THE SECRET PAST LIFE OF PLANTS:
Paleoethnobotany in British Columbia

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INTRODUCTION

It is now over fifty years since Charles Borden recovered cherry seeds (*Prunus* sp.) from nine- to ten-thousand-year-old hearths at the Milliken site in the Fraser Canyon (Borden 1960, 116-17; 1975, 63-69; Pokotylo and Mitchell 1998). Based on these few seeds, Borden inferred that this now iconic site was a fall camp, devoted to salmon fishing. However, this accidental paleoethnobotanical discovery also had the potential to significantly advance our thinking about the "gathering" part of the fisher-hunter-gatherer subsistence package. Armed with these hearth contents, we gained the potential to round out our image of this millennia-old encampment from one focused on salmon fishing, with men doing the active harvesting, to an image that encompasses multi-aged and gendered family groups conducting a range of tasks – including harvesting and processing of the plant resources – along the banks of the Fraser Canyon.

Since Borden's discovery, we have learned a considerable amount about British Columbia's past from the archaeological remains of plants and associated features. Although exceedingly slow in the making, we have now accumulated a significant corpus of data focused on ancient plant use. Collectively, and especially in combination with linguistic and ethnographic evidence, oral history, and traditional ecological knowledge, these data inform us about the ancient use of plants for foods, fuels, medicines, and technologies involving plant resources employed by the ancestors of contemporary First Nations peoples.

This article summarizes what we have learned from the study of ancient plant remains recovered from archaeological sites on the Coast and in the Interior of British Columbia. This research falls within the rubric of paleoethnobotany or archaeobotany – two roughly synonymous terms used to describe the study of past human relationships with the plant world. We base our discussion on a summary of all macrobotanical remains (i.e., those you can see with the naked eye) recovered in archaeological sites in British Columbia, including the identification of seeds, wood, and other non-woody plant materials (e.g., needles, cones, nut shells). We also refer to studies of microremains (e.g., those requiring magnification, such as pollen, phytoliths, and starches) conducted in British Columbia, though these are still rare. Because of our expertise, we focus the body of the text on non-artifactual remains recovered from flotation samples in archaeological contexts, but we highlight the value of artifacts to the study of ancient plant use in the two case studies. We also include in our review indirect evidence of ancient plant use in the form of plant-processing features. The review draws on a previous review of paleoethnobotany in the larger Northwest region (Alaska to Oregon) by Lepofsky (2004) but focuses on British Columbia. We use this earlier review as a foundation for evaluating the status of paleoethnobotany in British Columbia in the decade since it was written.

We begin this article with a short history of paleoethnobotany in British Columbia, showing a long, if sporadic and often isolated history of this subdiscipline in consulting and academic archaeology. We provide a brief discussion of sampling and interpreting the paleoethnobotanical record in order to encourage all BC archaeologists, regardless of specialty or the milieu in which they work, to be thinking about incorporating paleoethnobotany into their sampling designs. We then present a summary of the conceptual advances learned through paleoethnobotanical research, using specific examples to highlight this knowledge. We close with a forward-looking discussion about the potential of paleoethnobotany in the province, charting some of the current and prospective theoretical and methodological directions of research and practice. Our article is followed by two case studies. Croes provides an overview of wet site archaeology in British Columbia and beyond, while Bernick focuses on the results of the analysis of waterlogged artifacts from the Little Qualicum River wet site on the east coast of Vancouver Island.

A HISTORY OF PALEOETHNOBOTANY IN BRITISH COLUMBIA

In the mid-1970s, several BC archaeologists attempted to retrieve paleoethnobotanical remains from archaeological sites. This attention to plant remains was nested within the larger disciplinary focus on environmental archaeology characteristic of that time (e.g., Minnis

1978; Watson 1976). In 1975, the Royal BC Museum (then the British Columbia Provincial Museum) developed archaeological field forms that listed "flotation for floral remains" as one of a suite of laboratory analyses that could be completed on matrix samples. Excavators were also asked to note if plant remains were observed during excavation and to collect seeds, when possible (Grant Keddie, personal communication, 2013). At least one flotation machine was built to retrieve plant remains and was used in the mid-1970s at the Hope Archaeological Project (Ketcheson, Norris, and Clark 1977; Figure 1a). In the late 1970s and early 1980s, the fortuitous discovery of plant-processing features in the Upper Hat Creek Valley and Pitt River projects, respectively, led to focused analyses of non-artifactual plant remains (Ketcheson 1979; Patenaude 1985; Pokotylo and Froese 1983).

These early projects made Northwest Coast archaeologists aware of the potential for plant remains to contribute to archaeological interpretation. They did not, however, considerably expand our understanding of ancient plant use. This was partly due to the fact that matrix samples were collected but remained unanalyzed, but, more importantly, it was because there was not often a clear research design focused on excavating and processing contexts in which in situ plant remains would be preserved.

The importance of water-saturated sites ("wet sites") for retrieving plant remains in the form of artifacts was first recognized in the late 1960s in British Columbia with the discovery of the Axeti site on the Central Coast by Philip Hobler (1976). Since then, many botanical artifacts have been recovered and identified from wet-site middens and waterlogged fish weir features (Bernick 1981, 2003; Inglis 1976, case studies). These analyses have considerably expanded our understanding of how Indigenous peoples of British Columbia used plant materials to construct various artifacts. However, similar to the famous Ozette wet-site excavations in Washington State (Gill 1983), seeds and other small remains have not been collected systematically from the majority of British Columbia's wet-site excavations (but see Lyons et al. 2010). Furthermore, while other non-artifactual plant remains (e.g., sticks, leaves, unmodified wood) have been collected in abundance from waterlogged sites, with few exceptions they have not been analyzed beyond determining whether they are artifacts or naturally deposited "ecofacts" (Kathryn Bernick, personal communication, 2013).

Similar to coastal wet sites, BC Plateau archaeologists discovered early on that some "dry" sites have extraordinary contexts for plant preservation. In the course of the Lillooet Archaeological Project in the early 1970s, for instance, an abundant and diverse array of desiccated plants was recovered from sites (Compton, Mathewes, and Guzmán 1995; Mathewes 1980). Despite their potential importance, these data have not yet been fully reported. A more recent discovery of a basket from the Six Mile Rapids fishery near Fountain, with equally abundant and diverse botanical remains (Villeneuve et al. 2011), indicates that we have much to learn from systematically sampling these dry contexts in Plateau sites.

The systematic recovery of plant remains via flotation from BC archaeological sites truly began with Brian Hayden's Keatley Creek project near Lillooet in the mid-1980s. The Keatley Creek project stands apart from most others because it involved a paleoethnobotanist (Lepofsky) from its inception. Since the project's research questions were explicitly linked to retrieval methods and formation processes (Hayden 1997), research at Keatley Creek has resulted in numerous publications about ancient plant use (e.g., Hayden and Mossop Cousins 2004; Lepofsky 2000a, 2000b; Lepofsky et al. 1996). Following the Keatley Creek project, other long-term research projects have actively incorporated paleoethnobotanical analyses into their overall project goals, including Michael Blake's and Dana Lepofsky's research at Scowlitz (Lepofsky et al. 2000; Lepofsky and Lyons 2003) and Anna Prentiss and colleagues' investigations throughout the Middle Fraser Canyon (Lyons 2003; Prentiss and Kuijt 2012; Prentiss et al. 2007, 2011).

Since the year 2000, over fifty excavation projects in British Columbia have incorporated analyses of plant remains recovered through flotation. Although the number of paleoethnobotanical analyses still amounts to only a small percentage of the total number of excavation projects per year (average around 13 +/- 10 percent per year; Figure 2), considerably more projects have involved paleoethnobotany in this period than any time prior in BC archaeology. Of the projects that incorporated paleoethnobotany since 2000, over one-third (N = 18; 38 percent) were conducted in the context of academic research. There exists a huge variance in the number of projects that incorporate paleoethnobotany, and, in some years, no paleoethnobotany was conducted at all (Figure 2). In our experience, a consistent set of academic researchers and a small coterie of consulting companies routinely incorporate paleoethnobotany into their projects. Many BC archaeologists remain unaware of the major contribution that archaeobotanical data can make to their analyses.

Figure 1. Flotation devices for retrieving paleoethnobotanical remains used in British Columbia excavation projects. Top: Pat Gerry and Barbara Routledge, in 1976, floating sediment samples from the excavation of the Katz site (*Sxwowiymelh*) in the upper Fraser Valley using a froth flotation machine (Credit: Bryan McGill photo courtesy University of Victoria; McGill 1976). Bottom: The authors floating sediment samples during the 1997 excavations of the Scowlitz site, located at the confluence of the Harrison and Fraser rivers. Sediment samples of known volume (minimum one litre) were poured into a bucket of water. Water flowed into the container via the clear tube, slightly agitating the water to suspend the plant material ("the light fraction"). The heavier sediment settled in the bottom of the bucket ("the heavy fraction") and the plant remains floated into a fine mesh screen (0.425 millimetres) and then were dried for further sorting and analysis.

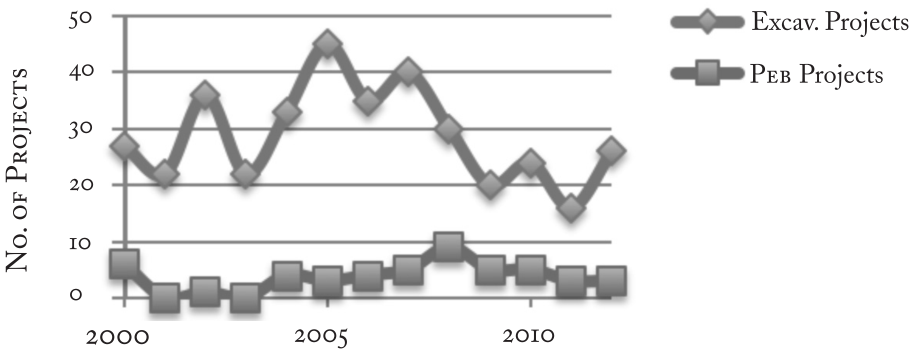

Figure 2. Approximate number of excavation projects in British Columbia and projects that conducted paleoethnobotanical analyses of flotation samples. Number of excavation projects is based on the number of Archaeology Branch-issued investigation permits (compiled by Al Mackie). Paleoethnobotanical (PEB) projects were assigned to a year based on the year the analysis was completed and/or reported. Thus, there is an offset between the year the permit was granted and the year the analysis was completed. We suspect that the peak in excavation permits between 2005 and 2007 corresponds with the minor peak in paleoethnobotany in 2008.

SAMPLING AND INTERPRETING THE PALEOETHNOBOTANICAL RECORD OF BRITISH COLUMBIA

We start this discussion with the assumption that there *are* paleoethnobotanical materials in most archaeological sites but that, in order to retrieve meaningful samples, we need to develop sampling strategies appropriate to the scale and questions of the larger project. We note that there are many commonly held assumptions about the limited potential for paleoethnobotany in British Columbia, most of which are based on unfounded assumptions about the record (Table 1). Thus, while the analysis and interpretation of plant remains is a specialized field, designing projects to incorporate paleoethnobotany should be on the minds of all archaeologists. Without question, the most successful paleoethnobotanical projects in British Columbia have involved ancient plant experts from the earliest stages of project planning, be they academic or consulting projects (e.g., Keatley Creek, Bridge River, Scowlitz, White Rock Springs, DhRp-52).

Deciding where to collect plant samples requires understanding two fundamental attributes about the paleoethnobotanical record:

(1) the source of the plant remains and (2) the context in which the plant remains were preserved (Lepofsky 2000a, 2000b, 2002, 2004; Pearsall 2000). Thinking beforehand how plants might enter archaeological deposits (e.g., as fuel, as food, accidentally via wind or water [Minnis 1981]), and tying those possibilities to research questions, will considerably streamline sampling designs.

Once in the archaeobotanical record, plants are preserved by charring, waterlogging (case studies), or desiccation. Since charring is the most common context for preservation in BC sites, the record is skewed towards fuels and plant foods that have been processed with fire in some way. Evidence for medicinal and ritual plant use can be elusive because such plants were often stored as raw herbs and roots, often without seeds attached, away from fires (but see Compton, Mathewes, and Guzmán 1995; Ostapkowicz et al. 2001). An efficient sampling strategy for food and fuel is to focus on discrete features and other contexts in which plants were exposed to fire (e.g., cooking features, hearth dumps, burned structures). For small excavation projects, such as mitigations often undertaken by consultants, a small, well-placed number of samples can still yield results that contribute to feature- and site-level interpretation.

With few exceptions, the most effective way to recover an adequate sample of plant remains from non-waterlogged sites is to collect sediment samples that are then "floated" in the field or laboratory. Flotation (Figure 1) is an elegant method for efficiently retrieving small, fragile plant parts from a standard volume of sediment (usually one or multiple litre increments). Macroremains, such as large seeds that are haphazardly collected during excavations or dry-sorted while screening, are of far less analytical value. Samples collected from waterlogged sites must be processed and analyzed "wet" or, less preferably, wet-screened and slowly dried and then analyzed. In our opinion, the collection and processing of archaeobotanical samples from appropriate contexts should become a requisite part of all excavations in British Columbia. For a more detailed summary of best practices for retrieving paleoethnobotanical remains in the Northwest, see Lepofsky (2004).

Varying degrees of inferences are required to interpret ancient plant use from British Columbia's archaeological sites. On the more direct end of the inferential scale is the identification of macrobotanical remains recovered by flotation (Appendices 1 and 2) and the identification of artifacts, such as fish weir stakes (Lyons 2011a) and other waterlogged remains (case studies). Indirect evidence includes the identification of features that, based on morphology and location, are inferred to be

TABLE 1
Assumptions (and counter-arguments) about sampling and interpreting the paleoethnobotanical record of British Columbia

Common assumptions	Counter-arguments
Plant remains won't preserve in the high pH context of coastal shell middens	Charred remains do preserve, often in abundance
There is no point in identifying plants because it will only produce a list of plants	Lists of animals and stone tool types are the foundation of culture histories; lists of plants are significant too
There's no point in identifying wood charcoal	This is an important source of information about paleoecology and cultural preferences related to fuel use and technologies
Paleoethnobotanical analyses are expensive	These analyses are no more expensive than other specialized studies
Huge samples are needed at huge expense, to say something interesting	Small samples can yield valuable results (Lepofsky et al. 2001; Lyons 2009, 2011a; Lyons and Orchard 2007)
Plant remains are found infrequently in the archaeological record	Abundance will depend on the contexts sampled; and a large dataset is often not required in order to obtain significant results

used for plant processing. Examples of the latter in British Columbia are the upland heating features for drying blueberries (Frank 2000), the roasting features used to cook "root foods" in the Plateau (e.g., Hayden and Mossop Cousins 2004; Lepofsky and Peacock 2004; Peacock 1998, 2002), and a variety of plant-processing features from the early Holocene site of Xay:tem in the Fraser Valley (Ormerod 2002).

Given that many archaeological sites and the features within them had multiple functions (Hayden and Mossop Cousins 2004) and complex life-histories (Peacock 2002; Wollstonecroft 2002), definitively determining ancient feature use ultimately depends on adequately sampling and analyzing all of the contents of a feature (i.e., plant macroremains, micro-fauna, and micro-lithics). Retrieving direct evidence of plant foods in roasting pits has only been marginally successful due to the super-abundance of charcoal in many of these features and the fact that plant foods, particularly "root foods" were carefully removed after cooking in order to be consumed (Nicolaides 2010; Peacock and Kooyman n.d.).

Despite best efforts, systematic attempts at paleoethnobotanical research will not always result in the retrieval of identifiable plant remains (e.g., Ruggles 2007). If cognizant of the role that source and context of preservation can play, the paleoethnobotanist and project leader can determine whether the absence of plant remains actually reflects the (near) absence of ancient plant activities at a site. There are diverse reasons for negative data. At the small site of DiRu-5 on Bowen Island, for example, the lack of plant remains recovered from hearth features likely relates to a focus on hunting at this short-term camp, which, in turn, speaks to the gender-specific nature of the site (Lyons 2011b). At sites where the paleoethnobotanical analysis is exploratory, the use of a phased approach to sampling can also be helpful, whereby small batches of samples are analyzed at a time to determine if and where plant remains are present.

The interpretive potential for sites with archaeobotanical remains is vast and ever-expanding. Paleoethnobotanists in British Columbia are fortunate to be able to work with the region's Indigenous communities – many of whom continue their traditional relationships with plant resources – to address questions of ancient plant use. We are also fortunate in having one of the richest ethnobotanical and ethnoecological records in the world (as evidenced by this volume and others, e.g., Deur and Turner 2005). Knowledge shared by living and now-passed knowledge-bearers contributes immensely to our collective understanding of how, where, and when plants were tended, collected, processed, and used by present and past First Nations peoples. These elements form the foundation for archaeobotanical interpretation, and they help not only to increase education and awareness of the potential for paleoethnobotany but also to build the tools for its development.

WHAT HAVE WE LEARNED?

Paleoethnobotanists in British Columbia have learned an enormous amount about plant use among the region's First Nations. A significant number of taxa have been identified in the archaeobotanical record, representing a range of plants used for food, fuel, medicine, ritual, and technology from a range of ecosystems (Appendices 1 and 2). Most analyzed paleoethnobotanical assemblages date to the last two to three thousand years, reflecting the age of most excavated sites in the province. The few older sites that have been systematically analyzed (e.g., McCallum, Xay:tem, DhRp-52) demonstrate that plants and plant processing, and the social aspects accompanying these activities, were a regular part of the seasonal round and movements of the region's peoples from at least the mid-Holocene forward.

Paleoethnobotanical investigations, as part of larger ethnoecological investigations, have provided otherwise elusive insights into human interactions with and modifications to the landscape. For instance, Lepofsky and colleagues (Lepofsky et al. 2003; Lepofsky et al. 2005) identified charred plant remains from features and from soil profiles in order to understand the history of prescribed burning in low and high elevation meadow ecosystems. Lyons and colleagues (2010) studied the sequence of natural seed rain deposition in an ancient wetland garden deposit in Pitt Meadows to determine the succession of wetland types managed by the resident community over several millennia. Paleoethnobotany has also been combined with other datasets to provide insights into human interactions with high and low elevation meadows (Lepofsky et al. 2003; Lepofsky et al. 2005; Pokotylo and Froese 1983).

When appropriately combined with ethnographic information, the paleoethnobotanical record can be an especially productive avenue for expanding our understanding of ancient plant use. This is well illustrated by recent work at the site of DhRr-74, on the south bank of the Fraser River in present-day Surrey, where excavations uncovered a rich archaeological site that, for decades, had been capped in concrete due to industrial activities. The site was a historically known base camp used for fishing and harvesting wetland plants, the latter use recorded on a nineteenth-century vegetation map (North, Dunn, and Teversham 1979). Excavations of cooking and other burn features yielded evidence of both of these activities, including the identification of the first bog cranberries in BC archaeological sites. Bog cranberries were widely reported as significant trade items in historic times in nearby Katzie territory (Suttles 1955, 26; Turner 1995, 86), but their identification at DhRr-74 demonstrates their abundance and use in other local territories and in earlier times. The abundance of bog cranberries and other plant taxa at DhRr-74 reflects the intensive use of the site's environs, including a nearby wetland (Golder Associates 2010; Lyons 2011c).

Determining seasonality via paleoethnobotany can also lead directly to new insights into ancient social systems. Because many plants, unlike most fauna, are available for harvest for only discrete periods of time, they are the most effective way to determine site seasonality.

In the Fraser Valley, for instance, ethnographic sources stated that semi-subterranean pithouse dwellings were exclusively winter homes and that above-ground plank houses were occupied in the warmer months (Barnett 1955; Duff 1952). However, analyses of plant remains, in combination with fauna, recovered from millennia-old sites has shown that both pithouses and plank houses, even within the same site, could be occupied for multiple seasons, including summer (Lepofsky et al. 2009; Ritchie 2010). Likewise, plant seasonality has suggested, contra the ethnographic record, that ancient households in certain periods lived year-round at the Middle Fraser Valley site of Scowlitz (Lepofsky and Lyons 2003; Lyons 2000a). These results have created more nuanced discussions about the social relationship both within and between these ancient Fraser Valley communities.

The archaeobotanical record also creates pathways for the discovery of "new" human-plant interactions not identified from extant ethnobotanical knowledge and living communities. For instance, in BC Plateau sites, the seeds of *Chenopodium capitatum* (strawberry-blite) have now been recovered from enough archaeobotanical contexts and in enough abundance (e.g., Wollstonecroft 2000, 2002) to suggest that it had socio-economic values in ancient times not identified in the ethnographic literature. The ethnographic record states that the fruits of strawberry-blite were used as a bright red dye but were considered inedible by most Interior communities (Turner 1998). In the past, however, they may have been eaten in significant amounts, as they were elsewhere in the Americas (Smith 2006), or had some other, as yet unknown, ethnobotanical use. Similarly, red elderberry seeds are found in the archaeobotanical record out of proportion to the ethnobotanically documented importance of this berry. While this may reflect a preservation bias towards the processed seeds (Losey et al. 2003), it may also indicate that elderberries were more highly valued as food in the past than they were historically (Lepofsky 1992).

Paleoethnobotanical surprises have also come in much larger packages. Archaeologists surveying the Upper Hat Creek Valley in the late 1970s were not expecting to find much in the way of archaeological sites of any kind at this elevation. When they encountered numerous circular depressions patterned across the landscape, they initially assumed that these features were the remains of (rather small) pithouses. It was only after the excavations produced copious amounts of charcoal, the remains of root foods, fire-altered rocks, and few if any artifacts that the excavators deduced that these were ancient earth ovens primarily used for cooking root foods of various kinds (David Pokotylo, personal communication, 2013; Pokotylo and Froese 1983). This discovery opened the door to intensive programs of research focused on earth ovens and fundamentally changed both the way archaeologists situate ancient plant production within the development of Plateau socio-economic systems (e.g., Kuijt and Prentiss 2004; Lepofsky and Peacock 2004; Prentiss and Kuijt 2012) and their view of the region's archaeological record more broadly.

Several research projects in the southern Interior highlight the social and economic role of women and children in the past (cf. Turner 1992; Turner et al. 1990), and the continuing ability of paleoethnobotany to explore this avenue of research (e.g., Peacock 1998, 2002). At the White Rock Springs earth oven site in the Upper Hat Creek Valley, Sandra Peacock and colleagues (Nicolaides 2010) posit that earth ovens may have been the property of women of particular families. They note that root foods were viewed as wealth and that, consequently, considerable interest was attended to the maintenance of the ovens and proliferation of the resource (121-23). At site EeRb-140, in present-day Secwépemc territory, the archaeobotany of Late Period earth ovens and berry-drying features suggest the summer processing of plant foods by specialized task groups in direct proximity to their winter village (Wollstonecroft 2002, 69). In her ethnoarchaeological research among the St'át'imc, Alexander (1992, 158-59) suggests that women primarily conducted summer processing activities at upland root-roasting grounds but that they may have travelled between the uplands and lower elevation villages through the course of the summer, ultimately storing their dried goods within winter pithouses. Finally, a recent discussion of birch-bark artifacts recovered from Interior Plateau archaeological sites highlights the multi-faceted connection of women to the many uses of birch bark (Croft and Mathewes forthcoming).

The paleoethnobotanical record also provides a window into issues of status, ownership, and control (e.g., Lepofsky et al. 1996). Given the widespread abundance of protein-rich foods in the diets of Northwest communities, plants played a unique role in status relations in the past because they are rich in carbohydrates and other nutrients, and are spatially and temporally limited. The ethnobotanical record is replete with evidence of the importance of some foods in feasting and displays of status (e.g., crabapples, seaweed, highbush cranberries; Turner et al. 2013). Research focused on early historic Tsimshian houses and middens, for instance, produces evidence for processing and storage of blueberries

(*Vaccinium* sp.) by the status elite (Martindale and Jurakic 2006). Hearth and roasting features from Bridge River and Keatley Creek that exhibit rich, dense, and diverse assemblages of fauna, flora, and rare types of artifacts are interpreted as feasting locales within these Middle Fraser Canyon communities (Dietz 2005; Lyons 2003). Prentiss and colleagues (2007) explore the nature and scale of feasting in these contexts.

Despite these huge gains in our understanding of ancient plant use, our knowledge of the social, economic, and ecological context of plant gathering remains somewhat limited. This is in part because sites devoted to plant gathering and processing are still relatively understudied, under-recognized, and undervalued. The interpretive potential of such sites, however, is great. This is exemplified by one approximately two-thousand-year-old plant-gathering site along Burrard Inlet in the Lower Mainland. The deposits at the site are not typical of the better-known coastal shell middens, and thus, at the time of excavation, some archaeologists disregarded the site because it did not fit into any of the known and/or expected site categories. However, the limited samples from processing features produced over twenty species of identified plant remains, with several others that were unidentifiable (Lepofsky 1992). Based on the many overlapping features, an abundance of fire-altered rock, and the quantity and diversity of plants, Ham and Yip (1992) interpret the site to be a women's gathering site. At such locales, women would have returned yearly to harvest and process a variety of plant resources from ecosystems that were at least well known, if not maintained, through regular yearly visits.

We acknowledge that a large part of what we have learned about ancient plant use in British Columbia comes from some of the better-funded archaeological research projects, which often focus on large settlements. However, smaller-scale paleoethnobotanical analyses of smaller sites can also be hugely informative. This is clearly illustrated in the above example of DhRr-74 and the Burrard Inlet site. Similarly, the recent analysis of fifteen flotation samples from a rockshelter in the Fraser Valley yielded almost two thousand seeds and an abundance of wood charcoal and other remains (Ritchie and Springer 2011). In total, twenty-two plant taxa were identified, and many more remained unidentified. Analyses of macrobotanical data from rockshelter sites DlRt-9, in upper Squamish territory (Lyons 2007), and EbRk-2, on the Stein River (Lyons 2012a), suggest long-term use of these locales, in both cases extending into the historic period. Insights from these rockshelter studies are hugely expanding our understanding of this little known site type.

DISCUSSION: THE (NOT-SO-SECRET) FUTURE LIFE OF PALEOETHNOBOTANY IN BRITISH COLUMBIA

While significant strides have been made in BC paleoethnobotany in the last decade or so, this subdiscipline continues to be a minor (but growing) vein of archaeological inquiry and analysis (Table 2). Realizing the full potential of paleoethnobotany in the province requires ongoing collaboration and communication among field archaeologists, paleoethnobotanists, ecologists, botanists, traditional knowledge-bearers, and their respective communities. There are many and growing examples of productive collaborations.

For example, major excavations at the site of DhRp-52, in Pitt Meadows, was initiated and conducted by Katzie First Nation's Development Corporation in collaboration with a large and diverse project team that, early on in the investigative process, included a paleoethnobotanist (Lyons). This substantial mid-Holocene wet and dry site produced the earliest known wetland wapato (*Sagittaria latifolia*) garden in the Pacific Northwest (Hoffmann 2010). This project incorporated a major training and capacity-building element throughout the course of excavations, analysis, and reporting. The paleoethnobotanical team developed procedures for processing wet-site samples, a comparative collection for identifying wetland species, and analyses for quantifying, presenting, and reporting on the massive dataset from the wapato garden (Lyons et al. 2010). Interpretations of the rock pavement and garden involved lively and extended discussions between Katzie plant experts and a larger community of ethnobotanists, paleoecologists, and paleoethnobotanists from throughout the Pacific Northwest.

As the paleoethnobotanical record of British Columbia continues to grow and diversify, we look forward to combining datasets in order to understand the ancient use of plants at a regional scale. Small datasets especially have increased interpretive potential when combined in a regional sample. This is demonstrated by Lyons' (in press) recent analysis, which integrated twenty plant assemblages from the Lower Fraser River region. While many of these site assemblages are small, the combined sample permitted inferences about the relative richness of edible plant use at different site types, such as small and large camps and villages, and regional uses of different types of ecosystems, such as various types of wetlands versus more terrestrial habitats.

An additional area of growth includes the use of an increasing array of theoretical models for studying ancient plant use. Culture ecology has long been the predominant approach to paleoethnobotanical analysis, but larger and more temporally recent assemblages are inviting researchers to try new theoretical strands. For example, multiple datasets, including the archaeobotanical assemblage, from a fur trade era pithouse at the Bridge River site are undergoing analysis using a pluralist approach to understand the interactions between local and settler communities and the colonialist state, including ethnohistory, political economy, and human behavioural ecology (Prentiss 2013). Prentiss and colleagues (2007) are also applying modelling approaches offered by demographic and foraging theory to the understanding of ancient plant use at Bridge River and Keatley Creek. Lyons and colleagues are developing a contextual approach to floral and faunal data from the Kwoiek Creek Valley (Lyons 2013; Lyons and Cameron 2013). Lepofsky's current research program uses paleoethnobotany as one part of a holistic approach – one that cross-cuts ecosystems, resource types, and disciplinary boundaries – to documenting past human-environmental interactions. Such an integrative approach moves us one step closer to understanding the natural world as the people who inhabited it understood and engaged with it.

Paleoethnobotany in British Columbia will continue to expand with new methodological approaches. One promising area of growth will be around the use of ancient DNA to track the movement and lineage of plants (cf. Lepofsky and Lertzman 2008). In addition, the refinement of phytolith analysis (family- or genus-specific silica bodies in many plants that are resistant to decay) will provide invaluable insights into the use of plants that are not preserved in charred form (e.g., Peacock and Kooyman n.d.). A final, significant area of methodological growth is in developing techniques for the study of wetlands. Paleoethnobotanical and ecofactual data in waterlogged sites must be collected, processed, and analyzed using specialized methods; their interpretation can open our eyes to the full extent of human-environmental relationships in the past (Lyons et al. 2010; Bernick 1991).

The future life of paleoethnobotany in British Columbia is being seeded one project at a time. The secrets of this subdiscipline are being revealed bit by bit to interested archaeologists and source communities. Plants have a way of drawing people in – perhaps because of their versatility as foods, fibres, fuels, and technologies; their potency and applications as medicines; their role in terms of gendered activity

TABLE 2
Comparison of status of paleoethnobotany (PEB) in British Columbia in 2003 versus 2013. Data for 2003 are derived from Lepofsky (2004).

2003	2013
Need for innovative techniques	Still true. Some research in developing phytolith analysis of roasting features in the Plateau
Beginning of discussions of plant management	Firmly established in ethnographic literature, beginning in archaeological literature
Increasing use of multidisciplinary techniques and ideas to understand ancient plant use	Trend continues, as evidenced by this special issue
Few excavation projects incorporate PEB	Still true
Sampling issues (size, location) are unresolved	These issues remain unresolved
Plants not recognized in general discussions about ancient socio-economics and subsistence	With few exceptions, still true
PEB studies only in grey literature	Since 2003, ten publications include or are focused on PEB
PEB not considered in initial project design	Increasing number of Archaeology Branch officers, researchers, and resource managers are thinking about PEB in initial stages, but numbers are small.
Few and limited PEB comparative collections	Increasing number of individual collections but no coordinated effort, and collections aren't widely used and accessible
Scanning Electronic Microscopy (SEM) should be used as a standard technique	SEM is still not standard practice
Identification criteria needs to be clearly stated, with accompanying photographs	Still not standard practice
PEB studies focus on Lower Mainland	Better regional coverage (e.g., Haida Gwaii; Fraser; BC Southern Interior), but still limited in focus

and knowledge; and their stories and symbolism as rendered in clan crests, house poles, and mortuary poles. This interest – coupled with the growing corpus of data and the establishment of methodological conventions and best practices by the region's paleoethnobotanists (Lepofsky 2004; Lyons and Orchard 2007) – is pushing the field forward into a growing array of questions, forays into the research of micro-remains (e.g., phytoliths, spores, pollen), and other as yet unimagined directions. The increased level of collaboration and varied types of partnerships between archaeologists and First Nations communities can only lead to greater knowledge, understanding, and critical study of ancient plant use in British Columbia.

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CASE STUDY 1

Plant Technology in Archaeology: From the Ancient Past into the Future

Dale R. Croes[1] and Kathleen Hawes[2]

People-plant associations as reflected in technology have been a primary focus of ethnobotany in British Columbia for many years. In paleoethnobotany specifically, wet sites along the Northwest Coast have revealed a rich window into past plant technologies (Bernick 1998), and, in the Interior, dry sites or dry contexts within sites have been similarly fruitful in giving hints about plant materials used by peoples of the past (Croft and Mathewes forthcoming; Lepofsky 2004). In recent years, associated with melting ice, extraordinary remains have also been recovered from frozen sites (e.g., Beattie et al. 2000; Keddie and Nelson 2005).

Our work, focusing primarily on woods and fibres as key materials for construction and artifact production on the Northwest Coast, emphasizes the overwhelming importance of plant materials in past cultures. In fact, based on the plant remains from several coastal wet-site contexts in British Columbia and beyond, wood, fibre and other plant materials comprise over 85 percent of the ancient Northwest Coast material culture, as far back as 10,500 years or more (Bernick 1983, 2001; Croes 1995, 1997, 2012a, 2012b; Croes et al. 2009; Fedje et al. 2005). Fishhooks, wedges, nets, fish weirs, cordage, and basketry have all been identified and described from such sites. Cellular analysis of wet-site material is constantly revealing unexpected finds, such as the apparently distinctive use of bigleaf maple bark (*Acer macrophyllum*) for woven basketry, cordage, and nets from the Qwu?gwes wet site of southern Puget Sound (Hawes and Rowley 2013). In British Columbia, cellular analysis reveals that true fir, salmonberry wood, and hardwood bark (cherry or maple) were used to make a basket recovered from the Glenrose Cannery site in the Fraser delta (Eldridge 1991, 36-37).

Archaeological and ethnographic information across British Columbia and through time indicates broad similarities in the general categories of plant materials used for technology (e.g, baskets, mats, handles, etc.) (Lepofsky 2004; Turner 1998). Differences in plant ranges often account for differences in specific plants used within a region,

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although historically people also traded non-local raw plant materials, including cedar bark sheets, yew wood, yellow cedar wood, cherry bark, and Indian-hemp fibre (Turner and Loewen 1998). The analysis of archaeological wood artifacts for both Little Qualicum River site (Bernick 1983, 2003) and Ozette (Friedman 1975) suggests that people used locally available plant materials. Friedman (1975), based on a very large sample size, further concludes that, for each particular purpose, people used the most suitable wood that was available to them.

There is a notable temporal shift in the use of western redcedar and yellow cedar, since these species only became a predominant species in coastal forests in the later Holocene (Hebda and Mathewes 1984). Before the ranges of these ethnographically important trees extended northward, people used other materials for house construction, canoes, and basketry. At the 10,700-year-old wet site of Kilgii Gwaay, southern Haida Gwaii, British Columbia, for instance, the most numerous artifacts are woodworking tools, including wooden splitting wedges with collar top areas (thus far, one identified as western hemlock and another as Sitka spruce) as well as a potential wooden elbow adze handle, a wooden adze haft, and a unifacially flaked adze bit (Figure 3; Fedje et al. 2005; A. Mackie, personal communications, 2012). When cedar expanded northward some five thousand years later, its splitting qualities were readily incorporated into age-old, successful woodworking technologies.

Figure 3. Ten-thousand-seven-hundred-year-old wooden wedge recovered from the wet-site component of Kilgii Gwaay in June 2012. Photo by Dale Croes.

While the use of many raw materials has considerable longevity, styles of artifacts such as wooden fishhooks (Croes 1997, 1995, 2001, 2005) and types of basketry techniques (Croes 1977, 1995, 2001, 2012a; Croes, Kelly, and Collard 2005; Bernick 1983, 1989) have varied over the years. These changes in style reflect ongoing innovation, adaptation, cultural transmission, and knowledge exchange among Indigenous peoples. Basketry in particular has become a potential tool for helping archaeologists, anthropologists, and ethnobotanists to understand the development and diffusion of culturally distinctive techniques, materials, and styles over a considerable time depth (Laforet 1990). In contrast to the subtractive technology of stone, bone-antler, and shell artifacts, basketry is an additive technology not unlike ancient pottery in other parts of the world. Thus new forms, decorations, and techniques can easily be introduced into basketry construction, making it stylistically diverse and sensitive with regard to cultural identity and change.

A good example of how basketry traditions have endured over time may be seen in the style differences apparent in the common pack baskets of the Musqueam Northeast and Hoko River wet sites – sites of a similar time period, around 3000 BP. Carrying or burden baskets comprise about 50 percent of all baskets at each site, but the baskets at each site have distinctly different weaves on their bottoms and bodies, different shapes, and different handles and tumpline attachments. Croes argues that these styles reflect the cultural identity of the makers and users of these ancient baskets – referred to as emblemic style – potentially enabling someone from the outside West Coast or inside Salish Sea to identify the basket, or possibly the carrier, as originating from these different regions. These differences in outside West Coast and inside Salish Sea basketry traditions have persisted into contemporary times (Croes 1977, 1995, 2005, 2012a; Croes et al. 2005). Another pattern of long-term similarity emerged when statistically comparing the approximately 1500 to 2000 BP Lachane wet-site basketry in Prince Rupert, British Columbia, with the unique Tsimshian style of museum basketry – again demonstrating long-term regional cultural continuity into the contact period (Croes 1989, 2001).

Because of the numerous changes and impacts on Indigenous cultures, the traditional plant technologies as reflected in fishhooks, fishing nets, carved bowls, canoes and boxes, woven baskets, and numerous other items diminished in the 1900s. Several generations of First Nations children grew up without learning many of the skills and arts used to make and use these artifacts. Modern materials – nylon fishnets, metal fishhooks and wedges, aluminum and fiberglass boats, and plastic ice-cream buckets and burlap sacks – have taken over in many cases.

However, since about the 1970s, when major wet sites such as Ozette Village, rich in ancient wood and fibre artifacts, were first investigated and reported, there has been a movement towards revitalization (Croes 2010, 2012b). For example, three major Native cultural revitalization movements link in various ways to the recovery of the wood and fibre components in ancient wet sites such as Ozette: (1) The huge number of whale bones and the whole array of whaling equipment influenced the Makah people's return to whaling, with the successful hunt of 1999, and ongoing training to enable them to continue this ancient tradition; (2) region-wide canoe journeys and canoe building have expanded since Paddle to Seattle in 1989 (involving over one hundred canoe families from Alaska to Oregon and thousands of Native peoples each summer); and (3) the Northwest Native American Basketweavers Association (NNABA), established in 1996, today involves over one thousand Native basket weavers from throughout the region each year. The association has hosted a wet-site archaeological update presentation at almost each meeting over the past ten years (Croes 2012a). These Native-based programs have been established to ensure the cultural transmission of these ancient traditions and associated identity, seen in millennia of wood and fibre artifacts, to well into the future.

CASE STUDY 2

Artifacts as Botanical Specimens: An Example from Vancouver Island

KATHRYN BERNICK[3]

Archaeological artifacts made of wood comprise direct evidence of people-plant interaction. Their contribution to our knowledge of ancient plant use includes material preparation and manufacturing technologies, taxa preferences, and reconstructions of the natural environment (e.g., Bernick 1983; Friedman 1975; Croes and Hawes case study). This case study addresses the diversity of plants represented by one-thousand-year-old wood and bark objects from the Little Qualicum River site in British Columbia. It provides an example of the kind of information about people-plant interactions that can be gleaned from archaeological artifacts.

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Located on the east coast of Vancouver Island at the mouth of the Little Qualicum River, the site spans the intertidal beach and adjacent terrestrial area. Archaeological excavations in the 1970s recovered waterlogged wood and bark material from refuse deposits in the intertidal zone, in addition to stone, bone, and shell items. The terrestrial part of the site was a residential area (Bernick 1983). My research indicated that, one thousand years ago, when the site was occupied, the natural environment was much the same as it was when Euro-Canadians first arrived (86-89). Thus, I used modern biogeoclimatic characteristics such as those described by Meidinger and Pojar (1991) to contextualize the archaeological data and to show that people had located their residence (and adjacent refuse) at the junction of marine, littoral, estuarine, riparian, and forest ecological habitats. My analysis further indicated that site residents could have obtained the plant materials present in the artifact assemblage from an area requiring no more than ten minutes' travel time (Bernick 1983).

The plants used to make the 172 wood and bark artifacts were identified. For composite artifacts, each element type was examined; for example, a basket with warps, wefts, rim-wrapping, and a handle accounts for four identified specimens. Thus, the number of identified specimens (212) is larger than the number of artifacts. Wood was identified by microscopic examination of thin-sections cut from the artifacts, and bark material was identified by general appearance. I identified the majority of the specimens in 1978 at the University of Victoria; several were identified by the Western Forest Products Lab in Vancouver and several others by wood-anatomist Mary-Lou Florian. Limitations included collapsed cellular structure, degraded diagnostic features, and a dearth of comparative reference sources. For detailed methods, see Bernick (1983, 341-58).

The plant species determinations indicate that the woody plants represented by the artifacts comprise seven softwoods (conifers), three hardwoods (angiosperms), and perhaps a fourth hardwood (Table 3). The suite of taxa and the relative abundance of softwoods versus hardwoods correspond to the range of trees likely to have been growing near the site. Previous publications describe the artifacts in detail, including their botanical composition and ethnographic analogues (Bernick 1981, 1983). Here, I group the data by kind of material and how people used these materials to make the Little Qualicum River site artifacts.

TABLE 3
Species determinations for wood and bark artifacts, Little Qualicum River site

Taxon	Common name	Frequency Percent	Frequency Number
Gymnosperms (Softwoods)			
Thuja plicata wood	western redcedar	59	125
T. plicata bark	western redcedar	18	38
Pseudotsuga menziesii	Douglas-fir	5	10
Abies sp.	true fir	4	8
Tsuga heterophylla	western hemlock	4	8
Taxus brevifolia	Pacific yew	3	6
Picea sitchensis	Sitka spruce	2	5
Pinus contorta	lodgepole pine	<1	1
Angiosperms (Hardwoods)			
Prunus emarginata wood	bitter cherry	1	2
P. emarginata[1] bark	bitter cherry	2	5
Holodiscus discolor	oceanspray	1	2
Pyrus fusca[1]	Pacific crabapple	<1	1
Indeterminate hardwood		<1	1
Total (172 separate artifacts)		100	212

Note: The specimens are wood (xylem) except those specified "bark."
[1] Tentative identification.

Thin, flexible material

- Withes: Western redcedar withes stripped of twigs and leaves – used whole or split longitudinally for cordage and basket handles; split longitudinally for open-weave basketry elements. True fir and western hemlock split withes – used as bindings or lashings.
- Bark: Western redcedar inner-bark strips – used for plaited basketry, occasional wefts of open-weave basketry, weir-lattice weft, apparel (hat top-knob), light cordage, and to bind wood objects of unknown original form. Cherry bark strips – used to bind or wrap wood objects of unknown original shape or function.

- Twigs: Western hemlock – bundle of folded twigs with needles (bound with cedar withe, indeterminate function).
- Roots: Western redcedar roots – used as a binding or lashing.

Semi-flexible, slender pieces of wood

- Thick withes: Western redcedar and true fir – split and fashioned into a hoop and U-shaped objects.
- Branches: True fir branch, bent; crabapple branch, notched.
- Wood: True fir – steambent to make a fishhook.

Rigid, straight lengths of wood

- Large: Douglas-fir, western hemlock, Sitka spruce, true fir, lodgepole pine – whole-round or split halves, used for fish-weir structure (stakes and poles).
- Medium: Douglas-fir – split sticks used for weir lattice uprights; Pacific yew – possible digging stick.
- Small: Western hemlock – wedge; western redcedar, true fir, bitter cherry, and an indeterminate hardwood – whole-branch or roughly split pieces with minimal modifications.
- Very small: Oceanspray – stick used to reinforce bark sheet (canoe bailer); Douglas-fir and Sitka spruce – point tips.

Small pieces of wood (fragmentary artifacts)

- Western redcedar – thick withes wrapped with cherry bark strips.
- Douglas-fir, bitter cherry, and oceanspray – sticks bound with bark strips.
- Pacific yew – wedge tip and shaft slivers; fragments of carved objects.

Sheet forms

- Western redcedar inner bark, cut and creased – used for canoe bailer; other fragmentary items of creased, drilled, or folded cedar bark.

The list of plant materials clearly illustrates non-random selection of species and plant parts by residents of the Little Qualicum River site. Although western redcedar accounts for a large majority of the wood and bark artifacts from the site (Table 3), with one exception its use is limited to slender, flexible or semi-flexible material from withes, roots, and bark, plus occasional bark sheet forms. In contrast, for rigid structural elements of the fish weir, people selected a variety of tree species – but not cedar. Selection criteria probably reflect properties of the respective woods combined with availability.

Many of the Little Qualicum River site artifacts appear to be expedient constructions. Only a few items (canoe bailer, fishhook, some of the basketry) are likely to have been made elsewhere and brought to the site when people came there to harvest fish and clams. The bulk of the assemblage – weir structure, lattice, and crudely made simple cordage and lashings – would have been made at the site from materials harvested nearby. A cordage artifact consisting of an entire sapling – roots and stem – aptly illustrates the point.

Artifacts made of wood and bark are botanical specimens as well as cultural objects. Those summarized in this case study document that, one thousand years ago, people at the Little Qualicum River site used a wide range of trees that grew in the vicinity and that they harvested particular kinds of material for immediate, practical use.

REFERENCES

Alexander, D. 1992. "A Reconstruction of Prehistoric Land Use in the Mid-Fraser River Area Based on Ethnographic Data." In *A Complex Culture of the British Columbia Plateau,* ed. B. Hayden, 99-176. Vancouver: UBC Press.

Baptiste, G., and M.M. Wollstonecroft. 1997. "Plant Remains." In *Vancouver Island Highway Project, Victoria Approaches Archaeological Data Recovery DcRu*-92. Vol. 1. Millennia Research. Submitted to the BC Archaeology Branch, Victoria, BC.

Barnett, H. 1955. *The Coast Salish of British Columbia*. University of Oregon Monographs, Studies in Anthropology No. 4. Eugene, OR.

Beattie, O., B. Apland, E.W. Blake, J.A. Cosgrove, S. Gaunt, S. Greer, A.P. Mackie, K.E. Mackie, D. Straathof, V. Thorp, and P.M. Troffe. 2000. "The Kwaday Dan Ts'inchi Discovery from a Glacier in British Columbia." *Canadian Journal of Archaeology* 24: 129-47.

Bernick, K. 1981. "The Contribution of Wood Artifacts: Little Qualicum River Site Example." *The Midden* 13 (1): 11-15.

—. 1983. "A Site Catchment Analysis of the Little Qualicum River Site, DiSc 1: A Wet Site on the East Coast of Vancouver Island, BC." National Museum of Man Mercury Series, Archaeological Survey of Canada Paper 118. Ottawa: National Museums of Canada.

—. 1989. "Water Hazard (DgRs 30) Artifact Recovery Project Report." Permit 1988-55. Ms. on file at University of British Columbia.

—. 1991. "Wet-Site Archaeology in the Lower Mainland Region of British Columbia." Ms. on file with the Archaeology Branch, Victoria, BC.

—, ed. 1998. "Hidden Dimensions. *The Cultural Significance of Wetland Archaeology*." Pacific Rim Archaeology and Wetland Archaeology Research Project (WARP), Occasional Paper 2. Vancouver: UBC Press.

———. 2001. "Serendipitous Discoveries: The Water Hazard Wet Site in Southwestern British Columbia." In *Enduring Records: The Environmental and Cultural Heritage of Wetlands*, ed. B.A. Purdy, 110-19. Wetland Archaeology Research Project (WARP), Occasional Paper 15. Oxford, UK: Oxbow Books.

———. 2003. "A Stitch in Time: Recovering the Antiquity of a Coast Salish Basket Type." In *Emerging from the Mist: Studies in Northwest Coast Culture History*, ed. R.G. Matson, G. Coupland, and Q. Mackie, 230-43. Vancouver: UBC Press.

Borden, C.E. 1960. "DjRi3, an Early Site in the Fraser Canyon, British Columbia." National Museum of Canada Bulletin 162. Contributions to Anthropology 1957, Anthropological Series 45, 101-18. Ottawa.

———. 1975. "Origins and Development of Early Northwest Coast Culture to About 3000 BC." National Museum of Man Mercury Series, Archaeological Survey of Canada Paper 45. Ottawa.

Compton, B.D., R.W. Mathewes, and G. Guzmán. 1995. "Puffballs from the Past: Identification of Gasteromycetes from a Lillooet Archaeological Site and Speculation Regarding Their Aboriginal Use." *Canadian Journal of Archaeology* 19: 154-59.

Croes, D.R. 1977. "Basketry from the Ozette Village Archaeological Site: A Technological, Functional and Comparative Study." PhD diss., Washington State University. (University Microfilms 77, 25, 762, Ann Arbor, MI.)

———. 1989. "Lachane Basketry and Cordage: A Technical, Functional and Comparative Study." *Canadian Journal of Archaeology* 13: 165-205.

———. 1995. *The Hoko River Archaeological Site Complex, the Wet/Dry Site (45CA213), 3,000-2,600 BP*. Pullman, WA: Washington State University Press.

———. 1997. "The North-Central Cultural Dichotomy on the Northwest Coast of North America: Its Evolution as Suggested by Wet-Site Basketry and Wooden Fish-Hooks." *Antiquity* 71: 594-615.

———. 2001. "North Coast Prehistory: Reflections from Northwest Coast Wet-Site Research." In *Perspectives on Northern Northwest Coast Prehistory*, ed. J.S. Cybulski, 145-71. Canadian Museum of Civilization, Mercury Series, Paper 60. Hull, Quebec.

———. 2005. *The Hoko River Archaeological Site Complex: The Rockshelter (45CA21), 1,000-100 B.P.* Pullman, WA: Washington State University Press.

———. 2010. "Courage and Thoughtful Scholarship = Indigenous Archaeology Partnerships." *American Antiquity* 75 (2): 211-16.

———. 2012a. "Ancient Basketry of the Olympic Peninsula." In *From the Hands of a Weaver: Olympic Peninsula Basketry through Time*, ed. J. Wray and the Olympic Peninsula Intertribal Cultural Advisory Committee, 142-55. Norman: University of Oklahoma Press.

———. 2012b. "Wet Site Archaeology on the Northwest Coast of North America and the Native Communities' Involvement in Managing Their Wetland Heritage Sites." In *The Oxford Handbook of Wetland Archaeology*, ed. F. Menotti and A. O'Sullivan, 703-16. Oxford, UK: Oxford University Press.

Croes, D.R., J.L. Fagan, and M.M. Zehendner, eds. 2009. "Assessing the Results of the 2006 and 2007 Investigations at Sunken Village Wet Site." *Journal of Wetland Archaeology* 9: 185-201.

Croes, D.R., K. Kelly, and M. Collard. 2005. "Cultural Historical Context of Qwu?gwes (Puget Sound, USA): A Preliminary Investigation." *Journal of Wetland Archaeology* 5: 137-49.

Croft, S., and R. Mathewes. Forthcoming. "Barking up the Right Tree: Understanding Birch Bark Artifacts of Canadian Plateau Peoples in British Columbia." *BC Studies*.

Deur, D., and N.J. Turner, eds. 2005. *Keeping It Living: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*. Vancouver/Seattle: UBC Press/University of Washington Press.

Dietz, C.A. 2005. "Structure, Function, and Dating of External Cooking Features at the Bridge River Site." MA thesis, University of Montana.

Duff, W. 1952. "The Upper Stalo Indians." Anthropology in British Columbia 792, memoir no. 1. British Columbia Provincial Museum, Victoria.

Eldridge, M. 1991. "The Glenrose Cannery Wet Component: A Significance Assessment." Permit 1990-24. Ms. on file, British Columbia Archaeology Branch, Victoria, BC.

—. 1996. *Archaeological Impact Assessment of Paradise Creek Area Cutblocks in the Lillooet Forest District*. Report on file with the Archaeology Branch, Victoria, BC.

Eldridge, M., and T. Fisher. 1997. *St. Mungo Cannery Wet-Site, DgRr 2: An Evaluation*. Report on file with the Archaeology Branch, Victoria, BC.

Endo, N. 2004-13. *Palaeoethnobotanical Reports for Bridge River Site EeRl4*. Reports on file with the author.

—. 2004. *Palaeoethnobotanical Report for Site DcRu*662. Report on file with the author.

—. 2006. *Palaeoethnobotanical Report for Richardson Island Site 1127T13*. Report on file with the author.

Fedje, D.W., A.P. Mackie, R.J. Wigen, Q. Mackie, and C. Lake. 2005. "Kilgii Gwaay: An Early Maritime Site in the South of Haida Gwaii." In *Haida Gwaii: Human History and Environment from the Time of Loon to the Time of the Iron People*, ed. D.W. Fedje and R.W. Mathewes, 187-203. Vancouver: UBC Press.

Franck, I. 2000. "An Archaeological Investigation of the Galene Lakes Area in the Skagit Range of the North Cascade Mountains, Skagit Valley Park, BC." MA thesis, Simon Fraser University.

Friedman, J.P. 1975. "The Prehistoric Uses of Wood at the Ozette Archaeological Site." PhD diss., Washington State University.

Gill, S.J. 1983. "Ethnobotany of the Makah and Ozette People, Olympic Peninsula, Washington." PhD diss., Washington State University.

Golder Associates. 2007. *Report on Archaeological Mitigation of DkSb-30, Saltery Bay, BC, Telus North Island Ring Project*. Submitted in fulfilment of Heritage Conservation Act Permit 2004-120. Report on file with the Archaeology Branch, Victoria, BC.

—. 2010. *Interim Report: Fraser River Flood Protection Works in Surrey, BC*. HCA Permit 2010-002. Report on file with the Archaeology Branch, Victoria, BC.

Graesch, A.P. 2006. "Archaeological and Ethnoarchaeological Investigations of Households and Perspectives on a Coast Salish Historic Village in British Columbia." PhD diss., University of California.

Ham, L., and A. Yip. 1992. "The 1991 Archaeological Investigations at the Barnett Highway Sites, Port Moody, British Columbia." Permit 1991-106. On file, Archaeology Branch, Victoria, BC.

Hawes, K.L., and D. Rowley. 2013. "Cellular Identification of Wood/Fiber Artifacts and Fuelwoods." In *The Qwu?gwes Archaeological Site and Fish Trap (45TN240), and Tested Homestead (45TN396), Eleven-Year South Puget Sound Community College Summer Field School Investigations with the Squaxin Island Tribe*, ed. D.R. Croes, with R. Foster and L. Ross. Report on file with the Washington State Department of Archaeology and Historic Preservation (DAHP).

Hayden, B. 1997. "Observations on the Prehistoric Social and Economic Structure of the North American Plateau." *World Archaeology* (29): 242-61.

Hayden, B., and S. Mossop Cousins. 2004. "The Social Dimensions of Roasting Pits in a Winter Village Site." In *Complex Hunter-Gatherers: Evolution and Organization of Prehistoric Communities on the Plateau of Northwestern North America*, ed. W.C. Prentiss and I. Kuijt, 140-54. Salt Lake City: University of Utah Press.

Hebda, R.J., and R.W. Mathewes. 1984. "Holocene History of Cedar and Native Indian Cultures of the North American Pacific Coast." *Science* 225: 711-12.

Hobler, P.M. 1976. "Wet Site Archaeology at Kwatna." In *The Excavation of Water-Saturated Archaeological Sites (Wet Sites) on the Northwest Coast of North America*, ed. D.R. Croes, 146-57. National Museum of Man Mercury Series, Archaeological Survey of Canada Paper 50. Ottawa: National Museums of Canada.

Hoffmann, T., ed. 2010. *Archaeological Excavations at DhRp-52*. Vol. 1: *Final Permit Report*. Report submitted in partial fulfilment of HCA Permit 2007-097. Report on file with the BC Archaeology Branch, Victoria, BC.

Inglis, R.I. 1976. "'Wet' Site Distribution – The Northern Case GbTo33 – The Lachane Site." In *The Excavation of Water-Saturated Archaeological Sites (Wet Sites) on the Northwest Coast of North America*, ed. D.R. Croes, 158-85. National Museum of Man Mercury Series, Archaeological Survey of Canada Paper 50. Ottawa: National Museums of Canada.

Jackley, J. 2011. "Weaving the Histories of Klehkwahnnohm: A Tla'amin Community in Southwest British Columbia." MA thesis, Simon Fraser University.

Kaltenrieder, S., K. Kristensen, T. Cardinal, I. Wilson, S. Bond, J. Hall, R. Spady, H. Kanipe, K. Bowie, R. Wigen, A. Hickok, and B. Weathers. 2009. *Archaeological Excavations Park Farm Site (DhRq-22): Proposed Shopping Centre, Pitt Meadows, BC*. I.R. Wilson Consultants, Burnaby, BC.

Keddie, G., and E. Nelson. 2005. "An Arrow from the Tsitsutal Glacier, British Columbia." *Canadian Journal of Archaeology* 29 (1): 113-21.

Ketcheson, M.V. 1979. "Floral Analysis of Archaeological Sites in the Hat Creek Valley." Ms. on file with the Department of Anthropology and Sociology, University of British Columbia, Vancouver.

Ketcheson, M.V., M. Norris, and D.A. Clark. 1977. *Floral Analysis of the 1976 Hope Archaeological Project*. Ms. on file with the Archaeology Branch, Victoria, BC.

Kuijt, I., and W.C. Prentiss. 2004. "Villages on the Edge." In *Complex Hunter-Gatherers: Evolution and Organization of Prehistoric Communities on the Plateau* *of Northwestern North America*, ed. W.C. Prentiss and I. Kuijt, 155-68. Salt Lake City: University of Utah Press.

Laforet, A. 1990. "Regional and Personal Style in Northwest Coast Basketry." In *The Art of Native American Basketry*, ed. F.W. Porter, 281-97. New York: Greenwood Press.

Lenert, M.P. 2007. "Hunter-Gatherer Household and Village Organization at *Sxwóxwiymelh*, British Columbia." PhD diss., University of California.

Lepofsky, D. 1988. "Floral Remains from EeQw 30." In *Archaeological Excavations at the Sahhaltkum Bridge Site (EeQw 30), Chase, BC.* Arcas Associates. Ms. on file with the Archaeology Branch, Victoria, BC.

—. 1992. "Paleoethnobotanical Report for Barnett Highway Mitigation Project." In *The 1991 Archaeological Excavation at the Barnett Highway Site, Port Moody, BC.* Permit 1991-106, ed. Len Ham and Arlene Yip, 192-211. Report on file with the Archaeology Branch, Victoria, BC.

—. 2000a. "Site Formation Processes at Keatley Creek: The Palaeoethnobotanical Evidence." In *The Ancient Past of Keatley Creek*: Vol. 1: *Taphonomy*, ed. B. Hayden, 105-35. Burnaby, BC: Archaeology Press, Simon Fraser University.

—. 2000b. "Socioeconomy at Keatley Creek: The Botanical Evidence." In *The Ancient Past of Keatley Creek*. Vol. 2: *Socioeconomic Interpretations*, ed. B. Hayden, 75-86. Burnaby, BC: Archaeology Press, Simon Fraser University.

—. 2002. "Plants and Pithouses: Archaeobotany and Site Formation Processes at the Keatley Creek Village Site." In *Hunter-Gatherer Archaeobotany: Perspectives from the Northern Temperate Zone*, ed. S.L.R. Mason and J.G. Hather, 62-73. London, UK: Institute of Archaeology, University College of London.

—. 2004. "The Northwest." In *Plants and People in Ancient North America*, ed. P. Minnis, 367-464. Washington, DC: Smithsonian Institution Press.

Lepofsky, D., M. Blake, D. Brown, S. Morrison, N. Oakes, and N. Lyons. 2000. "The Archaeology of the Scowlitz Site, Southwestern British Columbia." *Journal of Field Archaeology* 27 (4): 391-416. (Released in 2002.)

Lepofsky, D., D. Hallett, K. Washbrook, A. McHalsie, K. Lertzman, and R. Mathewes. 2005. "Documenting Precontact Plant Management on the Northwest Coast: An Example of Prescribed Burning in the Central and Upper Fraser Valley, British Columbia." In *Keeping It Living: Traditions of Plant Use and Cultivation on the Northwest Coast*, ed. D.E. Deur and N.J. Turner, 218-39. Vancouver/Seattle: UBC Press/University of Washington Press.

Lepofsky, D., E. Heyerdahl, K. Lertzman, D. Schaepe, and B. Mierendorf. 2003. "Climate, Humans, and Fire in the History of Chittenden Meadow." *Conservation Ecology* 7: 5. Available at http://www.consecol.org/vol7/iss3/art5

Lepofsky, D., K.D. Kusmer, B. Hayden, and K.P. Lertzman. 1996. "Reconstructing Prehistoric Socioeconomies from Palaeoethnobotanical and Zooarchaeological Data: An Example from the British Columbia Plateau." *Journal of Ethnobiology* 16 (1): 31-62.

Lepofsky, D., and M. Lenert. 2004. *Report on the 2004 Excavations of the Maccallum Site (Dh Rk 2), Agassiz, BC.* Stó:lo Nation Permit No. 2004-15, Provincial Permit No. 2004-073, on file, Stó:lo Nation, Sardis, and Archaeology Branch, Ministry of Small Business, Tourism and Culture, Victoria.

Lepofsky, D., and K. Lertzman. 2008. "Documenting Ancient Plant Management in the Northwest of North America." *Botany* 86: 129-45.

Lepofsky, D., and N. Lyons. 2003. "Modeling Ancient Plant Use on the Northwest Coast: Towards an Understanding of Mobility and Sedentism." *Journal of Archaeological Science* 30: 1357-71.

Lepofsky, D., M.L. Moss, and N. Lyons. 2001. "The Unrealized Potential of Paleoethnobotany in the Archaeology of Northwestern North America: Perspectives from Cape Addington, Alaska." *Arctic Anthropology* 38 (1): 48-59.

Lepofsky, D., and S.L. Peacock. 2004. "A Question of Intensity: Exploring the Role of Plant Foods in Northern Plateau Prehistory." In *Complex Hunter-Gatherers: Evolution and Organization of Prehistoric Communities on the Plateau of Northwestern North America*, ed. W.C. Prentiss and I. Kuijt, 115-39. Salt Lake City: University of Utah Press.

Lepofsky, D., D. Schaepe, A. Graesch, M. Lenert, P. Ormerod, K. Carlson, J. Arnold, M. Blake, P. Moore, and J. Clague. 2009. "Exploring Stó:lō-Coast Salish Interaction and Identity in Ancient Houses and Settlements in the Fraser Valley, British Columbia." *American Antiquity* 74: 595-626.

Losey, R.J., N. Stenholm, P. Whereat-Phillips, and H. Vallianatos. 2003. "Exploring the Use of Red Elderberry (*Sambucus racemosa*) Fruit on the Southern Northwest Coast of North America." *Journal of Archaeological Science* 30: 695–707.

Lyons, N. 2000a. "Investigating Ancient Socioeconomy in Sto:lo Territory: A Palaeoethnobotanical Analysis of the Scowlitz Site, Southwestern BC." MA thesis, Simon Fraser University.

——. 2000b. *Analysis and Reporting on Archaeological Plant Remains from the White Creek Site, BC.* Report on file with Millennia Consulting Archaeologists, Victoria, BC.

——. 2003. *Report on the Palaeoethnobotanical Assemblage from the 1999, 2001, and 2002 Excavations at Keatley Creek (EeRl-7), British Columbia*. Report on file with University of Montana, Department of Anthropology, Missoula, MT.

——. 2007. *Preliminary Report on the Palaeoethnobotanical Assemblage from DlRt 9, Squamish Territory*. Report on file with Squamish Nation, Squamish, BC.

——. 2009. *Palaoethnobotanical Analysis of Site DgRs-56, Nottingham Farm, Delta, BC*. Report on file with Golder Associates, Burnaby, BC.

——. 2011a. *Wood Identifications for Fish Weir Stakes from Matheson Inlet, Haida Gwaii*. Report on file with Parks Canada, Cultural Resource Services, Vancouver, BC.

——. 2011b. *Palaeoethnobotanical Analysis of Site DiRu*-65 *Bowen Island, BC*. Report on file with Golder Associates, Burnaby, BC.

——. 2011c. *Palaeoethnobotanical Analysis of Macroremains from DhRr 74, Surrey, BC, Fraser River Flood Protection Works*. Report on file with Golder Associates, Burnaby, BC.

——. 2012a. *Seed Identifications from EbRk-2, Stein River*. Report on file with Chris Arnett, Department of Anthropology, University of British Columbia, Vancouver.

——. 2012b. *Palaeoethnobotanical Analysis of DhRt 6, the Locarno Beach Site*. Report on file with Arcas-AMEC, Vancouver, BC.

———. 2013. *Palaeoethnobotanical Analysis of Four Sites on Kwoiek Creek, British Columbia*. Report prepared for Arrowstone Archaeology. On file with Kanaka Bar Indian Band, and Innergex Renewable Energy, Longueuil, QC.

———. In press. "Plant Production Practices among Ancient First Nations of the Lower Fraser River Region." In *Archaeology of the Lower Fraser River Region*, ed. M. Rousseau and R. Carlson. Burnaby, BC: Archaeology Press, Simon Fraser University.

Lyons, N., and I. Cameron. 2013. "The Bounty of the Ancient Nlaka'pamux: Evidence for Plant and Animal Use at Kwoiek Creek, British Columbia." Paper presented at the Canadian Archaeological Association Meetings, 17 May, Whistler, BC.

Lyons, N., A. Homan, R. Leon, A. Diaz, A. Ruggles, and T. Leon. 2010. "Appendix L. Report on the Seed Assemblage from the DhRp-52 Wet-Site, Maple Ridge, BC." In *Archaeological Excavations at DhRp-52, Heritage Investigation Permit #2007-0097*. Vol. 1: *Final Permit Report*, ed. T. Hoffmann, Katzie Development Corporation, 1-83. Report on file with the BC Archaeology Branch, Victoria, BC.

Lyons, N., and T. Orchard. 2007. "Sourcing Archaeobotanical Remains: Taphonomic Insights from a Midden Analysis on Haida Gwaii, British Columbia." *Canadian Journal of Archaeology* 31 (1): 28-54.

Martindale, A., and I. Jurakic. 2006. "Identifying Expedient Glass Tools in a Post-Contact Tsimshian Village." *Journal of Archaeological Science* 33 (3): 414-27.

Mathewes, R.W. 1980. "Plant Remains from the Lillooet Archaeological Project, BC." Abstract of paper presented at Botany 80, Botanical Society of America, Miscellaneous Series 158.

McGill, B. 1976. "Students Dig before Bulldozers Come." *The Ring* 2 (3): 11.

McLay, E., D. Brown, N. Oakes, and L. Oliver. 2007. *Archaoelogical Investigations of Ground Penetrating Radar Mapping at Somenos Creek (DeRw-018), BC*. Prepared for Tibercrest Estates Ltd. Archaeology Branch, Cowichan Tribes and Hul'qumi'num Treaty Group. Report on file with the Provincial Archaeological Report Library. Available at http://www.archaeology.qp.gov.bc.ca.

McPhatter, B. 1985. *Analysis of Found Human Remains at Toquart Bay, Historical Period Box Burial*. HCA Permits 1985-4. Report on file with the Archaeology Branch, Victoria, BC.

Meidinger, D., and J. Pojar, eds. 1991. *Ecosystems of British Columbia*. Special Report 6. Victoria: BC Ministry of Forests.

Minnis, P. 1978. "Paleoethnobotanical Indicators of Prehistoric Environmental Disturbance: A Case Study." In *The Nature and Status of Ethnobotany*, *Anthropological Papers* 67, ed. R.I. Ford, 347-66. Ann Arbor: University of Michigan Press.

———. 1981. "Seeds in Archaeological Sites: Sources and Some Interpretive Problems." *American Antiquity* 46 (1): 143-52.

Nicolaides, M. 2010. "The Proof Is in the Pits: A Paleoethnobotanical Analysis of White Rock Springs (EeRj 226), an Ancient Root Processing Locale on the Canadian Plateau." MA thesis, University of Calgary.

North, M., M. Dunn, and J. Teversham. 1979. *Vegetation of the Southwestern Fraser Lowland, 1858-1880*. Lands Directorate, University of British Columbia, Vancouver.

Ormerod, P. 2002. "Reading the Earth: Multivariate Analysis of Feature Functions at Xa:ytem (the Hatzic Rock Site, DgRn 23), British Columbia." MA thesis, University of British Columbia.

Ostapkowicz, J., D. Lepofsky, R. Schulting, and A. McHalsie. 2001. "The Use of Cattail (*Typha latifolia* L.) Down as a Sacred Substance by the Interior and Coast Salish." *Journal of Ethnobiology*. 21: 77-90.

Patenaude, V. 1985. "The Pitt River Archaeological Site (DhRg 21): A Coast Salish Seasonal Camp on the Lower Fraser River." Ms on file with the Archaeology Branch, Victoria, BC.

Peacock, S.L. 1998. "Putting Down Roots: The Emergence of Wild Plant Food Production on the Canadian Plateau." PhD diss., University of Victoria.

——. 2002. "Perusing the Pits: The Evidence for Prehistoric Root Resource Processing on the Canadian Plateau." In *Hunter-Gatherer Archaeobotany: Perspectives from the Northern Temperate Zone*, ed. S.L.R. Mason and J.G. Hather, 45-63. London, UK: Institute of Archaeology Occasional Publications, Archetype Publications.

Peacock, S.L., and B. Kooyman. N.d. *Report on Archaeological Investigations of White Rock Springs (EeRj-226), A Root Processing Locale in the Hat Creek Valley, British Columbia*. HCA Permit 2005-245. Report in progress.

Pearsall, D.M. 2000. *Paleoethnobotany: A Handbook of Procedures*. San Diego, CA: Academic Press.

Pokotylo, D.L., and P.D. Froese. 1983. "Archaeological Evidence for Prehistoric Root Gathering on the Southern Interior Plateau of British Columbia: A Case Study from the Upper Hat Creek Valley." *Canadian Journal of Archaeology* 7: 127-57.

Pokotylo, D.L., and D. Mitchell. 1998. "Prehistory of the Northern (Canadian) Plateau." In *Handbook of North American Indians*. Vol. 12: *Plateau*, ed. D.E. Walker and W.G. Sturtevant, 81-102. Washington, DC: Smithsonian Institution Press.

Prentiss, A.M. 2013. *Report of the 2012 University of Montana Investigations at the Bridge River Site (EeRl-4): Housepit 54 during the Canadian Fur Trade Period*. Report on file with the National Endowment for the Humanities (Grant RZ-51287-11) and the University of Montana, Missoula.

Prentiss, A.M., E. Carlson, N. Crossland, H. Schremser, and L. Reininghaus. 2009. *Report of the 2008 University of Montana Investigation at the Bridge River Site (EeRl4)*. Report on file with the Bridge River Indian Band and Stl'atl'imx First Nation Offices, Lillooet, BC.

Prentiss, A.M., J. Chatters, N. Lyons, and L. Harris. 2011. "Archaeology in the Middle Fraser Canyon, British Columbia: Changing Perspectives on Paleoecology and Emergent Cultural Complexity." *Canadian Journal of Archaeology* 35 (1): 143-74.

Prentiss, A.M., and I. Kuijt. 2012. *People of the Middle Fraser Canyon: An Archaeological History*. Vancouver: UBC Press.

Prentiss, A.M., N. Lyons, M. Burns, L. Harris, and T. Godin. 2007. "The Emergence of Status Inequality in Intermediate Scale Societies: A Demographic and Socio-Economic History of the Keatley Creek Site, British Columbia." *Journal of Anthropological Archaeology* 26: 299-327.

Prentiss, A.M., L. Smith, L. Reininghaus, M. Schirack, M. Wanzenried, and O. Ward. 2010. *Report of the 2009 University of Montana Investigation at the Bridge River Site (EeRl4)*. Report on file with the Bridge River Indian Band and Stl'atl'imx First Nation Offices, Lillooet, BC.

Prentiss, W.C., D.S. Clarke, D. Markle, J. Bochart, J. Foss, and S. Mandelko. 2005. *Report of the 2004 University of Montana Investigations at the Bridge River Site (EeRl4)*. Report on file with the Bridge River Indian Band and Stl'atl'imx First Nation Offices, Lillooet, BC.

Reimer, R. 2005. *The 2004 Squamish Nation Trust Archaeological Project Final Report*. Submitted to the Squamish Nation/Squamish Nation Trust and the Archaeology Branch, in fulfilment of Permit 2004-272, North Vancouver, BC, and Victoria, BC.

Ritchie, M. 2010. "From House to Watershed: The Cultural Landscape of the Sts'ailes People." MA thesis, Simon Fraser University.

Ritchie, M., and C. Springer. 2011. *Chocolate Bar Rock Shelter Excavation on the Harrison River*. With contributions by M. Cladwell and N. Endo. Heritage Investigation Permit 2009-0247, Sts'ailes Heritage Investigation Permit 2009-003, and Sto:lo Nation Heritage Investigation Permit 2009-049. Report on file with the Archaeology Branch of British Columbia, Victoria, BC; the Chehalis Indian Band, Agassiz, BC; and the Sto:lo Nation, Chilliwack, BC.

Ross, D. 2007. *Archaeological Investigations of Chinese and Japanese Labour Camps at Sites DgRr-25 and DgRr-41 on Don and Lion Islands, Richmond, BC*. Permit 2005-334. Report on file with the Archaeology Branch, Victoria, BC.

Ruggles, A. 2007. "Is Home Where the Hearth Is? Evidence for an Early Non-Domestic Structure on the Dundas Islands of North Coastal British Columbia." MA thesis, University of British Columbia.

Schaepe, D., I. Franck, S. Tribe, N. Endo, and S. Formosa. 2005. *Mitigative Data Collection, Archaeological Sites DgRl-32 and DgRl-33, 8050 Vedder Road, Chilliwack, BC*. HCA Permit 2005-37. Unpublished report on file with the BC Archaeology Branch, Victoria, BC.

Smith, B. 2006. "Eastern North America as an Independent Center of Plant Domestication." *Proceedings of the National Academy of Sciences of the United States of America* 103 (33): 12223–28.

Suttles, W. 1955. *Katzie Ethnographic Notes*. Anthropology in British Columbia, Memoir 2. Victoria: British Columbia Provincial Museum.

Turner, N.J. 1992. "Plant Resources of the *Stl'átl'imx* (Fraser River Lillooet People): A Window into the Past." In *A Complex Culture of the British Columbia Plateau. Traditional Stl'átl'imx Resource Use*, ed. B. Hayden, 405-69. Vancouver: UBC Press.

——. 1995. *Food Plants of Coastal First Peoples*. Vancouver/Victoria: UBC Press/Royal BC Museum.

——. 1998. *Plant Technology of First Peoples in British Columbia*. Vancouver/Victoria: UBC Press/Royal BC Museum.

Turner, N.J., and D.C. Loewen. 1998. "The Original 'Free Trade': Exchange of Botanical Products and Associated Plant Knowledge in Northwestern North America." *Anthropologica* 40 (1): 49–70.

Turner, N.J., C. Robinson, G. Robinson, and B. Eaton. 2013. "To Feed All the People: Lucille Clifton's Fall Feasts for the Gitga'at Community of Hartley Bay, British Columbia." In *Explorations in Ethnobiology: The Legacy of Amadeo Rea*, ed. M. Quinlan and D. Lepofsky, 259-92. Published by *Contributions in Ethnobiology*. Denton, TX: Society of Ethnobiology.

Turner, N.J., L.C. Thompson, M.T. Thompson, A.Z. York. 1990. *Thompson Ethnobotany: Knowledge and Use of Plants by the Thompson Indians of British Columbia*. Victoria: Royal BC Museum.

Villeneuve, S., N. Billy, A. Adolph, N. Endo, E. Carlson, D. Yang, C. Speller, B. Hayden, M. Fox, S. Spafford Ricci, A. Watson, L. Narcisse, and R.-E. Narcisse. 2011. "Results of the Sxetl' Basket Excavations at Six Mile Rapids along the Fraser River, British Columbia." Poster presented at the Annual Meeting of the Society for American Archaeology, Sacramento, CA.

Villeneuve, S., and B. Hayden. N.d. *Paleoethnobotanical Analysis of Keatley Creek, by Naoko Endo.* Unpublished analyses on file with authors.

Watson, P.J. 1976. "In Pursuit of Prehistoric Subsistence: A Comparative Account of Some Contemporary Flotation Techniques." *Mid-Continental Journal of Archaeology* 1: 77-100.

Wollstonecroft, M.M. 2000. "The Fruit of Their Labour: A Paleoethnobotanical Study of Site EeRb 140, A Multi-Component Open-Air Archaeological Site on the British Columbia Plateau." MA thesis, Simon Fraser University.

——. 2002. "The Fruit of Their Labour: Plants and Plant Processing at EeRb 140 (860±60 uncal B.P. to 160±50 uncal B.P.): A Late Prehistoric Hunter-Gatherer-Fisher Site on the Southern Interior Plateau, British Columbia, Canada." *Vegetation History and Archaeobotany* 11: 61-70.

APPENDIX 1

Paleoethnobotanical remains recovered from non-waterlogged archaeological sites in coastal British Columbia

Species *Scientific name* (Common name)[1]	Part found[2]	References[3]
BASIDIOMYCOTA LYCOPERDACEAE (Puffball family) *Lycoperdon perlatum* (gemmed puffball)	whole	McPhatter (1985)
GYMNOSPERMAE CUPRESSACEAE (Cypress family)		
Chamaecyparis sp. (yellow cedar)	L, W	Lyons (2000a)
Thuja plicata (western redcedar)	C, L, W	Lyons (2000a, 2011b); Lyons and Orchard (2007); McPhatter (1985)
PINACEAE (Pine family)		
Abies sp. (true fir)	L, W	Lepofsky (1992); Lyons (2000a); Ritchie (2010)
Abies sp./*Tsuga* sp.	W	Graesch (2006); Ritchie and Springer (2011)
Chamaecyparis sp./*Tsuga* sp.	W	Lyons and Orchard (2007)
Picea sp. (spruce)	C, L, W, S	Endo (2006); Lepofsky (1992); Lyons and Orchard (2007); Reimer (2005)
Picea cf. *sitchensis* (Sitka spruce)	C, L, W	Lyons and Orchard (2007)
Pinus sp. (pines)	C, L, S, W	Lyons (2000a); Endo (2006)
Pinus contorta (lodgepole pine)	L, W	Ross (2007)
Pseudotsuga menziesii (Douglas-fir)	C, L, S, W	Baptiste and Wollstonecroft (1997); Golder Associates (2007); Graesch (2006); Reimer (2005)
Tsuga sp. (hemlock)	C, L, W	Endo (2006); Lepofsky (1992); Lyons and Orchard (2007); Graesch (2006)
TAXACEAE (Yew family)		
Taxus brevifolia	L, W	Lepofsky (1992); Lyons (2000a); Schaepe et al. (2005)
Pollen cones		Lyons (2009)
MONOCOTOLYDONAE ALISMATACEAE (Water-plantain family)		
Alisma plantago-aquatica	S	Ross (2007)
Sagittaria latifolia	S	Ross (2007)
ARACEAE (Arum family)		
Lysichiton americanus (skunk cabbage)	S	Ross (2007)

Species *Scientific name* (Common name)[1]	Part found[2]	References[3]
CYPERACEAE (Sedge family)	S	Reimer (2005); Ritchie and Springer (2011); Schaepe et al. (2005)
Carex sp. (sedges)	S	Jackley (2011); Kaltenrieder et al. (2009); Ritchie and Springer (2011)
Eleocharis sp. (spike-rush)	S	Ross (2007)
Scirpus sp., *Schoenoplectus* sp. (bulrushes)	S	Ross (2007); Kaltenrieder et al. (2009); Lepofsky (1992); Schaepe et al. (2005)
IRIDACEAE (Iris family)		
Iris cf. *pseudacorus*	S	Ross (2007)
LILIACEAE (Lily family)		
cf. *Allium* sp.	S	Reimer (2005)
Camassia sp. (camas)	S, R	Baptiste and Wollstonecroft (1997)
Maianthemum dilatatum (false lily-of-the-valley)	S	Lyons (2000a); Patenaude (1985)
POACEAE (Grass family)	S, L	Baptiste and Wollstonecroft (1997); Graesch (2006); Golder Associates (2007); Lepofsky (1992): Lyons and Orchard (2007); Ritchie (2010)
Glyceria sp. (mannagrass)	S	Ross (2007)
TYPHACEAE (Cattail family)		
Typha latifolia (cattail)	down, L, S, St	Ostapkowicz et al. (2001)
DICOTYLEDONAE		
ACERACEAE (Maple family)		
Acer sp. (maple)	W	Kaltenrieder et al. (2009); Lyons (2000a); Ritchie (2010); Schaepe et al. (2005)
APIACEAE (Celery family)		
Sium suave (water-parsnip)	S	Ross (2007)
ASTERACEAE (Aster family)	S	Lyons (2000a); Schaepe et al. (2005)
Cirsium sp. (thistle)	S	Golder (2007); Ross (2007)
BORAGINACEAE (Borage family)		
Myosotis sp. (forget-me-not)	S	Ross (2007)
Phacelia sp. (phacelia)	S	McLay et al. (2007)

SPECIES *Scientific name* (Common name)[1]	PART FOUND[2]	REFERENCES[3]
BRASSICACEAE (Cabbage/mustard family)	S	Endo (2004)
Barbarea sp. (winter cress)	S	Ross (2007)
Brassica sp. (mustards)	S	Lepofsky and Lenert (2004); Reimer (2005)
Sisymbrium sp. (tumble mustard)	S	Ross (2007)
BETULACEAE (Birch family)		
Alnus sp. (alder)	C, S, W	Lyons (2000a); Ritchie and Springer (2011); Ross (2007)
Betula sp. (birch)	S, W	Lepofsky (1992)
Corylus cornuta (hazelnut)	S, W	Eldridge and Fisher (1997)
CAPRIFOLIACEAE (Honeysuckle family)		
cf. Lonicera sp. (honeysuckle)	S, W	Lyons (2000a)
Sambucus sp. (elderberry)	F, S, W	Graesch (2006); Lepofsky (1992); Lyons (2000a); Reimer (2005)
Sambucus racemosa (red elderberry)	S	Lepofsky (1992); Lyons (2012b)
Symphoricarpos albus (snowberry, waxberry)	S	Ross (2007)
CAMPANULACEAE (Bellflower family)		
cf. *Lobelia* sp. (lobelia)	S	Endo (2006)
CARYOPHYLLACEAE (Pink family)	S	Lyons (2009)
Silene sp. (campion)	S	Graesch (2006); Ritchie (2010)
CHENOPODIACEAE (Goosefoot family)		
Atriplex sp. (goosefoot)	S	Golder Associates (2007)
Chenopodium sp. (chenopod)	S	Baptiste and Wollstonecroft (1997); Schaepe et al. (2005); Kaltenrieder et al. (2009); Graesch (2006); Ritchie and Springer (2011)
Chenopodium album (lamb's quarters)	S	Graesch (2006)
Chenopodium cf. *fremontii*	S	Jackley (2011)
CORNACEAE (Dogwood family)		
Cornus sp. (dogwood)	S, W	Lyons (2000a); Ross (2007)
Cornus canadensis (bunchberry)	S	Lepofsky (1992); Lyons (2000a)
Cornus stolonifera (red-osier dogwood)	S	Reimer (2005)
CUCURBITACEAE (Cucurbit family)		
Citrullus vulgaris (watermelon)	S	Ross (2007)

Species *Scientific name* (Common name)[1]	Part found[2]	References[3]
EMPETRACEAE (Crowberry family)		
Empetrum sp. (crowberry)	S	Endo (2006)
ERICACEAE (Heath family)		
Arctostaphylos sp. (manzanita, kinnikinnick)	F, S, T	Lepofsky (1992); Lyons (2000a, 2011b); Ritchie (2010); Ritchie and Springer (2011)
Arctostaphylos uva-ursi (kinnikinnick)	S	Ritchie (2010)
Gaultheria shallon (salal)	F, S, T	Lepofsky (1992); Lyons (2000a); Lyons and Orchard (2007)
Gaultheria sp./*Vaccinium* sp. (cf. salal/ blueberry)	S	Ritchie (2010); Ritchie and Springer (2011)
Vaccinium oxycoccos (bog cranberry)	S	Lyons (2009, 2011c)
Vaccinium sp. (blueberry, huckleberry)	F, L, S, T, W	Endo (2006); Graesch (2006); Ritchie and Springer (2011)
FABACEAE (Pea family)		
cf. *Trifolium* sp. (clover)	S	Endo (2004)
FAGACEAE (Beech family)		
Quercus garryana (oak)	S, W	Baptiste and Wollstonecroft (1997)
FUMARIACEAE (Fumitory family)		
Dicentra formosa (Pacific bleedingheart)	S	Lyons (2000a)
GROSSULARIACEAE (Gooseberry family)		
Ribes sp. (currants, gooseberries)	S	Lyons (2000a); Lyons and Orchard (2007)
HIPPURIDACEAE (Mare's-tail family)		
Hippuris sp.	S	Golder Associates (2007)
HYPERICACEAE (St. John's wort family)	S	Schaepe et al. (2005)
Hypericum sp. (St. John's wort)	S	Golder Associates (2007)
LAMIACEAE (Mint family)	S	Lenert (2007); Lepofsky and Lenert (2004)
cf. *Clinopodium douglasii* (yerba buena)	S	Lyons (2000a)
PORTULACACEAE (Purslane family)		
Claytonia sp. (miner's lettuce, spring beauty)	S	Lenert (2007)
PLANTAGINACEAE (Plantago family)		
Plantago sp. (plantain)	S	Golder Associates (2007)
PLUMBAGINACEAE (Leadwort family)		
Armeria maritima (thrift)	W	Lepofsky et al. (2001)

Species *Scientific name* (Common name)[1]	Part found[2]	References[3]
POLYGONACEAE (Buckwheat family)	S	Kaltenrieder et al. (2009)
Polygonum sp. (knotweed)	S	Golder Associates (2007); Kaltenrieder et al. (2009); Ritchie (2010); Ritchie and Springer (2011)
Rumex sp. (dock)	S	Ritchie and Springer (2011); Ross (2007)
Rumex acetosella (sheep sorrel)	S	Ross (2007)
Rumex crispus (yellow dock)	S	Ross (2007)
RANUNCULACEAE (Buttercup family)	S	Golder Associates (2007)
Aquilegia cf. *formosa* (columbine)	S	Ross (2007); Lepofsky and Lenert (2004)
Ranunculus sp. (buttercup)		
RHAMNACEAE (Buckthorn family)		
Rhamnus purshiana (buckthorn, cascara)	W	Baptiste and Wollstonecroft (1997); Lepofsky and Lenert (2004)
ROSACEAE (Rose family)	S	Endo (2006); Ritchie (2010)
Amelanchier alnifolia (serviceberry, saskatoonberry)	F, S	Lepofsky and Lenert (2004); Reimer (2005); Ritchie and Springer (2011)
Crataegus sp. (hawthorn)	F, S	Ross (2007); Ritchie and Springer (2011)
Crataegus douglasii (black hawthorn)	S	Ross (2007)
Fragaria sp. (strawberries)	S	Ross (2007); Lyons (2000a, 2012b)
Malus fusca (crabapple)	S, W	Lyons (2000a); Ritchie (2010); Ritchie and Springer (2011)
Oemleria cerasiformis (Indian plum)	S	Lepofsky (1992)
Potentilla sp. (silverweed, cinquefoil)	S	Ritchie (2010); Ritchie and Springer (2011)
Prunus sp. (cherry)	F, S, W,	Baptiste and Wollstonecroft (1997); Endo; Jackley (2011); Lepofsky (1992)
Prunus avium (bird cherry)	S	Ross (2007)
Prunus domestica (domestic cherry)	S	Ross (2007)
cf. *Prunus emarginata* (bitter cherry)	S	Lyons (2012b)
Prunus persica (peach)	S	Ross (2007)
Prunus virginiana (choke cherry)	S	Jackley (2011)
Rosa sp. (rosehip)	S, W	Ross (2007); Jackley (2011); Lyons (2000a, 2012b); Ritchie and Springer (2011)
Rosa nutkana (Nootka rose)	S	Lyons and Orchard (2007)

Species *Scientific name* (Common name)[1]	Part found[2]	References[3]
Rubus sp. (raspberry, or related species)	F, S, W	Baptiste and Wollstonecroft (1997); Lepofsky and Lenert (2004); Reimer (2005)
Sanguisorba canadensis (burnett)	S	Ross (2007)
RUBIACEAE (Madder family)		
Galium sp. (bedstraw)	F, S	Endo (2004); Graesch (2006); Jackley (2011); Lyons and Orchard (2007)
SALICACEAE (Willow family)		
Populus sp. (cottonwood, aspen)	W	Baptiste and Wollstonecroft (1997); Graesch (2006); Lepofsky and Lenert (2004)
Salix sp. (willow)	W	Lepofsky (1992)
Salix sp./*Populus* sp.	W	Graesch (2006); Kaltenrieder et al. (2009); Lyons (2000a); Schaepe et al. (2005)
SOLANACEAE (Nightshade family)	S	Jackley (2011)
Solanum sp. (nightshade, potato, tomato)	S	Ross (2007); Lenert (2007); Ritchie and Springer (2011)
URTICACEAE (Nettle family)		
Urtica sp. (nettles)	S	Lyons (2000a, 2011a)
Urtica dioica (stinging nettle)	S	Reimer (2005)
VIOLACEAE (Violet family)		
Viola sp. (violet)	S	Golder Associates (2007); Lenert (2007); Ritchie (2010)
VITACEAE (Grape family)		
Vitis sp. (grape)	S	Ross (2007)

1 Questionable identifications have been deleted.

2 C = cone; F = fruit; L = leaf/needle; R = roots, bulbs, corms, rhizomes, and so on; S = "seed" (exocarp, endocarp, etc.); St = stem; T = other non-woody tissue; W = wood, bark, branch, and.

3 This is not an exhaustive list of references.

4 cf. signifies that this is the most likely identification, but it is not certain.

APPENDIX 2

Paleoethnobotanical remains recovered from archaeological sites in Interior British Columbia

Species *Scientific name* (Common name)	Part found[1]	References[2]
BASIDIOMYCOTA		
LYCOPERDACEAE (Puffball family)		
Bovista sp.	carpophores	Mathewes (1980)
Bovista dakotensis	carpophores	Compton et al. (1995)
Bovista tomentosa	carpophores	Compton et al. (1995)
Abstoma reticulatum	carpophores	Compton et al. (1995)
PTERIDOPHYTA	R	Ketcheson (1979)
GYMNOSPERMAE		
CUPRESSACEAE (Cypress family)		
Juniperus sp. (juniper)	L, W	Ketcheson (1979); Lepofsky (2000a)
Thuja plicata (western redcedar)	L, W	Villeneuve and Hayden (n.d.)
PINACEAE (Pine family)		
Abies sp. (true fir)	C, L, W	Ketcheson (1979); Prentiss et al. (2009, 2010); Villeneuve and Hayden (n.d.)
Abies grandis	L	Endo (2004–13)
Picea sp. (spruce)	L, W	Ketcheson (1979); Prentiss et al. (2005); Villeneuve and Hayden (n.d.)
Pinus sp. (pine)	C, L, S, St, W	Lepofsky (2000a); Lyons (2003); Prentiss et al. (2010); Villeneuve and Hayden (n.d.)
Pinus albicaulis (whitebark pine)	C, S, W	Eldridge (1996); Mathewes (1980)
Pinus ponderosa (ponderosa pine)	C, L, S, W	Ketcheson (1979); Lepofsky (1988); Lepofsky et al. (1996); Mathewes (1980); Prentiss et al. (2010)
Pinus contorta (lodgepole pine)	C, L, S, W	Ketcheson (1979)
Pseudotsuga menziesii (Douglas-fir)	B, C, L, S, W	Ketcheson (1979); Lepofsky (1988, 2000a); Lepofsky et al. (1996); Mathewes (1980); Wollstonecroft (2000)
Tsuga sp. (hemlock)	L, W	Ketcheson (1979); Prentiss et al. (2010)

Species *Scientific name* (Common name)	Part found[1]	References[2]
MONOCOTYLEDONAE		
CYPERACEAE (Sedge family)	S	Prentiss et al. (2005)
Carex sp. (sedges)	S	Lepofsky (1988, 2000a); Lepofsky et al. (1996); Prentiss et al. (2009)
Scirpus sp., *Schoenoplectus* sp. (bulrushes)	S	Prentiss et al. (2005, 2009, 2010); Villeneuve and Hayden (n.d.)
LILIACEAE (Lily family)	R	Ketcheson (1979)
Allium sp. (onion)	R, S	Hayden and Mossop Cousins (2004); Ketcheson (1979); Wollstonecroft (2000)
Maianthemum racemosum (false Solomon's-seal)	S	Lepofsky (2000a)
Maianthemum stellatum (star-flowered false Solomon's-seal)	S	Lepofsky et al. (1996)
POACEAE (Grass family)	L, R, S, St	Lepofsky (2000a); Lepofsky et al. (1996); Ketcheson (1979); Wollstonecroft (2000)
Calamagrostis sp. (reedgrass, pinegrass)	S	Ketcheson (1979)
Muhlenbergia sp. (muhly grass)	S	Ketcheson (1979)
Poa sp. (bluegrass)	T	Ketcheson (1979)
DICOTYLEDONAE		
ACERACEAE (Maple family)		
Acer sp. (maple)	W	Lepofsky (2000a); Prentiss et al. (2010)
APIACEAE (Celery family)		
Lomatium sp. (lomatiums, biscuitroots)	R	Hayden and Mossop Cousins (2004)
ASTERACEAE (Aster family)	R, S	Ketcheson (1979); Prentiss et al. (2005); Villeneuve and Hayden (n.d.)
Artemisia sp. (sagebrushes, wormwoods)	L, S, W	Lepofsky (2000a); Wollstonecroft (2000)
BETULACEAE (Birch family)		
Alnus sp. (alder)	W	Ketcheson (1979); Lepofsky (2000a); Lepofsky et al. (1996); Prentiss et al. (2010)
Betula sp. (birch)	W	Ketcheson (1979); Lepofsky (1988, 2000a); Mathewes (1980)
Betula papyrifera (paper birch)	W	Lepofsky et al. (1996); Villeneuve and Hayden (n.d.); Wollstonecroft (2000)
Corylus sp. (hazelnut)	S	Wollstonecroft (2000)

SPECIES *Scientific name* (Common name)	PART FOUND[1]	REFERENCES[2]
BORAGINACEAE (Borage family)	S	Lepofsky et al. (1996)
Amsinckia menziesii (small-flowered fiddleneck)	S	Lepofsky (2000a)
Lithospermum sp. (gromwell)	S	Wollstonecroft (2000); Prentiss et al. (2005, 2010); Villeneuve and Hayden (n.d.)
Phacelia sp.	S	Endo (2004–13); Villeneuve and Hayden (n.d.)
BRASSICACEAE (Cabbage family)	S	Wollstonecroft (2000); Prentiss et al. (2005)
CACTACEAE (Cactus family)		
Opuntia sp. (pricklypear cacti)	S	Lepofsky (2000a); Lepofsky et al. (1996); Prentiss et al. (2010)
CAPRIFOLIACEAE (Honeysuckle family)		
Sambucus sp. (elderberry)	S, W	Ketcheson (1979); Lepofsky (1988, 2000a); Prentiss et al. (2005)
Sambucus cf.[3] *cerulea* (blue elderberry)	S	Lyons (2012a)
CARYOPHYLLACEAE (Pink family)		
Silene sp. (campion)	S	Lepofsky (1988, 2000a); Lepofsky et al. (1996); Prentiss et al. (2005)
CHENOPODIACEAE (Goosefoot family)		
Chenopodium sp. (chenopod)	S, W	Lepofsky (1988, 2000a); Lepofsky et al. (1996); Mathewes (1980); Prentiss et al. (2005)
Chenopodium cf. *fremontii*	S	Villeneuve and Hayden n.d.
CORNACEAE (Dogwood family)		
Cornus stolonifera (red-osier dogwood)	S	Lepofsky (1988, 2000a); Lepofsky et al. (1996); Villeneuve and Hayden (n.d.); Wollstonecroft (2000)
ELAEAGNACEAE (Oleaster family)	S	Lyons (2012a); Prentiss et al. (2009)
Shepherdia canadensis (soopalallie, soapberry)	S	Prentiss et al. (2009)
ERICACEAE (Heath family)	S	Lepofsky et al. (1996); Prentiss et al. (2009); Villeneuve and Hayden (n.d.)
Arctostaphylos sp. (manzanita, kinnikinnick)	F, L, S	Ketcheson (1979); Lepofsky (1988, 2000a); Lepofsky et al. (1996); Lyons (2012a); Prentiss et al. (2005, 2009, 2010)

Species *Scientific name* (Common name)	Part found[1]	References[2]
Arctostaphylos uva-ursi (kinnikinnick)	S	Endo (2004–13); Villeneuve and Hayden (n.d.)
Vaccinium sp. (blueberry, huckleberry)	L, S	Ketcheson (1979); Prentiss et al. (2005); Wollstonecroft (2000)
FABACEAE (Pea family)		
Astragalus sp. (milk-vetch)	L, S	Ketcheson (1979)
Trifolium (clover)	S	Endo (2004–13)
GERANIACEAE (Geranium family)	S	Endo (2004–13)
GROSSULARIACEAE (Gooseberry family)		
Ribes sp. (currants, gooseberries)	F, S, W	Lepofsky (1988); Wollstonecroft (2000)
HYDROPHYLLACEAE (Waterleaf family)		
Phacelia sp. (phacelia)	S	Lepofsky (1988, 2000a); Lepofsky et al. (1996); Prentiss et al. (2005, 2009, 2010)
HYPERICACEAE (St. John's wort family)		
Hypericum sp. (St. John's wort)	S	Villeneuve and Hayden (n.d.)
LAMIACEAE (Mint family)	S	Prentiss et al. (2005); Prentiss et al. (2010)
Mentha sp. (mint)	S	Lyons (2000b)
cf. *Monarda* (wild bergamot)	S	Lyons (2000b)
Plantago sp. (plantain)	S	Prentiss et al. (2005); Villeneuve and Hayden (n.d.)
POLYGONACEAE (Buckwheat family)		
Rumex sp. (dock)	S	Wollstonecroft (2000)
ROSACEAE (Rose family)	S, W	Lyons (2012a); Prentiss et al. (2009, 2010); Villeneuve and Hayden (n.d.)
Amelanchier alnifolia (serviceberry, saskatoonberry)	F, S, W	Lepofsky (1988, 2000a); Lepofsky et al. (1996); Mathewes (1980); Wollstonecroft (2000); Prentiss et al. (2005, 2009, 2010)
Crataegus sp. (hawthorn)	S, W	Lepofsky (1988); Prentiss et al. (2010)
Geum sp. (avens)	S	Lyons (2012a)
Potentilla sp. (cinquefoil)	S	Lyons (2012a)

Species *Scientific name* (Common name)	Part found[1]	References[2]
Prunus sp. (cherry)	F, S, W	Lepofsky (1988, 2000a); Lepofsky et al. (1996); Lyons (2000b, 2012a); Mathewes (1980); Villeneuve and Hayden (n.d.)
Prunus cf. *armeniaca* (domesticated apricot)	S	Lyons (2012a)
Prunus cf. *virginiana* (choke cherry)	S	Wollstonecroft (2000)
Rosa sp. (rosehip)	S	Lepofsky (1988); Prentiss et al. (2005)
Rosa cf. *woodsii* (Wood's rose)	S, T	Lepofsky (2000a); Lepofsky et al. (1996)
Rubus sp. (raspberry or relative)	S, W	Lepofsky (1988); Lyons (2012a); Mathewes (1980); Prentiss et al. (2005, 2010); Villeneuve and Hayden (n.d.)
Sorbus sp. (mountain-ash)	S	Prentiss et al. (2009)
RUBIACEAE (Madder family)		
Galium sp. (bedstraw)	S	Lepofsky (1988); Prentiss et al. (2005, 2009)
SALICACEAE (Willow family)		
Populus sp. (cottonwood, aspen)	S, W	Ketcheson (1979); Lepofsky (2000a); Lepofsky et al. (1996); Endo (2004–13)
Salix sp. (willow)	W	Ketcheson (1979); Lepofsky (2000a)
Salix sp./*Populus* sp.	W	Lepofsky (1988); Prentiss et al. (2009, 2010); Wollstonecroft (2000)
SCROPHULARIACEAE (Figwort family)		
Collinsia parviflora (small flower blue-eyed Mary)	S	Lepofsky (1988, 2000a)
VIOLACEAE (Violet family)		
Viola sp.	S	Endo (2004–13)

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