperaceae spp.)	9	
	Heath (Ericaceae)	4	
	cf. *Lappula*	74	8
	Pine (*Pinus*)	1	
	Grasses (Poaceae spp.)	351	30
	Chokecherry (*Prunus virginiana*)	41	6
	Currant/gooseberry (*Ribes*)	19	
	Rose (Rosaceae)	2	
	Raspberry/thimbleberry (*Rubus*)	29	1
	Dock (*Rumex*)	2	
	Blueberry/huckleberry (*Vaccinium* sp.) (s)	3	
	Unknown Seed Type 1	2	
	Unknown Seed Type 2	2	
	Unknown Seed Type 3	17	
	Unknown Seed Type 4	4	
	Unidentified seeds	52	2
	Unidentifiable seeds	107	1
	Unidentifiable seed fragments	622	11
CH (g)	CHARCOAL (g)	100.52	100.67
	Pseudotsuga menziesii (Douglas-fir)	9,708	2
	Pinus ponderosa (ponderosa pine)	63	
	Unidentifiable fragments	2	2
WHOLE BERRY (n)	*A. alnifolia* berry fruit (mashed) (n)	25	
	Ribes berry fruit (mashed) (n)	2	
	Unidentifiable berry	26	4
VEGET. TISSUE (g)	*Allium cernuum* (nodding onion) tissue	0.33	
	Unknown Vegetative Tissue Type 1	1.38	3.45
	Unidentifiable Vegetative Tissue	4.51	1.53
BK (g)	Birch bark	1.62	
	ORIGINAL SEDIMENT VOLUME (litres)	33.950 (L)	21.12 (L)
	ARBITRARY LEVELS:	Levels 2–7	Levels 2–5
	DEPTH IN CENTIMETERS BELOW SURFACE:	5–35	5–25

Figure 5. Charred seed of Saskatoon (*Amelanchier alnifolia*) recovered from the Unit 30 hearth. Photo by Michèle Wollstonecroft.

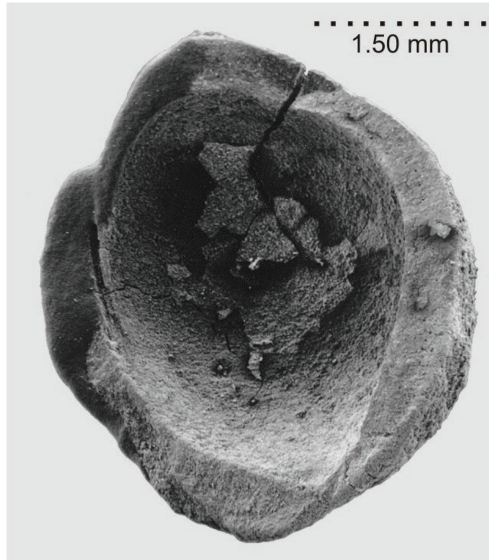

Figure 6. Charred fragment chokecherry (*Prunus virginiana*) stone recovered from the Unit 32 hearth. Photo by Michèle Wollstonecroft.

Figure 7. Charred "seed" (achene) of *Rubus* (raspberry thimbleberry) from the Unit 30 hearth. Photo by Michèle Wollstonecroft.

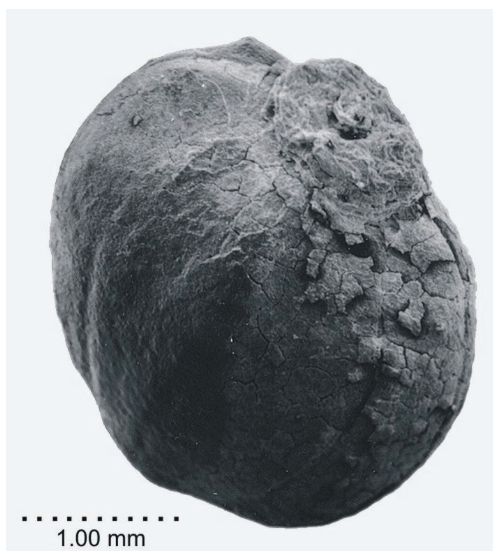

Figure 8. Charred red-osier dogwood (*Cornus stolonifera*) stone from the Unit 30 hearth. Photo by Michèle Wollstonecroft.

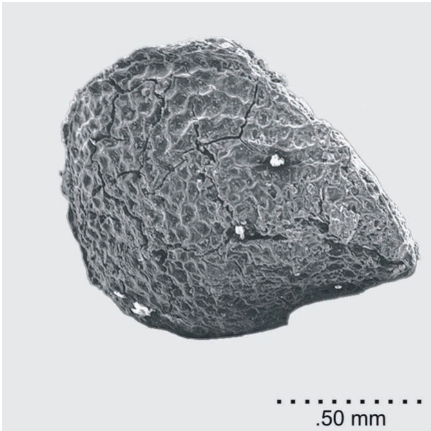

Figure 9. Charred seed of *Vaccinium* (blueberry/huckleberry) from the Unit 30 hearth. Photo by Michèle Wollstonecroft.

Figure 10. Charred seed of *Ribes* (gooseberry/currant) from the Unit 30 hearth. Photo by Michèle Wollstonecroft.

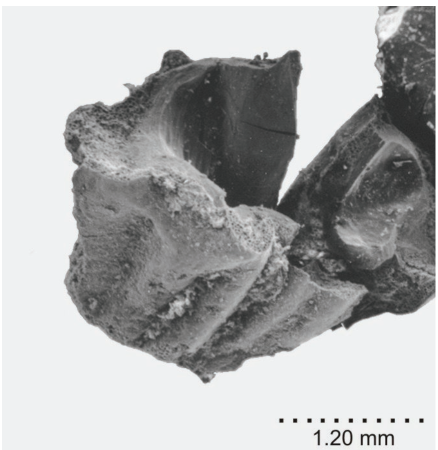

Figure 11. Charred (immature) nutshell of *Corylus cf. cornuta* (hazelnut) from the Unit 30 hearth. Photo by Michèle Wollstonecroft.

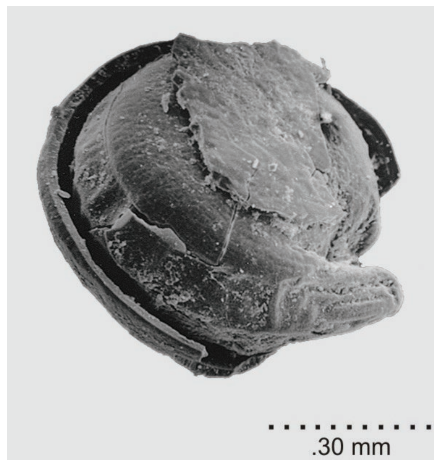

Figure 12. Charred chenopodium (*Chenopodium cf. capitatum*) seed from the Unit 30 hearth. Photo by Michèle Wollstonecroft.

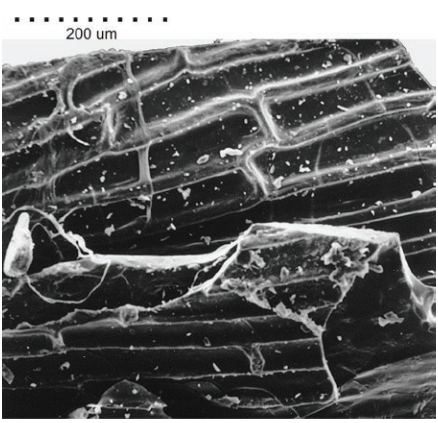

Figure 13. *(Left)* Charred tissue of nodding onion (*Allium cernuum*) from the Unit 30 hearth. Photo by Michèle Wollstonecroft.

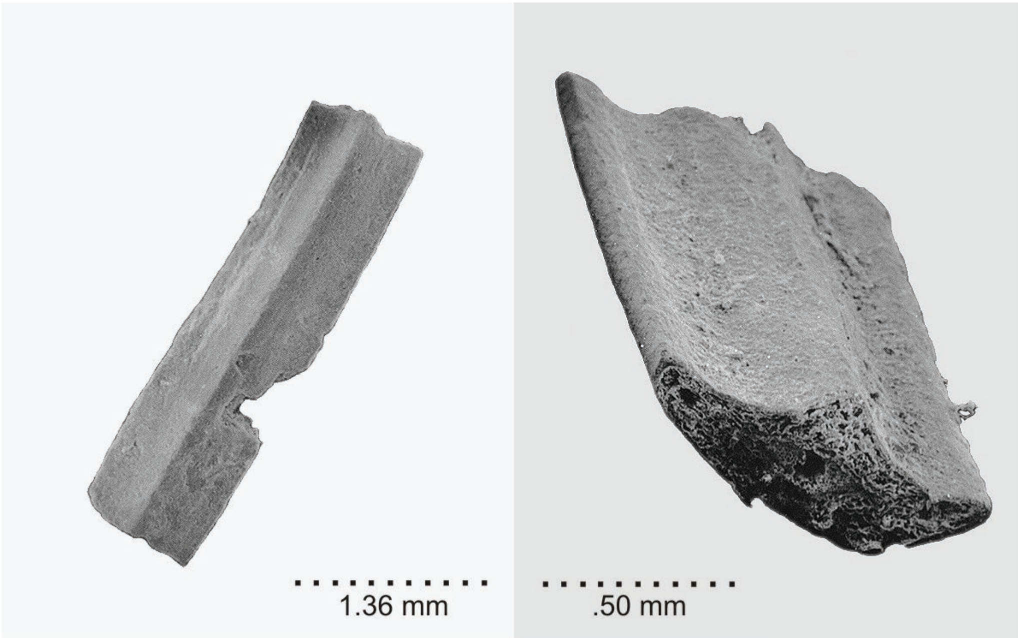

Figure 14. Charred ponderosa pine (*Pinus ponderosa*) needle fragments from the Unit 30 hearth. Image on left shows the view of the lower surface; image on the right shows the cross-section, with the lower surface facing up to illustrate the diagnostic ridge down the centre. Photo by Michèle Wollstonecroft.

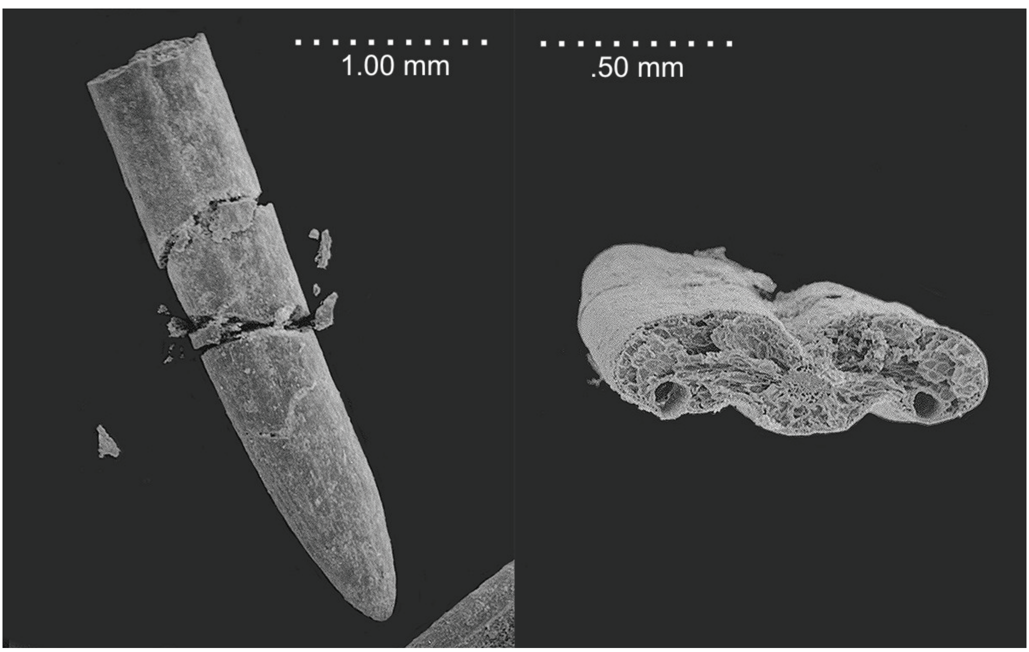

Figure 15. Charred Douglas-fir (*Pseudotsuga manziesii*) needle fragments. Image on left, showing the upper surface, shows the ways that these needles typically fragment; image on right shows the typical cross-section of Douglas-fir needles, with the upper surface facing up. Photo by Michèle Wollstonecroft.

(n) charred conifer needle fragments, 100 g charcoal, and over 6 g vegetative tissue, the latter which included fragments of nodding onion (*Allium cernuum*) and crushed fruit of *Ribes* spp. (currant/ gooseberry) and Saskatoon (*Amelanchier alnifolia*). The edible bulb tissue of nodding onion (Figure 13) was identified by Wollstonecroft using anatomical techniques designed by Hather (1993). From the vertical patterning in Unit 30, it was inferred that plants were charred within the hearth (upper feature) and later became mixed into the transition zone and pit feature below. Several factors may explain this mixing including the re-use of the feature in prehistory or natural causes such as perturbation due to rodent burrowing or winter freezing and thawing (Wollstonecroft 2000).

From the Unit 32 hearth and the sediments immediately around it, 12 plant taxa were identified from 66 (n) charred seeds, 108 g charcoal, and almost 5 g charred vegetative tissue. Pine (*Pinus* spp.), Douglas-fir (*Pseudotsuga menziesii*), and cottonwood/willow (*Populus/Salix* spp.) were identified from the charcoal of both the Unit 30 and 32 hearths, while sagebrush (*Artemisia cf. tridentata*) occurred exclusively in the Unit 30 hearth. Fragments of conifer needles found in the Unit 30 features were identified as pine and Douglas-fir, while only Douglas-fir needle fragments were found in Unit 32 (Figures 14 and 15).

The archaeobotany of the two hearths differed in terms of the dimensions of the deposit, the density of the charred plant remains, the number of species recovered, species abundance, and the density and condition of the charcoal. Given that the two hearths appear to have been subject to the same preservation conditions, we inferred that the differences between the two plant assemblages indicated that they were used primarily for different types of activities. Our interpretations of plant-related activities at each of the hearths are therefore discussed separately, beginning with the Unit 30 hearth.

To identify the patterning in the plant remains, abundance, and ubiquity measures are used in the following sections. Seed abundance was determined by tabulating the total number of seeds recovered from the Unit 30 Hearth and then calculating the percentage of that total represented by each type. In consideration of the large amount of fragmentation of the vegetative tissue, conifer needles, and wood charcoal, presence analysis was used to tabulate and assess the patterning (see Smart and Hoffman 1988). For seeds and needle fragments, ubiquity (presence) was determined by counting the number of sub-samples in which each species occurs within a sample and then converting that count to a percentage. Ubiquity measures for vegetative tissue and charcoal were calculated from weights rather than counts.

Interpreting the Unit 30 Hearth (Upper Feature)

Table 6 classifies the plant assemblage from the Unit 30 Hearth into their known uses according to Ethnobotany Framework 1 (Table 3). The seed abundances (Table 6) show that 46.1% of the seeds found in the Unit 30 Hearth are species ethnographically reported to be Plateau foods, primarily "berry foods" (Saskatoon, *Cornus* spp., chokecherry, gooseberry/currant, raspberry/thimbleberry, and blueberry/huckleberry) and nuts (pine and hazelnut) (illustrat-

Table 6. Potential economic uses of plants identified at EeRb 140, based on Plateau ethnobotanies summarised in Table 3.

POTENTIAL PLANT USE BASED ON THE ETHNOGRAPHIC RECORD

TAXON[1] and likely use	UNIT 30 HEARTH		UNIT 32 HEARTH	
	Seeds only % Abundance[2]	All plant parts % Ubiquity[3]	Seeds only % Abundance[2]	All plant parts % Ubiquity[3]
FOOD				
Saskatoon (*A. alnifolia*)	40.2	91	5.3	50
Red-osier dogwood (*C. stolonifera*)	0.3	14		
Hazelnut (*cf. C. cornuta*)	0.2	14		
Pine (*Pinus* sp.)	<0.1	3		
Chokecherry (*P. virginiana*)	2.4	66	10.5	75
Currant/gooseberry (*Ribes* sp.)	1.1	31		
Raspberry/thimbleberry (*Rubus* sp.)	1.7	34		
Blueberry/huckleberry (*Vaccinium sp.*)	0.2	9		
Allium cernuum (V)		77		
Total % abundance food plants	**46.1**		**15.8**	
MEDICINE				
Mustards (Brassicaceae spp,)	10.5	54	2.6	25
Stickseed (*cf. Lappula* sp.)	4.3	60		
Dock (*Rumex* sp.)	0.1	6		
Total % abundance medicinal	**14.9**		**2.6**	
TECHNOLOGY				
Pinus cf. Ponderosa (N)		77		33
P. menzeisii (N)		100		
Sedges (Cyperaceae spp,)	0.5	26		
Grasses (Poaceae spp.)	20.6	91	76.3	75
Total % abundance technology	**21.1**		**76.3**	
FUEL				
Pinus cf. ponderosa (CH)		100		100
P. menzeisii (CH)		25		33
Populus/Salix (CH)		100		100
Artemisia cf. tridentate (CH)		37.5		
MULTIPLE USES				
Artemisia sp.	6.1	37		
Sunflower (Asteraceae sp.)	<0.1	3		
Chenopod (*C. cf. capitatum*)	**	80	2.6	25
Heath (Ericaceae spp.)	0.2	9		
Rose (Rosaceae spp.)	0.1	6		
Total % abundance multiple uses	**6.4**		**2.6**	

[1] Seeds unless indicated as (N) = needles, (CH) = charcoal, (V) = vegetative plant tissue.

[2] %Seed abundances were determined by tabulating the total number of seeds recovered from each hearth and then calculating the percentage of that total represented by each type of plant.

[3] % Presence (ubiquity) was determined by counting the number of sub-samples in which a species occurs within a sample, and then converting that count to a percentage.

** The relative abundance of *Chenopodium* in Unit 30 is omitted because the high percentage obscures the patterning among the other taxa.

ed in Figures 5–10). Interestingly, several of the plants classified as food had high ubiquity scores, indicating that they were present in many of the samples from this feature, including Saskatoon and chokecherry (91% and 66%, respectively) and nodding onion (77%).

Another 21.1% of the seed represented plants reported to have been used for their stems as matting and basketry (grasses and sedges); 14.9% represented species reported to have been used medicinally, although (see below) these three species (mustards, stickseed, and dock) may simply have been weeds that were accidentally introduced; the last 6.4% of the seed assemblage is composed of species with multiple uses, including Asteraceae, *Artemisia* spp., *Chenopodium*, heath (Ericaceae), and rose.

Given the range of edible species, which collectively represented almost 50% of the seed assemblage, and the high ubiquity scores of the nodding onion and Saskatoon and chokecherry seeds, we inferred that plant processing had taken place in this feature. To distinguish the methods of plant processing consideration was given to ethnographically-reported Plateau plant preparation methods that involved a hearth, described in Ethnobotany Framework 2 (Table 4). Berry processing was inferred because berries alone, which included six taxa (Saskatoon, *Cornus* spp., chokecherry, gooseberry/currant, raspberry/thimbleberry, and blueberry/huckleberry), made up 45.9% of the seeds from the Unit 30 Hearth; again, Saskatoon and chokecherry had particularly high presence scores of 91% and 66% respectfully (see Table 5). Furthermore, mashed and whole fruit tissue, identified as Saskatoon and currant/gooseberry, were recovered in addition to the seeds. The grass and sedge seeds found in association with the berries accord with to the ethnobotanies (Ethnobotany Framework 2, Table 4) in that grass stems were frequently used as matting during berry processing. No grass stems were identified at EeRb 140 but grass and sedge seeds comprised 21% of the Unit 30 hearth seed abundances, moreover grass seeds had the same high presence score (91%) as Saskatoon seeds, which were the most ubiquitous fleshy fruit in this feature. These patterns provide persuasive evidence for the fruit having come into contact with fire while being dried on grass/sedge mats.

The interpretation of berry processing in this feature is supported by the ethnobotanies. Teit (1900, 1909), Turner (1997), and Turner et al. (1990) report that Plateau people typically dried these species of berries by laying them out on mats made from grass or sedge stems; or else mashed into cakes, sometimes with several types of berries, and then laid out on the grass/sedge mats to dry. In both cases, the berry foods were typically dried over or near to a hearth. The interpretation of berry processing activities at the Unit 30 Hearth is further supported by Mack and McLure's (2002) archaeobotanical and ethnobotanical results from the Big Meadow site, which linked the *Vaccinium* spp. seeds, sedge (*Scirpus validus*) seeds and stems, and willow and Douglas-fir charcoal with berry processing.

The charred birch bark found in the Unit 30 Hearth also suggests food preparation given that Plateau groups used it for many food preparation activities, including wrapping food for storage and making baskets for berry collecting and storing, as well as boiling foods (Turner

1998). On the other hand, the birch bark possibly originated in the lower feature and become mixed into the upper feature sediments during the prehistoric re-use of this feature.

The abundance of possible medicinal plants (14.9%) including mustards, stickseed, and dock (although, again, we make this analogy with caution as we cannot be sure that these species were brought into the site intentionally) may support the reasoning that this feature was at least used for open-hearth processing: Plateau First Peoples prepared many of their medicinal plants in proximity to a hearth by boiling and/or steeping them directly over a fire or drying them near a fire (Turner et al. 1990; Turner et al. forthcoming).

However, the interpretation of this feature was confounded by the fact that most Plateau food preservation activities evidently involved a hearth, even if solely for the purpose of creating smoke to deter flies and other insects (Turner et al. 1990:29). Moreover, pit-oven technology can also be inferred from this assemblage, given the concentration of Douglas-fir needles in association with nodding onion tissue, pine nut, pine needles, grasses, and sedges. Douglas-fir needle fragments had a ubiquity score of 77% in this feature and Ponderosa Pine needles 100% (Table 6), although Douglas-fir needle fragments (n = 10,122) significantly outnumbered those of pine (n = 66) (Figures 14 and 15).

Conifer boughs and pine needles were used routinely by Plateau groups as lining for pit ovens. While grasses and sedges are reported to have been used in both roasting pit and berry-processing, and sometimes as fuel (Ethnobotany Framework 2, Table 4), conifer boughs are not reported to have been used in open-hearth food processing. These patterns correspond well with Teit's (1909:236) description of pit oven construction in which the upper layers of the pit were lined with a layer of yellow pine needles (Ponderosa Pine) interspersed between two layers of Douglas-fir branches. Significantly, Ponderosa Pine needles were concentrated within the Unit 30 Hearth and absent from samples taken from the surrounding areas.

In her archaeobotanical analysis of pit-ovens at White Rock Springs, Nicolaides (2010:46) observed that the prevalence of grass seeds and conifer needles in the EeRb 140 Unit 30 feature could possibly represent matting materials, and thereby give support to the interpretation of this feature as a pit oven. But she goes on to suggest that the relatively low amount of charcoal and the small size of this feature strongly indicates that it represents a small baking pit used without steam (described by Turner et al. 1990:316) rather than mass processing of root foods. The likelihood that this feature functioned as a pit oven is further supported by two other types of archaeological evidence: the faunal assemblage and the dimensions of the feature itself. Although Plateau groups used pit cooking primarily for processing root foods, such as the nodding onion found here, pit-ovens were occasionally used for cooking meat in this region (Thoms 2008, 2009). Deer bone that was recovered from the Unit 30 Hearth may represent the remains of meat that was pit-cooked. Moreover, the dimensions of the Unit 30 hearth are similar to those of pit-ovens reported ethnographically (Teit 1909:236; Turner and Peacock 1995), which evidently measure approximately 80 cm wide by 40 cm deep. This diameter is also similar to that of the Late Period Lucky Break pit-oven, discussed above, although it is deeper and has a richer plant assemblage.

To further complicate matters, some of the plants recovered from the Unit 30 hearth can be linked to both pit-cooking and open hearth processing. According to the ethnographic literature, Plateau First peoples used grasses and sedges as lining for pit ovens as well as mats for drying berries, e.g., Turner (1997:62) reports that several grasses were specifically harvested for pit-cooking nodding onion. Nodding onion, however, was also sometimes roasted in open hearths. And, while berries alone are not reported as having been processed by pit cooking, berries and berry juice were sometimes added as flavouring to meat (Turner 1997; Turner et al. 1990). The notably high ubiquity (77%) of an identifiable but unknown non-wood tissue that we labelled Unknown Vegetative Tissue Type 1, also complicated the issue.

Again, with reference to our Plateau ethnobotany frameworks (Tables 3 and 4) and patterns in Plateau archaeobotany (Table 2) we concluded that the best explanation for the patterning in the Unit 30 Hearth is that this feature was reused several times and possibly for multiple purposes. It appears to have served as a hearth on some occasions, probably to dry berries for winter use, and maybe to process medicinal plants; at other times, it appears to have served as a pit oven, possibly to prepare food for immediate consumption, such as the nodding onion and deer that were found in this feature.

Interpreting the Unit 32 Hearth

While the Unit 30 Hearth can be confidently linked to food processing activities, the uses of the Unit 32 Hearth (discussed below) are more ambiguous. The Unit 32 Hearth, situated at 10–15 cm below the surface, contained significantly higher concentrations of charcoal and charcoal-stained soil than the Unit 30 Hearth. Some plant remains were recovered from the layer above the hearth but little plant material was recovered from the areas surrounding and below it.

The archaeobotanical composition of this feature is significantly different from that of the Unit 30 Hearth (Table 5). Species classified as food plants (Table 6) represented less than 16% of the Unit 32 Hearth seed assemblage. Grasses (76.3% abundance) dominated the seed assemblage. Birch bark is absent. Significantly, Unknown Vegetative Tissue Type 1 (Table 5) was present in all of the samples (100% ubiquity).

No conclusive evidence for food processing was observed in this feature. Nevertheless, we cannot rule out the possibility that food processing took place here. Charred fruit seeds were present as well as charred grass seeds, (again, which may represent stems used as matting for food processing). Moreover, all the species found in the Unit 32 hearth were also recovered from the Unit 30 Hearth, where food processing has been confidently identified.

Interpreting Wood Charcoal from the Hearths

Ethnographic research shows that Plateau people selected fuel woods according to cultural and technological reasons and not simply the availability, abundance, and ease of collection

(Turner 1992; Turner et al. 1990). The choice of species and even the size of the branches depended on the type of fire required, e.g., whether higher or lower temperatures are needed, longer or shorter burning times, more or less smoke, and the presence or absence of a strong scent. For example, species of *Populus* produced a slow burning wood that was preferred by Plateau First Peoples for smoking meat but not for smoking fish because the resinous scent makes the fish bitter tasting (Turner 1998:195).

Similarities are evident between the charcoal assemblages from the Unit 30 and 32 hearths. The branch wood of pine, cottonwood/willow (*Populus/Salix*), and Douglas-fir occurred in both features. These three woods typically dominate charcoal assemblages from Plateau archaeological sites, including Lucky Break, Keatley Creek, and Hat Creek (Freiberg and Stenholm 1991; Lepofsky et al. 1996; Pokotylo and Froese 1983). Evidently, Plateau First Peoples preferred these three species as fuel woods for many purposes, including the preparation of food and medicine as well as the smoking of hides (Turner 1998).

Differences between the two charcoal assemblages include the condition of the specimens and that sagebrush (*Artemisia cf. tridentata*) was present in 37.5% of the Unit 30 Hearth samples but absent from the Unit 32 Hearth. Plateau groups used sagebrush as kindling because of its highly flammable properties (Turner et al. 1990). While most specimens from the Unit 32 Hearth were in an identifiable state, many specimens from the Unit 30 Hearth were too fragmented to be identified beyond conifer and deciduous. This suggests that the Unit 32 Hearth burned differently or else suffered less mechanical damage, possibly indicating that it remained undisturbed after its final use. In comparison, the frequency of unidentifiable specimens in the Unit 30 Hearth suggests that mechanical damage occurred, and supports the above inferences that the Unit 30 Hearth was reused.

Significantly, within the Unit 30 Hearth, pine charcoal had a notably higher ubiquity score than Douglas-fir. This pattern contrasts with those of the conifer needles in Unit 30 (Table 3), where substantially greater concentrations of Douglas-fir needle fragments were recovered than pine. These disparities suggest that pine was the preferred fuel but that for other purposes, the needle-laden boughs of Douglas-fir were selected over those of pine. Again, these patterns accord well with ethnographic reports that Plateau groups used fir boughs to line the upper layers of pit ovens, sprinkled with a small number of pine needles (Teit 1909).

The Question of Chenopods

Most of the plants recovered from the Unit 30 and Unit 32 hearths probably grew within the terrain that surrounded EeRb 140. It is therefore likely that some plants were accidentally brought to the site or arrived by natural means, e.g., the mustards, strawberry blite, dock, stickseed, stoneseed, grasses, sedges, and wild roses. Nevertheless, we inferred that the majority of these plants represent human plant-use activities because all the identified species were of economic value to Plateau First Peoples (Table 3) and because the specific combinations of plants found here accord with specific plant-use activities, i.e., the preparation of food and medicines. Again, it is conceivable that some species had uses for Late Prehistoric people that were lost to later generations or were not reported by ethnographers. For example, herbaceous species such as the mustards, stickseed, and dock could possibly have been used as condiments for flavouring meat or as lining in pit-cooking.

Chenopodium cf. capitatum

Of all the plants recovered at the site, the presence of strawberry blite (*Chenopodium cf. capitatum*) is the most difficult to explain (Figure 12). These seeds clustered in the Unit 30 Hearth but were sparse or absent in the other contexts. In fact, strawberry blite was the most abundant seed in the Unit 30 Hearth, comprising 86% abundance (n =10,904) and having an 80% presence score.

Certainly, the fact that strawberry blite clustered only within the Unit 30 hearth, in large concentrations, and is relatively absent elsewhere, strongly suggests that it was introduced as a result of human selection. Natural causes such as seed rain, the likelihood that *Chenopodium* plants grew near the Unit 30 hearth and/or the large number of seeds typically produced by *Chenopodium*, may explain this concentration. However, natural causes do not explain how large numbers of seeds got into the feature in the first place, or why they were relatively absent from samples taken from the surrounding areas.

Chenopodium seeds are frequently recovered from Plateau archaeological sites. It was recovered from specialised pit-ovens at *Ck̓emqenétkwe* (Peacock 2002) and White Rock Springs (Nicolaides 2010) and from domestic contexts at Keatley Creek. Lepofsky et al. (1996) argue that *Chenopodium* found in domestic contexts of the Keatley Creek pit-house village site, near present day Lillooet, were accidentally introduced into the pit-houses by people who unintentionally harvested them with other resources.

Several *Chenopodium* species have been used as food in other parts of the Americas, but whether or not this plant was used as a food on the British Columbia Plateau is subject to debate. Teit (1909) reported that the Tsilhqot̓in (Chilcotin) ate the fruit of *C. macrocarpum* but according to Hitchcock et al. (1964) this species is not indigenous to the region. Kuhnlein and Turner (1991) propose that instead, it was the fruit of *C. capitatum* that was occasionally eaten by some Tsilhqot'in and Ktunaxa people. Other than these two sources, *Chenopodium* is not reported as a food on the Plateau. In fact, Turner (1997:186) notes that the fruit of strawberry blite was avoided because "… if you eat them you will get very fat, as if you are pregnant, and your friends will laugh at you".

The ethnographies do report the use of strawberry blite as a dye. This raises the possibility that, in addition to food processing, the Unit 30 Hearth served as a place to prepare raw materials for domestic use, such as the dying and smoking of hides (see also Nicholas et al. this volume). Ponderosa Pine wood, also recovered from the Unit 30 hearth, is also reported to have been used for smoking hides (Turner 1998). However, given that the Unit 30 Hearth appears to have been used primarily for food processing, we cannot rule out the possibility that strawberry blite was also used as a food or else as a raw material to facilitate food processing, e.g., as a condiment or part of the lining of the pit oven. This interpretation diverges significantly from reported Plateau uses of this plant.

"Missing" Plants

A number of species reported to have been of economic importance on the Plateau are absent from EeRb 140, many of them species known to have been processed by open-hearth and/or pit-oven methods. Early summer ripening plants (mid-May–mid-June) as well as those harvested in the late fall (October) are poorly represented in the assemblage. Particularly conspicuous by their absence are early summer species that probably grew within the meadowlands and shrub-steppe around the site including: prickly pear cactus (*Opuntia* spp.), yellowbell (*Fritillaria pudica*), chocolate tips (*Lomatium dissectum*), desert hog-fennel (*Lomatium macrocarpum*), and bitterroot (*Lewisia rediviva*). Also missing from the assemblage were plants that typically flourish in the uplands including soapberry (*Shepherdia canadensis*), strawberry (*Fragaria* spp.), kinnikinnick (*Arctostaphylos uva-ursi*), balsamroot (*Balsamorhiza sagittata*), spring beauty (*Claytonia lanceolata*), Solomon's seal (*Maianthemum* spp.; syn *Smilacina* spp.), and black tree lichen (*Bryoria* spp.). Balsamroot, (which also grows in the gullies that border the terraces) and black tree lichen are known to have been processed by drying over or near hearths or in pit ovens (see Peacock 1998; Crawford, Chapter 9, this volume), with technology similar to that used at the site.

We concluded that the low numbers of early summer and autumn ripening plants, combined with the low numbers of upland species (Tables 7 and 8, discussed below), support the interpretation that this assemblage represents mid to late summer activities and that most plants were collected from the low to mid elevations surrounding the site. The relative absence of upland plants at the site can best be explained by the fact that upland species were probably processed near to their harvesting grounds. The relative absence of early summer and autumn ripening taxa suggests that the features examined here were not used for plant processing during these time periods. It is possible that these "missing" plants were processed at other terrace sites within the locality that have not yet been examined for plant remains. On the other hand, they may have been processed at EeRb 140 but, due being well-wrapped during pit-cooking, did not leave traces. Another possible explanation is that the tissue of these species did not survive due to their fragility and other taphonomic factors.

The Evidence for Land Use: Environments and Seasonality

Table 7 classifies EeRb 140 plant assemblages according to the habitats in which they most commonly grow in the Kamloops area, described in Ethnobotany Framework 1 (Table 3). According to Table 7, The EeRb 140 plants were available in the low, mid and upland habitats of the Bunchgrass, Ponderosa Pine, and Douglas-fir vegetation zones. The majority of species represented here are most abundant in the dry sage and grass steppe of the lower altitudes

Table 7. Vegetation zones from which the EeRb 140 plants were probably collected based on the ecosystems in which they most commonly occur[1].

ENVIRONMENTS IN WHICH THESE PLANTS ARE THE MOST COMMON

SEEDS & ECOSYSTEMS	UNIT 30 HEARTH		UNIT 32 HEARTH	
	% seed abundance	% presence	% seed abundance	% presence
BUNCHGRASS (BG) ZONE				
Artemisia sp.	6.1	37		
Artemisia cf. tridentata (CH)		37.5		
Stickseed (*cf. Lappula*)	4.3	60		
Total % abundance BG zone	**10.4**			
BG/PP OVERLAP				
Saskatoon (*A. alnifolia*)	40.2	91	5.5	50
Red-osier dogwood (*C. stolonifera*)	0.3	14		
Grasses (Poaceae spp)	20.6	91	76.3	75
Chokecherry (*P. virginiana*)	2.4	66	10.5	75
Total % abundance BG/PP	**63.5**		92.3	
PONDEROSA PINE (PP) ZONE				
Pine (*Pinus sp.*)*	<0.1	3		
Pine (*Pinus cf. ponderosa*) (CH)"		100		100
Total % abundance PP	**<0.1**			
DOUGLAS-FIR (DF) ZONE				
Hazelnut (*cf. C. cornuta*)	0.2	14		
Douglas fir (*P. menziesii*)(CH)		25		33
Blueberry/huckleberry (*Vaccinium)*	0.2	9		
Total % abundance DF zone	0.4			
SPECIES FOUND IN ALL 3 ZONES ZONES				
Nodding onion (Allium cernuum)		77		
Sunflower (Asteraceae sp.)	<0.1	3		
Mustard (Brassicaceae spp,)	10.5	54	2.6	25
Chenopod (*C. cf. capitatum)*	**	80	2.6	25
Sedge (Cyperaceae spp.)	0.5	26		
Heath (Ericaceae spp.)	0.2	9		
Cottonwood/willow (Populus/Salix)(CH)		100		100
Currant/gooseberr (*Ribes* sp.)	1.1	31		
Rose (Rosaceae)	0.1	6		
Rasp/thimbleberry (*Rubus* sp.) himbleb (*Rubus* sp)	1.7	34		
Dock (*Rumex* sp.)	0.1	6		
Total % abundance 3 zones	**14.2**		**5.2**	

[1] References: Alexander 1992a; Hitchcock et al. 1955-1969; Meidinger and Pojar 1991; Parish et al. 1996; Turner 1997; Turner and Peacock 1995; Turner et al. In Prep.

** The relative abundance of chenopodium is omitted for the Unit 30 hearth as the values are extremely high and otherwise obscure the patterning of the other taxa.

Table 8. Months in which EeRb 140 plants were probably harvested, based exclusively on the archaeobotanical seed assemblage, with reference to the ethnobotanies summarised in Table 3 (above).

PROBABLE SEASONS OF HARVEST	TAXA & SEASONS	UNIT 30 HEARTH		UNIT 32 HEARTH	
		% seed Abundance	% Ubiquity	% seed Abundance	% Ubiquity
	EARLY SUMMER (mid May–mid June)				
	Nodding onion (*Allium cernuum*)*		77		
	Sunflower (Asteraceae sp.)*	<0.1	3		
	Mustard (Brassicaceae sp.)*	10.5	54	2.4	54
	Stickseed (*cf. Lappula* sp.)*	4.3	60		
	Total % abundance early summer	**14.8**		**2.4**	
	MID -SUMMER (late June through July)				
	Saskatoon *(A. alnifolia)**	40.2	91	9.7	50
	Chenopod (*C. cf. capitatum)*	**	80	2.4	25
	Sedge (Cyperaceae sp.)	0.5	26		
	Heath (Ericaceae spp.)*	0.2	9		
	Pine *(Pinus* sp.)*	<0.1	3		
	Grass (Poaceae spp.)*	20.6	91	70.7	75
	Currant/gooseberry (*Ribes* sp.)	1.1	31		
	Rose (Rosaceae sp.)*	0.1	6		
	Raspb/thimbleberry *(Rubus* sp.)*	1.7	34		
	Dock *(Rumex sp.)**	0.1	6		
	Blue/huckleberry *(Vaccinium* sp.)*	0.2	9		
	Total % abundance mid-summer	**64.7**		**82.8**	
	LATE SUMMER (August through September)				
	Artemisia sp.	6.1	37		
	Red-osier dogwd (*C. stolonifera*)	0.3	14		
	Chokecherry (*P. virginiana*)	2.4	66	12.2	75
	Total % abundance late summer	**8.8**		**12.2**	
	AUTUMN (October)				
	cf. Hazelnut (*C. cf. cornuta*)	0.2	14		
	Total % abundance fall	**0.2**			

*Indicates that, at the earliest, this plant fruits at this time, but may ripen later, depending on the species and altitude.

** The relative abundance of chenopodium is omitted for Unit 30 as the values are extremely high and otherwise obscure the patterning among the other taxa.

and the open coniferous forests of the mid altitudes**.** In fact, with the exception of nodding onion, huckleberry/blueberry, hazelnut, and Douglas-fir, most of these plants were probably obtainable within the vegetation zones that immediately surround the site. The proximity of these harvesting grounds to the site supports observations by archaeologists and ethnographers that from the Late Prehistoric through historic times, that Plateau people typically processed plant foods near to where they were harvested (Pokotylo and Froese 1983; Turner 1992).

Table 8 classifies the EeRb 140 plants identified from seeds into their seasons of ripening. Together the seasons of ripening and habitat characteristics of the different species found at EeRb 140 indicate that the site was used between early and late summer. Most of the edible plants found at EeRb 140 are species that ripen between late June and August or September, depending on the elevation in which the particular plant grew. If the people who used EeRb 140 did process food plants near the harvesting sites, as reported in the ethnographies (Alexander 1992b), then it is more likely that berries such as the Saskatoon, raspberry/thimbleberry were harvested in the lower elevations and brought to EeRb 140 to be processed in June or July (Wollstonecroft 2002). In the latter scenario, people would have returned to the site again in August or September to process the later-ripening red-osier dogwood and chokecherries. The latter interpretation accords more closely with the ethnographic pattern described by Alexander (1992b), who reports:

> People returned to the terraces in June. The ripening of the berries, especially saskatoons (the most common berry on the Interior Plateau), was the event the most commonly used to signify the month. The upper edge of the Terraces, near the treeline, was one of the most important locations for gathering saskatoons and soapberries, and their harvesting and drying continued into July. Gathering wild onions was also an important activity in early July (Alexander 1992b:158).

It is also possible that early-ripening species were partially processed in June/July and processed again in August/September along with the red-osier dogwood and chokecherry.

The Evidence for Exchange and Long-Distance Travel

Most of the charred plants found at EeRb 140 are species that probably grew and were harvested from the environment around the site: the Bunchgrass, Ponderosa Pine, and Interior Douglas-fir ecosystems. Some plants found at EeRb 140 may nevertheless have been obtained by exchange or travel, such as huckleberry/blueberry, and hazelnut (Teit 1909; Turner et al. forthcoming). These species could feasibly have been collected from the nearby Douglas-fir uplands. On the other hand, huckleberry/blueberry are reported to have been particularly abundant in the Neskonlith Creek, to the east of present-day Kamloops (Palmer 1975a) and in recent times hazelnuts were supplied by the Chua Chua band of the North Thompson River.

According to ethnobotanical research with Plateau First Nations, the Secwepemc and their neighbours routinely exchanged plant and animal products among themselves and with neighbouring first nations (Ignace and Ignace, this volume; Turner and Loewen 1998; Turner et al. forthcoming). People were thus able to access resources from up to nine or more different ecosystems. In the case of the Stk'emlupsemc, travel and exchange permitted them to expand the accessible range of resources by almost threefold. Likewise, it is feasible that the occupants of EeRb 140 had similar practices of exchange and travel. The low numbers of taxa from more distant ecosystems is again probably due to the fact that people processed plants near to where they were collected.

Identifying Gender

Berry drying and pit-oven cooking are ethnographically reported to be primarily female tasks, as are the harvesting of food and medicinal plants (Alexander 1992a; Palmer 1975a; Teit 1900, 1909; Turner 1992, 1997; Turner et al. 1980; Turner et al. 1990). Therefore, if the ethnographic pattern does indeed hold for EeRb 140 then the archaeobotany suggests that this site represents the routine activities of a female task group(s). The role of women's production as it relates to the procurement, processing and control of critical resources, is of prime importance in gender research (Jackson 1991). If we can make distinctions between archaeological features and sites according to gender, we may also be able to determine how men and women differentially affected site formation processes (Brumback and Jarvenpa 1997a). Moreover if we can recognise the patterning in men's and women's activities over the landscape, we will also be better able to identify links between gender and the spatial organisation of labour and the distinct roles of men and women as they structured prehistoric Plateau subsistence settlement systems (Bromback and Jarvenpa 1997a, 1997b; Jackson 1991). A recent exploration of Plateau women's work by Nicolaides (2010) shows that further studies of women's space-based practices would be highly useful for interpretations of archaeological sites and archaeobotanical assemblages in this region.

Comparing the Plant Assemblages of EeRb 140

We compared the archaeobotany of EeRb 140 with those of the five other Late Prehistoric Canadian Plateau archaeological sites described in Table 2. Several similarities were evident between the Unit 30 hearth and the pit-oven sites, particularly the common use of *Populus* spp., Douglas-fir, and pine woods as fuel, the presence of conifer needles (White Rock Springs) and the presence of *Allium* (Upper Hat Creek and Keatley Creek). Nevertheless there were more differences than similarities, including the fact that EeRb 140 produced a much wider and different range of plants, is dated to a much later period in time (the Kamloops Horizon), is found in mid-altitude rather than upland area, and is significantly smaller than the Shuswap and Plateau horizon roasting pit sites.

The Unit 30 Hearth and Lucky Break pit oven share several characteristics including being from the same temporal period (Kamloops Horizon/Late Prehistoric III) and similar physical features including diameter and depth. Like the Unit 30 Hearth, the Lucky Break pit-oven was relatively small and shallow and lined at the bottom with charcoal, some of it from coniferous wood, and fire-cracked rock. Similar to the EeRb 140 Hearth, charred seeds of sedge, fragments of *Allium* spp,. and conifer needles were found here. Nevertheless, there are significant differences. *Lomatium* spp. was found at Lucky Break but not EeRb 140. Significantly, EeRb 140 produced a considerably wider range of species indicating it was used for a wider range of activities.

Similarities were also apparent between EeRb 140 and the Big Meadow Camp blueberry/huckleberry processing site. The archaeobotany and archaeological features of both EeRb 140 and the Big Meadow Camp suggest that berries were dried on reed and grass matting in proximity to a hearth. However, while both grass stems and seeds were recovered at the Big Meadow Camp (Mack and McLure 2002), at EeRb 140 only the seeds were recovered.

The greatest number of similarities between the archaeobotanical assemblage from EeRb 140 and the other sites discussed earlier (Table 2), in terms of the range and types of species recovered, are with domestic contexts of the Keatley Creek pit-house village, (Wollstonecroft 2002). This is surprising because one would expect a significantly greater range of plant-related activities in a winter village than in a specialised processing site (Alexander 1992b). Both EeRb 140 and the Keatley Creek pit-houses produced edible berries including Saskatoon, red-osier dogwood, Ericaceae, *Rubus* spp., *Ribes* spp., rose and choke-cherry, and charcoal that was predominantly composed of *Populus/Salix*, *Pinus* spp., and Douglas-fir (Lepofsky et al. 1996).

Some plants appear to have been used in different ways and/or to have been introduced by different means at each of these sites. Douglas-fir and significantly large quantities of Ponderosa Pine needles were distributed around the periphery of the Keatley Creek pit-house floors, which Lepofsky et al. (1996) interpreted as sleeping areas. Grasses and *Chenopodium* seeds were also found in these "sleeping areas." Lepofsky et al. (1996) argue that the grass seeds and conifer needles represent materials used as bedding while the *Chenopodium*, stoneweed, *Silene* spp., *Phacelia* spp. sedges, and prickly pear cactus seeds were brought into the pit-houses accidentally or by natural factors. While charred birch bark was found at EeRb 140, none of the birch bark found at Keatley Creek was charred.

Edible species found at EeRb 140 but not the Keatley Creek pit-houses are the bulb tissue of nodding onion and the seeds of hazelnut, pine, and *Vaccinium* spp. Non-food species that were recovered from only our site were *Artemisia* spp., Asteraceae, mustards, dock, and stickseed. Plants that were unique to the Keatley Creek village include kinnikinnick, prickly pear cactus, *Silene* spp., *Phacelia* spp., and Solomon's seal.

In summary, the archaeobotany of EeRb 140 has similarities with all four Late Prehistoric sites examined above. However, in terms of the range of identified species, the plant assemblage from the EeRb 140 is more similar to the Keatley Creek winter village, than the specialised processing sites. Thus, in addition to the processing and preservation of plant foods, EeRb 140 appears to have served a range of activities of daily life.

Summary and Conclusion

The archaeobotany of EeRb 140 suggests it was a seasonally-used work area, which served multiple purposes including the preservation of berries for winter stores and the pit-cooking of plant (and animal) foods for immediate consumption. It was most likely used by women's task groups between the months of June and August/September. The range of species recovered from the two hearth features suggest that this group followed a radiating mobility pattern to collect, process, preserve, and stockpile seasonally available resources from nearby Bunchgrass, Ponderosa Pine, and Douglas-fir ecosystems.

Given that EeRb 140 and the nearby pit-house village site (EeRb 77) produced contemporaneous archaeological components, it was probably members of this riverside community who created and used the site. As observed by Alexander (1992b:158), during the summer, Plateau groups would have frequented their winter villages to stockpile preserved food and other supplies. Thus EeRb 140 may have provided an intermediary station between the harvesting grounds and the winter village (EeRb 77), serving as a place to process and preserve berries and other edible plants before taking them to the winter village to store. During this period, when there were regular movements of people between the harvesting grounds, EeRb 140 and the winter village, EeRb 140 may also have provided a convenient location for the routine activities of daily life, such as processing of food for immediate consumption and the preparation of medicines, as well as the manufacture of stone and bone tools, which are suggested by the lithic assemblage. Therefore, we believe that the interpretation of EeRb 140 as a multipurpose plant-processing site best explains the condition, wide range, and relatively high densities of plant remains that were found here.

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