

BARKING UP THE RIGHT TREE:

*Understanding Birch Bark Artifacts from the Canadian Plateau, British Columbia**

SHANNON CROFT AND ROLF W. MATHEWES

INTRODUCTION

SEVERAL BIRCH BARK containers and other birch bark artifacts made by pre-contact First Nations have been encountered during archaeological excavations on the Canadian Plateau of British Columbia. From these discoveries, it is apparent that birch bark technologies were of major importance to First Nations, yet little attention has been paid to them as a category of artifacts. We examined a unique collection of 923 birch bark artifacts excavated from eighteen Canadian Plateau sites in British Columbia from 1969 to 1976 as part of a previous paleoethnobotanical study (Table 1; Croft n.d.; Mathewes 1980). Based on artifact form, we delineated three general classes in the paleoethnobotanical collection: baskets, rolled birch bark, and bark strips/sheets. We chose to focus on the baskets for three reasons: (1) the significance of birch bark basketry is not yet well understood; (2) there is good evidence of birch bark basket use in both utilitarian and ritual contexts; and (3) birch bark basketry is an example of a technology identified with women.

Currently in archaeological research on the Canadian Plateau, we are becoming more aware of plants used as food sources (Peacock 1998; Prentiss and Kuijt 2012; Wollstonecroft 2002). Botanical foods were valued by ancient First Nations for their diversity, abundance, and nutritional value. In this article, we shift beyond the usual theme of plants used as food to the theme of plants used for technological and social purposes – areas that have not been well explored.

When archaeologists hear the word “technology,” the first thing that typically springs to mind are lithic technologies, such as projectile

* The editors of *BC Studies* and the authors of this article would like to acknowledge the assistance of Arthur Adolph, Chief of Xaxli'p as well as chair of the Lillooet Tribal Council, for his careful reading of their work in manuscript form and for his clarification of existing archaeological and ethnographic references, based on his personal traditional knowledge.

points, scrapers, microliths, adzes, and so on. All these lithic technologies are very well represented in archaeological literature. If we widen our concept of technology, we can understand plant artifacts as having technological as well as social and ritual roles. It has not yet been considered that technological items made out of plants were probably integral to economic affairs: basketry, torches, woven mats, berry combs, food-drying racks, cordage, temporary shelters, bags, rope, clothing, among others. Additionally, because we do not have studies on plant-based artifacts, many activities associated with women are missing from our interpretations of ancient lifeways. Although it seems intuitive that the dearth of studies on botanical artifacts is simply the result of preservation bias, we know this is not the case because everywhere that archaeologists make an effort to look for plants they find them. Conkey and Spector (1984, 6) note that plant data are not inherently invisible, nor is the perceived archaeological “invisibility” of females: “The differential preservation of bones compared to plant remains is *not* the problem, only a diversion” (emphasis in original).

The story of plant technology in Canadian Plateau culture has been addressed primarily by modern ethnobotanical accounts (Turner 1988, 1998), and discussions of plant technologies are sparse in the archaeological literature (Billy et al. 2011; Wittke, Hayden, and Lauwerys 2004). Indeed, plant studies of any kind were rarely incorporated into past excavation programs in the region (Lepofsky 2004; Lepofsky and Peacock 2004, 130). Technology and economy on the Canadian Plateau have tended to be understood through animal and lithic remains, with the latter assumed to be hunting tools and hence indicative of a male set of activities. As mentioned, to a great extent, we have taken little to no account of plant technologies, at the expense of understanding a vital part of women’s knowledge and contribution to the economy. Towards the aim of remedying this unbalanced perspective, this article focuses on birch bark basketry, which is strongly associated with women ethnographically and offers an artifact type that can increase the visibility of women in the past.

The use of birch bark is also part of an interconnected network of social relationships and activities, the performance of which creates meaning. Thomas (1996, 235-36) argues that our Western modernist understanding draws discrete boundaries between bodies and inanimate things, which limits our understanding of non-Western cultures. In other words, people and material culture need not be conceptualized as separate entities but, rather, can be viewed as being part of a larger

cycle of creation and inter-activity. The notion of considering relationships between objects, tasks, and people as giving rise to cultural meaning is derived from Bourdieu's concept of habitus, which is part of his theory of practice (Bourdieu 1977 [1972]; Maton 2012). Thornburn (2003, 106-8) draws attention to the personal and spiritual meaning of birch bark basket making to women elders whom she has interviewed. The idea that these baskets represent more than static utilitarian items is evident.

In this article, we employ a multi-faceted approach to the study of birch bark, considering it from different angles and using various types of evidence. First, we describe and contextualize our study by situating it culturally and ecologically in the Canadian Plateau. We outline the special chemical properties of birch bark as well as its preservation and archaeological antiquity. We report and describe two Late Period birch bark baskets and their contents, originating from archaeological sites near Lillooet, British Columbia. Then we illustrate the process of harvesting bark and constructing baskets. Birch bark is highlighted as an important material resource to Canadian Plateau culture, something that is demonstrated by a review of archaeological and ethnographic literature that details how birch bark basketry was made and used. Last, we begin to address the under-represented theme of gender in Canadian Plateau archaeology. We briefly discuss the development of gender archaeology in the Pacific Northwest region, following this with an examination of the ways in which birch bark is closely connected with women, both economically and spiritually.

CULTURAL AND ECOLOGICAL BACKGROUND

The physical geography, climate, and vegetation of the Canadian Plateau culture area are extremely diverse (see Alexander 1992a for descriptions of environmental units). High mountains, deeply incised valleys, rolling plateaus, and badlands are all found in the area. The region is characterized by a mosaic of coniferous and deciduous forests, alpine tundra, subalpine meadows, wetlands, and open sagebrush grasslands. Three native species of birch are present in the study area: *Betula nana* L., *B. occidentalis* Hook., and *B. papyrifera* Marsh. However, Nancy Turner (1998, 154) notes that people only used the bark from the paper birch species *B. papyrifera*, which was of suitable quality and easily harvested from the tree. Where moisture is sufficient, paper birch is common and abundant at low to mid-elevations on southern interior plateaus, forests,

seepage sites, floodplains, and disturbed moist upland sites (Parish, Coupé, and Lloyd 1996, 30).

Several Indigenous groups, who spoke different Salish and Athabaskan languages, live in the Canadian Plateau (Helm 1981; Walker 1998). Based on Kroeber (1939) and Walker (1998), the peoples that lived in the Canadian part of the Plateau culture area include: the Dakelh (Carrier), the Tsilhqot'in (Chilcotin), the Secwepemc (Shuswap), the Stl'atl'imx (Lillooet), the Nlaka'pamux (Thompson), the N'kwala (Nicola), the Syilx (Okanagan), and the Ktunaxa (Kootenai) (see Figure 1). In general, during historic and pre-contact times, these groups shared similar social and economic organization (Brunton 1998, 223-37; Ignace 1998, 203-19; Kennedy and Bouchard 1998a, 174-90; 1998b, 238-52; Lane 1981, 4002-12; Tobey 1981, 413-32; Wyatt 1998a, 191-202; 1998b, 220-22). As we discuss below, ethnohistoric and archaeological records suggest that these groups also used similar birch bark technologies.

BIRCH BARK CHEMICAL PROPERTIES AND PRESERVATION

First Nations in British Columbia selected paper birch bark as a good construction material that is able to withstand changes in shape without breaking (Turner 1998, 154). Birch bark is dense, with bituminous resin deposits containing terpene hydrocarbons that make it both impermeable to water and highly flammable. Terpenes found in birch bark are defensive chemicals that help protect the tree from pathogens such as fungi, insects, bacteria, and viruses (Krasutsky 2006). Phytochemists are conducting ongoing studies to identify, extract, and test natural chemicals (pentacyclic triterpenes) present in birch bark for their anti-allergic, anti-viral, anti-microbial, anti-malarial, hepatoprotective, anti-cancer, and anti-inflammatory effects (Dehelean et al. 2012; Shikov et al. 2011; Mshvildadze et al. 2007; Sami et al. 2006). These biocidal and inhibitive characteristics of the bark were useful to past people for food storage and medicinal purposes. Indeed, Sarah Malcolm, an Athabaskan birch bark basket maker from Alaska, recalls that birch bark was excellent for wrapping and storing meat and fish because it prevented rot: "When they'd kill a moose out in the grass, they'd put [birch] bark down to put cut up meat on. Food not get spoiled on it. Fish good on it. Just like tin foil" (Steinbright 1985, 18). Similarly, Huron H. Smith (1932, 416) notes that it was the birch bark material used by the Ojibwa in their storage containers that preserved food from spoilage.

Despite being organic material, birch bark artifacts preserve very well in a variety of deposits. In fact, birch bark artifacts made by pre-contact hunter-gatherers have been recovered from Plateau contexts in British Columbia (e.g., Nicholas and Westfall forthcoming; Prentiss and Kuijt 2012, 10; Stryd 1970, 7; 1972, 22; 1973, 69; 1985, 78), from Subarctic Alaska (de Laguna 1936; Fair 2006, 289; Webber 1978, 61), from the Canadian Plains in Saskatchewan (Syms 1979, 229) and Manitoba (Vickers 1945: 92), from Eastern Woodlands in Ontario (Kidd 1963, 1965), from northern England (Clark 1954, 166), and from northern Germany (Street et al. 2001, 418). These birch bark artifacts have survived both charred and uncharred in the archaeological record. In general, uncharred botanical remains found in archaeological deposits are thought to be exceptional. This is because only charred plant remains are usually considered definitively ancient and to have arisen from cultural processes. However, uncharred birch bark artifacts are actually long lived because birch bark contains especially high amounts of a waxy hydrophobic substance called suberin, which makes up 20 to 40 percent of the bark periderm (Sjöström 1993, 113). Suberin is known to be extremely persistent in nature (Florian 1990, 25). In fact, a carbonized cut bark strip found at Medowcroft Rockshelter, suggested to be a birch basketry fragment, has been dated as far back as seventeen thousand years – perhaps the oldest perishable artifact ever found in the Western hemisphere (Adovasio et al. 1978, 643; Adovasio, Donahue, and Stuckenrath 1990, 351; Adovasio, Soffer, and Page 2007, 227). Unlike the bark, paper birch wood is not resistant to decay; therefore, it is not desirable as a long-term construction material (Panshin and de Zeeuw 1980, 353). The centre of a paper birch tree will rot out long before the resinous bark disintegrates.

IDENTIFICATIONS AND INTERPRETATIONS

The identification of the birch species represented by the 923 artifacts in our previous paleoethnobotanical study was made based on physical descriptions, anatomical drawings, and photographs of the bark of native trees in the Lillooet region (Arno and Hammerly 2007; Brayshaw 1996; Douglas et al. 1998; Farrar 1995; Hosie 1979; Parish, Coupé, and Lloyd 1996). During the handling of the containers, it was observed that sediment was adhering to their insides, and this was collected by gentle agitation and then analyzed. The sediment samples were caught and inspected with a dissecting microscope. Since the outside of the containers were cleaned before we analyzed them, the finds in the con-

tainer sediments originate from inside the containers rather than from the surrounding depositional environment. Seeds in the sediments were identified with the aid of two modern botanical comparative collections housed in the biology and archaeology departments at Simon Fraser University. Identification was also aided by photographs of seeds on the US Department of Agriculture online Plant Database (USDA 2008) as well as reference books (Delorit 1970; Martin and Barkley 1961; Welsh, Crompton, and Clemants 2004). We consulted descriptions of birch bark uses found in various ethnographic sources to guide our interpretations of the artifacts (Dawson 1891; Hill-Tout 1899; Palmer 1975; Ray 1939, 1942; Steedman 1930; Teit 1900, 1906, 1909, 1930; Turner 1998, 1992; Turner et al. 1980, 1990). In particular, we drew upon the work of James A. Teit as his documentation of the experience of Canadian Plateau women makes his ethnographies exceptional among his contemporaries (Wickwire 1993).

THE PALEOETHNOBOTANICAL COLLECTION

The birch bark containers, stitched fragments, and all other birch bark artifacts were collected during six seasons of excavations at a total of eighteen sites (Table 1). These excavations were directed by Arnoud Stryd for the Lillooet Archaeological Project between 1969 and 1976 (Stryd 1970, 1972, 1978, 1980; see Figure 1). Based on available radiocarbon dates and diagnostic artifacts, these sites are attributed mainly to the last two pre-contact horizons of the Late Period (4500–200 BP) – namely, the Plateau Horizon (2400 to 1200 BP) and the Kamloops Horizon (1200 to 200 BP) as well as early European contact times (Rousseau 2004).

ANTIQUITY AND ETYMOLOGY

In the Canadian Plateau, birch bark is found in abundance in the archaeological record before 2400 BP, both uncharred and charred. At this time, it was used for a variety of purposes (Richards and Rousseau 1987, 36). There is also some evidence that birch bark was used thousands of years earlier, between 6000 and 4500 BP (Nicholas and Westfall forthcoming). The use of *Betula papyrifera* bark may have even greater antiquity in the region than is demonstrated by the archaeological remains. Based on linguistic evidence, First Nations in northwestern North America had a long-standing familiarity with the paper birch tree (N. Turner, personal communication, 2013). The word “birch,” *q^wəlín*, is present in ancient Proto-Salish (Kuipers 2002), which is indicative

TABLE 1
Birch bark artifacts in paleoethnobotanical collection

| SITE | ARTIFACT TYPE | | | | | | | | | | | | TOTAL ARTIFACTS PER SITE |
|-------------------------------|----------------|---------------------------------------|---------------------|------------------------|------------------------------------|---|--------------------------------|--|----------------------------|--|---|-------|--------------------------------|
| | BARK BASKET | BARK FRAGMENT WITH STITCHING | INCISED FRAGMENT | BARK ROLL UNCHARRED | BARK ROLL CHARRED AT ONE END | BARK ROLL FIRE EXPOSED OR CHARRED | BARK FRAGMENT PERFORATED | BARK FRAGMENT UNCHARRED, CHARRED, OR CARBONIZED | BARK STRIP UNCHARRED | BARK FRAGMENT UNCHARRED, CHARRED, OR CARBONIZED | | TOTAL | |
| EeRk-4 Bell | 1 | 6 | 1 | 197 | 16 | 57 | 8 | 187 | 0 | 0 | 0 | | 473 |
| EeRk-7 Gibbs Creek | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | |
| EeRk-9 Ollie | 1 | 0 | 1 | 36 | 0 | 7 | 0 | 83 | 22 | 0 | 0 | 150 | |
| EeRk-15 Cabin | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 14 | |
| EeRl-4 Bridge River | 0 | 0 | 0 | 41 | 0 | 2 | 0 | 11 | 0 | 0 | 0 | 54 | |
| EeRl-6 West Fountain | 0 | 0 | 0 | 4 | 1 | 1 | 0 | 4 | 0 | 0 | 0 | 10 | |
| EeRl-11 Bridge River North | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| EeRl-21 Seton Lake Village | 0 | 0 | 0 | 4 | 0 | 6 | 0 | 5 | 0 | 0 | 0 | 15 | |
| EeRl-22 Mitchell | 0 | 0 | 0 | 22 | 0 | 13 | 3 | 0 | 0 | 0 | 0 | 38 | |
| EeRl-27 Malin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | |
| EeRl-36 Squatter's | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 8 | |
| EeRl-40 East | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 13 | 0 | 0 | 0 | 22 | |
| EeRl-41 Two Springs | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | |
| EeRl-45 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 5 | 0 | 0 | 0 | 11 | |
| EeRl-63 West Fountain West | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | |
| EeRl-73 | 0 | 0 | 0 | 30 | 2 | 0 | 0 | 71 | 2 | 0 | 0 | 105 | |
| EeRl-80 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | |
| EeRl-167 Terry | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | |
| Total by artifact type | 2 | 6 | 2 | 377 | 19 | 96 | 11 | 386 | 24 | 0 | 0 | 923 | |

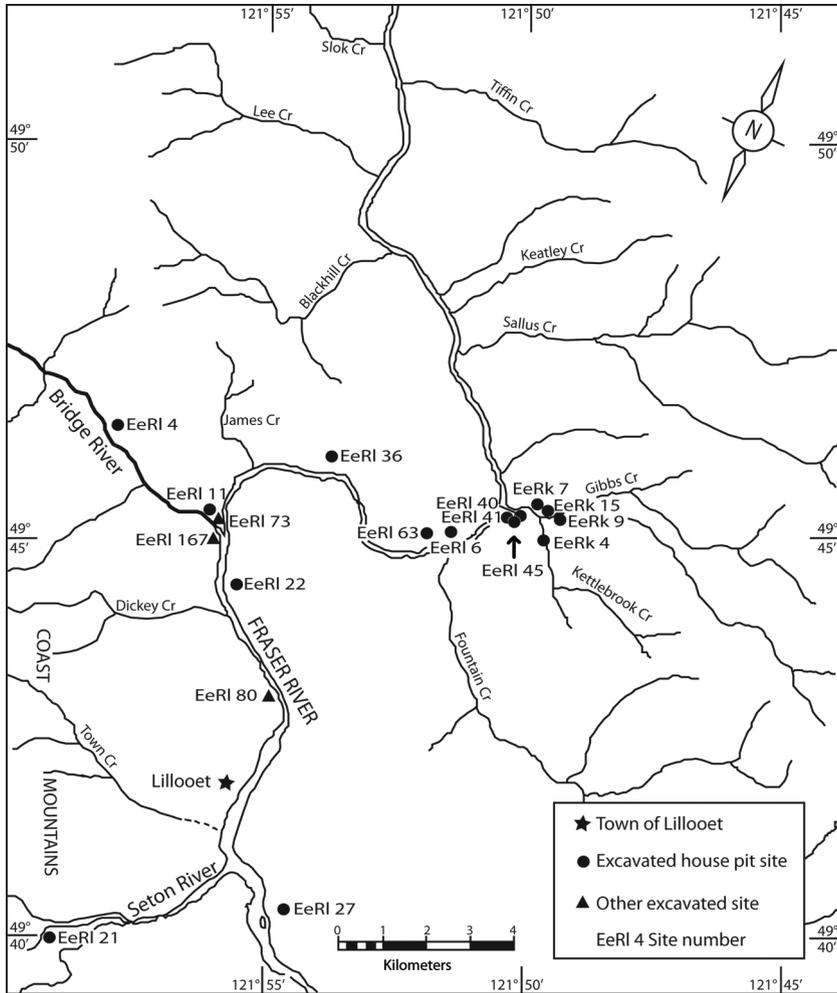


Figure 1. Map of the Lillooet area and sites where birch bark artifacts were collected during the Lillooet Archaeological Project (adapted from Stryd 1978, 12). *Note:* Site locations are approximate. Original sites EeRk-7 and EeRk-15 have since been combined with site EeRk-1.

of its use at the base of the language. The word for “birch” is also very ancient in the Athabaskan language, an unanalyzable monosyllable that reconstructs back to at least the Proto-Athabaskan language and perhaps dates to an even earlier language stock: Proto-Athabaskan-Eyak-Tlingit (B. Poser, personal communication, 2013). The existence of the word for “birch” in ancient languages of the Canadian Plateau suggests that the tree was used millennia ago and was culturally significant.

ARCHAEOLOGICAL EVIDENCE OF BIRCH BARK USE
ON THE CANADIAN PLATEAU

All the bark artifacts examined in the paleoethnobotanical collection exhibit traits indicative of *Betula papyrifera*: a layered papery texture, exterior surfaces that are white or cream, matte surfaces, and dark horizontally elongated lenticels (Arno and Hammerly 2007; Brayshaw 1996; Douglas et al. 1998; Farrar 1995; Hosie 1979; Parish et al. 1996). Two relatively intact containers were identified by the presence of folded seams that were sewn together on a piece of birch bark. Stitch holes had to be evident on at least two overlapping linear edges to be classed as a container. Birch bark pieces with small holes were designated as possible container fragments if more than two deliberate perforations could be observed. These artifacts were created by, and help identify, women in the past. Below we describe the containers and container fragments, along with their context, and discuss examples of birch bark containers that have been excavated on the Canadian Plateau.

The two birch bark vessels in the paleoethnobotanical collection are from the Ollie site (EeRk-9) and the Bell site (EeRk-4). The Ollie container was excavated from the upper rim area of a housepit in two flattened pieces (Blake 1974, 35; Figure 2). Since household garbage and sediments from the floor and roof were often discarded in the rim area of housepits (Hayden 1997, 247; Prentiss et al. 2003, 725; Prentiss et al. 2008, 63), it is possible that the Ollie container could have been broken and subsequently thrown away in the rim midden. A large degree of mixing of pre- and post-contact artifacts was noted for this housepit (Blake 1974, 24), and no radiocarbon dates were taken from the site. However, pre-Kamloops Phase projectile points were identified in the housepit (ibid.). The container is uncharred, but its surface appears darkened (perhaps from contact with other organic material in the rim deposit), and the pieces are folded with stitch holes that occur in straight rows as well as in stitch-hole pairs about three millimetres apart. The container has some preserved plant fibre stitching (Figure 3). Based on ethnographic accounts, the stitching material is probably split spruce roots (Teit 1900, 187; 1909, 477; Turner 1998, 155) or perhaps split cedar roots or willow bark (Turner 1998, 155).

The floral and faunal remains from inside the Ollie container suggest the basket was originally used to store foodstuffs in the housepit. Specifically, seeds from the container include: 28 Saskatoon (*Amelanchier alnifolia*), 14 *Chenopodium* sp., 5 raspberry (*Rubus* sp.), and 2 unknown seeds. All seeds were uncharred, but each seed type was cut open to

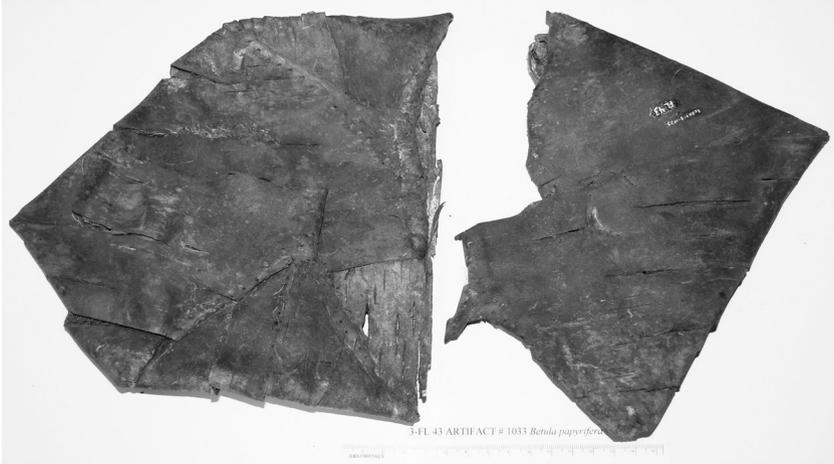


Figure 2. Flattened pieces of birch bark container from the Ollie site, pieces measuring 21 x 22 cm (left) and 20 x 21 cm.



Figure 3. Preserved fibrous stitches, likely spruce root, on the Ollie site container.

ensure that no endoperm was remaining and that all seeds were indeed ancient. The *Chenopodium* sp. and *Rubus* sp. seeds cannot be identified more specifically than genus due to the presence of many similar species in the BC interior that have size and morphological traits that overlap. The *Amelanchier alnifolia* seeds are three to four millimetres in diameter and have a distinctive crescent shape. The *Chenopodium* seeds are black, shiny, almost circular in planar view, lenticular shaped in cross section, have round margins, a projecting “knob” (or “beak”) at the edge, a smooth seed coat (testa), and measure about 1.1 millimetres in diameter. A few of the *Chenopodium* sp. seeds still have the thin papery fruit coat (pericarp) present, which is reticulate. The *Rubus* sp. seeds recovered

from the birch bark basket are ovate, with one more or less straight edge and the one rounded/curved edge, and with a smooth “seam” around the perimeter of the seed. These seeds have reticulate surface patterning and are about two millimetres in length.

Saskatoon berries were the most important fruit eaten by Canadian Plateau First Nations (Kuhnlein and Turner 1991, 234; Teit 1909, 514; Turner 1997, 140). Saskatoons are flavourful, easily dried for winter food, and are found in abundance in archaeological contexts (Lepofsky 2004, 425). There is no ethnographic or paleoethnobotanical information on the use of *Chenopodium* species for food (Lepofsky et al. 1996, 43, 46). Any *Rubus* sp. berries that were available to past peoples in the region were probably eaten, although it appears that only certain species were of high food significance and were collected systematically for winter storage, such as *R. idaeus* (Wild Raspberry) and *R. leucodermis* (Blackcap) (Turner 1997, 151–56).

In addition to seeds, tiny fragments of charcoal, grass blades, and fish bones were found in the sediment adhering to the container but were too small to identify. The fish bone fragments are likely from salmonids (cf. *Oncorhynchus* sp.), given that salmon species accounted for 77.8 percent of the number of identified species (NISP) from the Ollie site (Langemann 1987, 210). Insect integument pieces and pupal casings were also found in the container’s sediment. Beetle wing coverings (elytra) were among the remains, but it is unknown whether the beetles were pests of the time or intrusive post-deposition disturbances.

The second container comes from the Bell site, a large housepit village (Stryd 1978). The container (Figure 4) was found in housepit 2 at fifty-three centimetres below surface. A date obtained from this housepit was uncalibrated 1305 ± 80 years BP, taken at twenty centimetres depth, from charred wood overlying the only living floor (Stryd 1980, 14). Stitch holes are close together near the edges of the container and occur in a roughly linear arrangement, spaced three to four millimetres apart. The container appears to have been a cylindrical shape. The only materials recovered from the soil within the Bell container were unidentifiable traces of charcoal fragments. We can presume the container was not used for food storage, excluding the possibility of root storage, for which investigation by microscopic residue analysis would be necessary (e.g., Croft 2012). Additionally, the Bell container appears to be too small to have been used by an adult for collecting any large quantity of plant foods. Perhaps it was used as a water-drinking vessel or a child’s trinket basket.



Figure 4. Container from the Bell site, in pieces measuring 7.5 x 16.5 cm and 6 x 7.5 cm.



Figure 5. Birch bark fragments with evidence of stitch holes from the Bell site.

There are seventeen bark fragments in the paleoethnobotanical collection that have perforations or stitch holes, some also have evidence of folding and overlapping seams. These items could be the remains of containers (Figure 5). Stitched container fragments have been archaeologically documented from many sites, and some of them are decorated with incised geometric patterns (e.g., Blake 1974, 35; Stryd 1970, 8).

Given the many uses and cultural importance of birch bark containers documented in ethnographic sources (citations in Appendix 1), it is no surprise that this artifact type is relatively common in the archaeological record of the region. At least fifteen reasonably intact birch bark containers have been found at Canadian Plateau archaeological sites (Table 2). These containers have been recovered from a variety of contexts: six containers from graves, five from housepits, three from cache pits, and one from an earth oven. It appears the use of birch bark containers dates back to at least the Plateau Horizon (2400 to 1200 BP), with examples from the Kamloops Horizon (1200 to 200 BP) being the most common. Some variation in form and construction is evident, with rectangular and cylindrical shapes as well as stitched and non-sewn birch bark baskets having been discovered. With all this available information, why have birch bark baskets not been treated with the same scholarly interest as stone tools? Both basketry and stone tools were technologies of substantial economic importance to Canadian Plateau communities, and both have the potential to reveal insights into past peoples. Clearly, a bias exists towards emphasizing the economic contributions of men, or, rather, towards ignoring women's activities. As mentioned, birch bark artifacts do not suffer from poor preservation and appear to be well-represented archaeologically. The historical lack of interest in botanical technologies, including birch bark baskets, largely exists because the mode of inquiry has, until recently, been set and carried out by men. We return to the topic of gender in our discussion about the connection between women and birch bark.

ETHNOGRAPHIC EVIDENCE OF BIRCH BARK USE ON THE CANADIAN PLATEAU

There is a good deal of ethnographic material that indicates that birch bark was used extensively by Canadian Plateau First Nations, particularly as containers. The oldest in-depth information available about Canadian Plateau hunter-gatherer plant use is found in the ethnographies of the late nineteenth and early twentieth centuries, carried

TABLE 2

Baskets from archaeological excavations on the Canadian Plateau

| INTERPRETATION OF BASKET FUNCTION | BASKETS | SITE | CONTEXT | DATE |
|--|-----------|-----------------------------------|---|---|
| Food storage and/or preparation | 1 | Ollie site EeRk-9 | Upper rim area of a housepit, mixing of prehistoric and historic artifacts noted | No radiocarbon dates, pre-Kamloops Phase based on projectile points |
| Food storage in cache pit | 1 | EeRb-67 | Small food storage pit lined with birch bark | No radiocarbon dates or diagnostic artifacts |
| Children's berry picking basket | 1 | Bridge River site EeRl-4 | Housepit floor deposits | 1800 BP |
| Perhaps used for meat roasting in baking pit | 1 | EeRj-55 in Houth Meadows | Cultural feature 9 (earth oven), unit 5A, buried under the rim of area A's largest rock pavement | Cultural features from the site dated to 600 ± 40 BP, and 1220 ± 70 BP |
| Perhaps water vessel or trinket basket | 1 | Bell site EeRl-4 | From housepit 2, found at 53 cm below surface | 1305 ± 80 BP |
| Grave good | 1 | Government Hill, near Kamloops | Burial 2, dish found on top of thighs of a Thompson woman aged 30 | No radiocarbon dates or diagnostic artifacts |
| Grave good | 1 | Chase Burial site EeQw-1 | Burial 5, container under cranium of adult male burial | Late prehistoric, possibly AD 1000-AD 1800 |
| Grave good | 1 | Fountain site EeRl-19 | Burial 1, container between sage bark mat and bark covering the body | Kamloops Phase |
| Grave good | 1 | Terry site EeRl-167 | Found above burial of adult female and young infant or foetus | Lillooet Phase (1750-1150 BP), late prehistoric Kamloops Phase (1150-200 BP), possibly historic period (post-200 BP) |
| Grave goods | 2 | Cache Creek Burial site EeRh-1 | Burial 8, one container adjacent to the left foot, one container next to the occipital area of the skull of a child aged 1.5 to 2 years | 760 ± 110 BP |
| No interpretation | 1 | McPhee site EdRk-6 | Storage pit within housepit 1 | no radiocarbon dates or diagnostic artifacts |
| No interpretation | 1 | Cow Springs site EdRk-5 | Zone II of a housepit | 775 ± 95 BP, 825 ± 85 BP |
| No interpretation | 1 | Gibbs Creek EeRk-7 | Probably found in one of the three housepits that comprise the site | Housepits dated to 920 ± 90 BP (HP 1), and 1515 ± 80 BP (HP 3) |
| Food storage and/or preparation | 1 | Sxetl' (Six Mile Rapids) | Excavated in a pit storage facility, site at fishing grounds, Billy family camp | Fragment of basket AMS dated to 110 ± 40 BP, points found adjacent to and above the basket diagnostic of Kamloops Horizon |
| TOTAL | 15 | | | |

| BASKET INCLUSIONS | SHAPE, STITCHING, DECORATION | REFERENCE |
|---|--|--|
| <i>Amelanchier alnifolia</i> (Saskatoon berry, N = 28), <i>Chenopodium</i> sp. (N = 14), <i>Rubus</i> sp. (raspberry, N = 5), 2 unknown seeds, unidentifiable fragments of charcoal, grass blades, and fish bones | Rectangular, stitched, undecorated | Blake 1974; Croft and Mathewes 2013, reported here |
| 1 medium to large mammal bone | Not described | Richards and Rousseau 1982 |
| Pine and Douglas fir needles | Rectangular, stitched, undecorated | Prentiss et al. 2005 |
| Salmon bones | Appears rectangular, stitched, undecorated | Beirne and Pokotylo 1979; Ketcheson 1979 |
| Unidentifiable charcoal fragments | Cylindrical, stitched, undecorated | Croft and Mathewes 2013, reported here |
| None noted | Not described | Smith 1900 |
| Chipped bi-point, raw flakes, scrappers, chipped knives, bone and antler pieces | Cylindrical, appears to be stitched, undecorated, container contents x-rayed | Sanger 1968 |
| 1 chalcedony drill, 1 quartzite crystal, 14 gypsum crystals, 13 pieces of worked local gypsum, several mica flakes | Not described | Stryd 1970 |
| None noted | Not described | Stryd 1985 |
| Both pouches empty | Rectangular, unstitched (folded), no decoration noted | Pokotylo et al. 1987; Sanger 1968 |
| Articulated salmon vertebrae | Appears rectangular, unstitched, undecorated | Sanger 1970 |
| None noted | Rectangular, unstitched (secured with pitch), undecorated | Sanger 1970 |
| None noted | Not described | Stryd and Hills 1972 |
| <i>Chenopodium</i> (N = 3520), <i>Amelanchier alnifolia</i> (Saskatoon berry, N = 500), Ericaceae (Heather family, N=388), Rosaceae (N = 57), including <i>Rubus</i> (raspberries, blackberries, N = 115), and <i>Prunus</i> (cherries, N = 77). Seeds also found: <i>Arctostaphylos uva-ursi</i> (kinnikinnick, N = 10), Brassicaceae (N = 5), <i>Cornus</i> (dogwood, N = 5), <i>Crataegus</i> (hawthorn, N = 1), <i>Mabonia</i> (evergreen shrub, N = 4), <i>Phacelia</i> (water lily, N = 1), Poaceae (grass, N = 3). Pine needles, birch bark rolls, packed grasses, Saskatoon branches, greasy thick mat of grasses. Fish vertebrae | Cylindrical, 50 cm in height, folded, no stitching, undecorated | Billy et al. 2011 |

out by Scottish anthropologist James A. Teit. In his ethnographies of the Nlaka'pamux, Stl'atl'imx, Secwepemc, and Syilx, Teit describes the various ways that birch bark was incorporated into everyday activities (Teit 1900, 1906, 1909, 1930; Steedman 1930). Good ethnographic information about Canadian Plateau peoples was also collected by Charles Hill-Tout on the Nlaka'pamux, Syilx, and Stl'atl'imx in the late 1800s and early 1900s (Hill-Tout 1899), George M. Dawson on the Secwepemc (1891), and Verne F. Ray on various groups (Ray 1939, 1942). Today, Nancy Turner is the leading expert on the ethnobotany of First Nations in British Columbia, and her work well documents birch bark use on the Canadian Plateau. We consulted ethnobotanical accounts of the uses of birch by First Nations in British Columbia (Turner 1998), including the Stl'atl'imx (Turner 1992), the Syilx-Colville (Turner et al. 1980), the Secwepemc (Palmer 1975), and the Nlaka'pamux (Turner et al. 1990). Together these sources help explain and/or contextualize the archaeological record.

Harvesting

To remove a bark strip from the tree, two cuts were made horizontally and one vertically with a sharpened tool and the bark piece was peeled off in a rectangular sheet (Turner et al. 1980, 90). A long wood or bone bark peeler may have been used to help pry the bark from the tree. Women collected, prepared, and transformed plant materials such as birch bark into basketry and woven manufactures (Haeblerlin, Teit, and Roberts 1928, 359; Teit 1900, 187; Turner 1996). While the harvesting of birch bark was generally a woman's task, men likely also participated, probably doing the harvesting for the birch bark canoes they made (Turner 1998, 155). Birch bark was often harvested in such a way as to ensure the inner cambium layer remained intact and that the tree was not killed (Turner 1998, 154; Turner et al. 2000, 1278). This practice of bark removal left scarring that can be seen on many culturally modified birch trees in the BC interior today. However, sometimes a good tree was felled for total bark removal (Turner et al. 1980, 90). Seasonal changes affect the quality of the bark, and women planned to harvest at certain times of the year in order to make particular items. If tough, thick, and durable bark was needed, such as for the construction of toboggans (Teit 1900, 281) and water vessels (Teit 1909, 496), it could be peeled off in large sheets during the cold winter months in January and February, probably with the cork layer. After winter, the bark becomes fragile, thin, and peels easily as the xylem and phloem begin to actively

run in late spring to early summer; this is the time when bark can be stripped for use as paper (Turner 1998, 154; Turner et al. 1990, 190). To obtain birch bark with a rougher finish that can be easily incised with designs, Secwepemc elder Mary Thomas says that one should collect the bark immediately after the sap has run, within a window that opens for a few weeks around June (Thornburn 2003, 69).

Construction Technique and Decoration of Birch Bark Containers

Although birch bark containers differed slightly in style between Canadian Plateau groups, women of the Tsilhqot'in, Dakelh, Secwepemc, and Upper Nlaka'pamux made similar basket shapes (Teit 1909, 477), and there was a general pattern of preparation (Teit 1900, 187; 1909, 478). Once the birch bark was removed horizontally from the tree in a wide rectangular sheet, four central V-shaped cuts were made, two on each of the longer sides of the rectangle (Figure 6). The single piece of bark was then folded into shape. The smoother, darker inside surface of the bark formed the exterior of the basket. Nlaka'pamux, Secwepemc, and Syilx women usually set the orientation of the bark grain and lenticles parallel to the rim of the vessel (Teit 1909, 478; 1930, 186).

Women would stitch together the edge seams with a bone awl and split roots of spruce, Western redcedar, or cottonwood and then caulk the seams with pitch (Matthew 1986b, 6). The use of spruce roots for lashing birch bark containers has also been noted in examples from Alaska (Fair 2006, 106; Hail and Duncan 1989, 289), the Northwest Territories (Athabaskan) (Hail and Duncan 1989, 286–88), and eastern North America (225). The rims of some birch bark containers were reinforced with one or two flexible hoops of willow withes held in place with a staggered pattern of alternating stitches, sometimes sewn with a sharp feather or porcupine quill (Teit 1900, 187; 1909, 481; 1930, 186). Many early contact period birch bark vessels from the Canadian Plateau possess a staggered pattern of stitching around their rim circumferences (see Figure 7); this is also seen in modern baskets (Figure 8). Teit (1930, 186) observed this stitching method on Syilx birch baskets: “The rimrod was notched and sewed with a zigzag stitch, while the seams were made of straight stitching.” This staggered uneven line of stitching around the rim of the container prevents tears from originating in the direction of the bark grain and lenticels. Stepped stitching can be seen on the rims of at least twelve ethnographic examples of Dakelh birch bark baskets, dating from circa 1880 to 1959, in the online collections of the University of British Columbia’s Museum of Anthropology and the Smithsonian

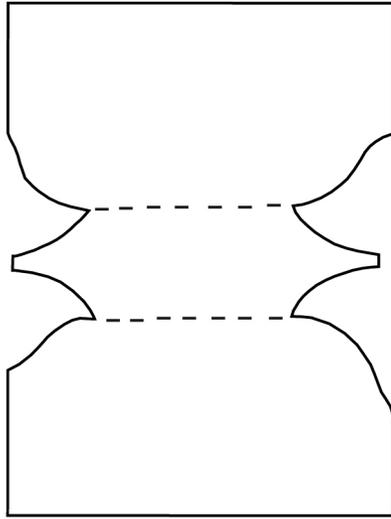


Figure 6. General pattern of birch bark container construction (adapted from Teit 1900).

National Museum of the American Indian. Ethnographic examples of Canadian Plateau birch bark baskets with stepped stitching are also found in the collections of the Royal British Columbia Museum and the Simon Fraser University Museum of Archaeology and Ethnology. In contrast, some baskets were made without any stitching and, instead, were folded and glued together (e.g., Billy et al. 2011). The techniques of making birch bark basketry outlined above were learned and passed on from one generation of women to the next. Women are the central teachers of traditional botanical knowledge in the Pacific Northwest (Norton 1981; Turner 2003), and this is definitely the case with regard to birch bark basket production.

Some birch bark baskets were decorated with cherry bark (*Prunus* spp.) stitched around the rims, incised, or were painted on the outside surface. During the contact period, Teit (1900, 187) stated that the exterior of birch bark baskets of the Nlaka'pamux people were "often ornamented with incised or red painted designs." Pictographic and geometric designs such as zig-zags, stars, birds, snakes, ungulates, and anthropomorphic figures were sometimes incised on the outside body of the vessel, as is seen in some Secwepemc and Tsilhqot'in examples (Teit 1909, 477-82, 764). Dyed and undyed goose and swan quills, dyed horse hair and pin cherry bark (*Prunus pensylvanica*) was occasionally sewn on Secwepemc and Tsilhqot'in basket rims (478, 764).



Figure 7. The staggered pattern of stitching around the rim makes the containers stronger and prevents tearing.

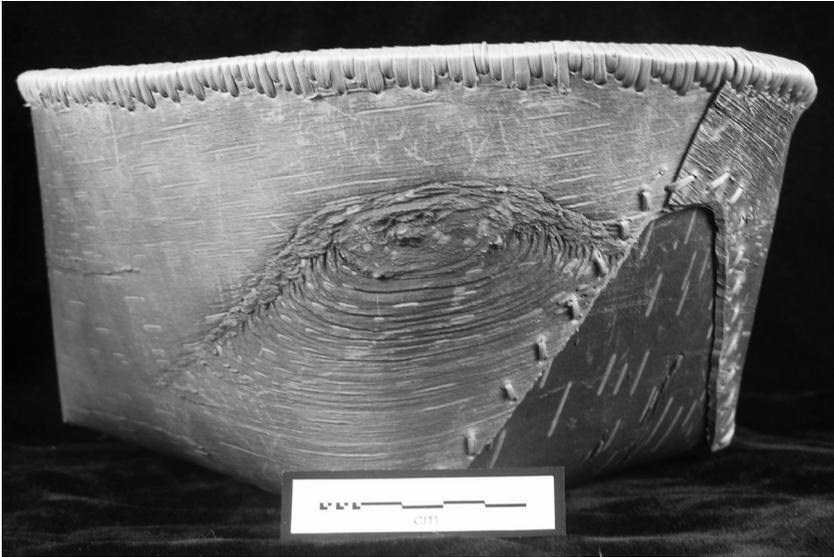


Figure 8. Modern birch bark basket made by Wet'suwet'en Dakelh First Nations in Smithers, British Columbia. Noted features include natural lenticels, stepped stitching on rim, and interior bark surface faces outside of vessel (private collection, D. Mathewes).

Despite the above ethnographic indications that birch bark baskets were enhanced with ornamentation, it cannot be assumed that all baskets were decorated. It seems that many birch bark containers were not decorated and may have served primarily utilitarian functions. None of the archaeological reports cited in Table 2 describes intact decorated birch bark containers. Moreover, when referring to the birch bark containers made by the tribes of the Syilx, Teit (1930, 186) notes that “most baskets were plain.” Further south on the Plateau, he also found that the birch bark baskets made by the Salishan-speaking Coeur D’Alene only rarely had a few pictographic and geometric etched designs (22). Cultural norms specific to tribe or community, as well as the intended use of the basket (e.g., cooking basket, trinket holder in grave, etc.), may have determined whether or not birch bark containers were decorated.

BIRCH BARK CONTAINERS AND CANADIAN PLATEAU ECONOMY

Birch bark baskets of many types were used widely for multiple applications, with Teit (1900, 200) noting: "These baskets varied much in size, and were used for purposes of storage and transportation, as buckets and cups, and for cooking." Ethnographic sources indicate that birch bark containers were an essential part of plant harvesting, cooking, and storage technologies on the Canadian Plateau, especially since pottery was not used in pre-contact times.

Strong birch bark containers played crucial roles in harvesting plant foods, transporting trade goods, and packing water (Turner 1998, 155). Women carried birch bark baskets strapped to their heads or waists during harvest excursions for berries, roots, cambium, seeds, and nuts (Matthew 1986a, 2, 5; Palmer 1975, 37; Teit 1900, 232). Parties of women and children went to berry patches, where they used bark baskets and birch bark trays to collect berries by hand (Brown 1868, 384; Teit 1909, 515; 1930, 222, 240). Trade goods moved between Canadian Plateau hunter-gatherers and neighbouring groups in bags of animal skin, bark, and plant fibre (Teit 1900, 184, 199-203; 1909, 497-98, 774), and berries and roots were carried in baskets (Teit 1900, 256). Birch bark baskets themselves were also an article of trade (Teit 1906, 232).

Birch bark cooking vessels were used with heated stones to boil or rehydrate dried foods (Jeness 1963, 355). Teit (1909, 517) describes round birch bark "kettles" with a lid or bark cover used by the Secwepemc and Nlaka'pamux to boil roots. Dense cakes of dehydrated berries, cherries, and rosehips were boiled with hot stones in birch bark and cedar root baskets (Teit 1900, 235). Birch bark vessels were also placed in subterranean earth ovens to cook root foods. Perhaps this practice prevented the roots from becoming burned, dirty, or overcooked. Using birch bark baskets may also have made it possible to achieve the desired state of the cooked product. For instance, sealing raw bulbs inside bark baskets can transform them into a type of flour after they have been baked in an earth oven (Macoun 1890, 343). The cooking of roots in earth ovens was exclusively carried out by women; men were not permitted to perform this task (Dawson 1891, 19; Steedman 1930, 509; citations within Alexander 1992b, 127). Women may have also been responsible for all types of cooking in which birch bark baskets were involved.

The successful storage of processed supplies of salmon, game, roots, and berries was essential for surviving Canadian Plateau winters. Subterranean cache pit storage facilities that could properly keep these

prepared foods through the cold months were imperative. Cache pits were constructed with birch bark in several ways: as lining for the pit, as wrapping for foods, and as baskets (Dawson 1891, 9; Teit 1900, 199, 234). These birch bark storage technologies provided an effective method for reducing food contact with dirt or air and, thus, for reducing decomposition due to fungi, bacterial colonization, insects, rodents, and other scavengers. Indeed, protecting foods in cache pits with birch bark seems to have been usual practice in the region. For example, bark-lined cellars called *powa'wan* were made by the Stl'atl'imx for the long-term storage of roots, berries, and other foods (Teit 1906, 223). Birch bark baskets stored many foodstuffs and supplies. Nlaka'pamux people stored salmon oil for winter use by sealing it in birch containers (Hill-Tout 1899, 56). Similarly, the Stl'atl'imx stored salmon eggs over the winter in birch bark baskets buried in the ground (Kennedy and Bouchard 1998a, 178; Romanoff 1992, 238). Prepared berries and roots were stockpiled in sacks and baskets that were often then wrapped with birch bark and placed in cache pits (Steedman 1930, 477; Teit 1900, 199).

Recently, Billy et al. (2011) reported on a fascinating multidisciplinary analysis of a large, birch bark storage container that was excavated at a traditional fishing camp at Sxetl', Six Mile Rapids, near Lillooet. Radiocarbon AMS brought back a date of 110 ± 40 BP, and associated points were diagnostic of the Kamloops Horizon. The analysis included an examination of three discrete soil levels that were excavated within the basket. Macrobotanical analysis found a very large diversity of edible berry seed species (listed in Table 2) as well as pine needles, birch bark rolls, packed grasses, saskatoon branches, and a greasy, thick mat of grasses. DNA analysis could not identify the species of fish bone due to poor preservation. Insect identifications of the pit sediments collected just adjacent to the basket and ICP-AES chemical analysis of soil samples from inside each basket level are currently under way. Using ethnographic records, the authors suggested that the buried birch basket, or "bucket," was used by a family at its fishing camp and that the basket would have been periodically visited throughout the winter to gain access to stored foods. Nicholas and Westfall (forthcoming) also describe what appears to be birch bark-lined pit storage facilities at EeRb-140. They unearthed a cultural feature containing an articulated salmon skeleton sandwiched between birch bark sheets and Ponderosa pine (*Pinus ponderosa*) bark, with part of the feature basin also being lined with birch bark sheets.

RITUAL USE OF BIRCH BARK IN GRAVES

Archaeologically, in Canadian Plateau burials, birch bark has been found not only as containers but also as material for grave lining, body wrapping, object wrapping, and as rolls (Appendix 1). It appears that placing birch bark containers with deceased men, women, and children was probably a normal custom on the Canadian Plateau: at least six complete containers have been found in graves. Since women made birch bark containers, it can be suggested that placing these containers with the dead was a way of providing the deceased with the nurturing presence of women. If we pause to think about the purpose of a birch bark basket – to hold and protect food and water, to cook nourishing foods, and to hold personal items – we can suggest that the basket may have been a symbol of female nurturing.

Inside a grave at the Fountain site (EeR1-19), a stitched birch bark container was found between a plaited sage bark mat and a layer of bark. The birch vessel contained lithics and mineral crystals (Stryd 1970, 7). Stryd (1973, 69) speculates that, in addition to the stone tools and minerals, this container also once held food, perhaps for the afterlife of the individual, as a marker of family wealth, or as an offering to spirits. At the Chase Burial site (EeQw-1) an adult male was excavated, and his head was found resting on top of a birch bark container. X-ray photographs of the container revealed stone tools, bone, and antler objects (Sanger 1968, 124). This container was filled with items that must have been meaningful to the man and that had symbolic value for the community that arranged the grave. Another burial at the site contained unburned birch bark fragments in the shape of a basket, with a human phalanx associated with the fragments. The above examples suggest that, in burial contexts, birch bark baskets were used to hold items of importance (such as personal trinkets or charms).

A child, around two years old, found at the Cache Creek Burial site (EeRh-1) was interred with a wealth of grave goods, including two unstitched birch bark pouches found behind the skull and beside the left foot (Pokotylo et al. 1987, 3-4; Sanger 1968, 140). The pouches appeared to be empty, but no attempts to recover macrobotanical, microbotanical, or faunal remains from sediments inside the baskets were reported.

The Terry site (EeR1-167) yielded birch bark artifacts from the burial of an adult female (probably a mother) with a foetus or young infant (Stryd 1985, 77-78). Grave inclusions of note were a birch bark container, a diorite bi-phallic club wrapped in two layers of birch bark, and birch bark rolls. There might have been some symbolic value in the act of

wrapping objects for the dead, perhaps to protect or conserve important items placed in the grave, akin to saving salmon in a cache pit or the idea of comfort that is conveyed by the way a mother wraps up a child.

WOMEN AND BIRCH BARK

At the outset of this study, we did not intend to examine gendered relations as expressed in the archaeological record of the Canadian Plateau. Nevertheless, the ethnographic evidence shows that a special relationship existed between women and birch bark. In particular, birch bark basketry and birch bark used in ritual contexts are connected with Canadian Plateau women. Significantly, ethnographic accounts consistently indicate that birch bark and woven vessel production was restricted to women (Haeberlin, Teit, and Roberts 1928, 359; Teit 1900, 187; Turner 1996). Thus, when archaeologists encounter basketry or fragments thereof, they are seeing evidence of an activity that was socially demarcated by gender.

Gender attribution in archaeology involves attempts to correlate particular types of artifacts with male or female tasks, often using analogies drawn from ethnographic sources. Although it has been argued that the gender attribution of material culture is an oversimplified approach to the study of gender in archaeology (Gero and Conkey 1991; Dobres 1995), it does offer a way of describing women and men as concrete entities and of humanizing the archaeological record (Costin 1996; Tringham 1991). To identify relatively fixed and widely shared divisions of labour in a society according to gender attribution is to take an appropriate first step towards a more nuanced study of past gender relations (Costin 1996, 120). However, to presume that a rigid gendered division of labour existed in all societies is erroneous as gender roles are neither inherent nor universal; rather, such boundaries are culturally situated, fluid, changing, and negotiable (Conkey and Spector 1984, 9). Still, when good gender information is available (e.g., through ethnographic records), gender attribution can be immensely valuable to the process of engendering archaeology (Moss 1999, 254).

Some efforts have been made to address gender archaeologically in the Pacific Northwest of North America. Hunn's 1981 article shows that, on the Columbia Plateau, there is little research that deals with the contribution of plant resources to the diet, and this has, in effect, diminished the apparent importance of women's economic roles. Moss (1993) draws attention to the disconnect between, on the one hand, the

abundant evidence of shellfish consumption at archaeological sites and, on the other, the de-emphasizing of shellfish as a “supplementary” food source in the archaeological, ethnographic, and ethnohistoric literature. Moss demonstrates that gender and status were social structuring mechanisms that influenced the collection and consumption of shellfish on the Northwest Coast – mechanisms that archaeologists had previously failed to consider. In 1999, Bernick edited a volume entitled “Feminist Approaches to Pacific Northwest Archaeology,” which presents studies that take account of gender in archaeological interpretations. She also comments on the status of women archaeologists in British Columbia, emphasizing the need for more women to publish their work (Bernick and Zacharias 1995). The theses of Nicolaides (2010) and Croft (2012) both touch on the economic roles of women in an ancillary way, noting that ethnographic sources indicate that, in Canadian Plateau cultures, harvesting and processing plants, especially root foods, was women’s work. With regard to patterns of plant management, in her dissertation Peacock (1998, 321) mentions that we must “acknowledge the role women and children possibly played in shaping the landscapes of the past,” although she does not develop or integrate the theme of gender in her work. From an anthropological standpoint, Norton (1985) deals with women’s economic strategies and contributions in Northwest Coast societies by closely reviewing ethnographic accounts from early European contact. In her dissertation, she insightfully observes that anthropological literature has consistently devalued women’s subsistence activities in hunter-gatherer societies (123). Norton also makes the point that marine economies were contingent on women’s plant knowledge and the plant technologies they produced: “fishing lines, nets, hooks, spears, weirs, harpoons, canoes, drying racks, storage containers and other goods were all manufactured from plant materials” (1981, 434). Finding women in the archaeological record is crucial to establishing a foundation for wider theorizing about gender in the past. To a greater or lesser extent, the studies cited above are beginning to provide more rigorous approaches to archaeology in the Pacific Northwest region, thus shifting our ideas about how past societies worked.

Making birch bark baskets was a strongly gendered activity and was, specifically, a woman’s technology. Women collected, prepared, and transformed plant materials such as birch bark into basketry and woven manufactures (Haerberlin et al. 1928, 359; Teit 1900, 187; Turner 1996). Learning the craft of birch basket construction was part of a girl’s transition into what it meant to be a woman both socially and economically;

it was also part of her spiritual development. Women's basket products could have served as important social indicators. Wright (2003) suggests that individual women who excelled in birch bark basket manufacture would have been highly regarded in the region and their products sought after through trade networks. Women passed their skill and knowledge in crafting basketry to their daughters and to other women in their community (11). Birch bark baskets were made and used by women for gathering berries, and girls used small birch bark containers for the same purpose (Teit 1906, 216). It was task groups of women who were primarily responsible for collecting and processing plant foods (Alexander 1992b, 154-60; Turner 1992, 425). Birch bark containers with carrying straps were also used by women for collecting dug-up root foods (Teit 1900, 232). Here we get the idea that producing and using birch bark basketry was part of a suite of activities that expressed femininity. It appears that women owned the basketry products they made. A woman was not separated from her baskets if she was widowed; rather, she inherited all baskets, bags, mats, and cooking utensils (Teit 1900, 294; 1906, 255; 1909, 572). The physical proximity of baskets with a woman helped define her feminine presence both within the household and during her harvesting activities; baskets were her property, and they moved with her wherever she went. Again, the strong association with women and basketry is apparent.

Birch bark was involved in various rituals specific to women of reproductive age on the Canadian Plateau. For the Secwepemc (Teit 1909, 587-88), Stl'atl'imx (Teit 1906, 263-65), and Nlaka'pamux (Teit 1900, 312-17), elaborate girls' puberty training rituals began at first menses. Menstruating women were regarded as powerful and dangerous, with the potential to impair men's hunting activities if proper protocols were not followed. These beliefs regarding menstruating women were common to many Aboriginal societies (Moss 1993, 642). The puberty rituals were a time of transformation when each girl prepared, both practically and spiritually, for womanhood. These rituals, which took place during a period of from one to four years during which the girl was isolated from the community and lived in her own conical hut, involved many invocations to spirits, the performance of intense and repetitive tasks, special dress and bathing programs, social taboos, ceremonies, and abstention from certain foods. For example, during their isolation girls had to drink water with a bone tube so that their mouths would not touch the stream and cause the water source to dry up (Teit 1900, 315; 1906, 264; 1909, 588). Nlaka'pamux girls used their drinking tubes to drink out of red-painted birch bark cups (Teit 1900, 313). A depiction of

the birch bark cup with drinking tube attached to a string was found on a boulder just over three kilometres east of Spences Bridge (Teit 1900, plate XX) and is likely a symbolic reference to Nlaka'pamux puberty rituals. The girl was obliged to perform exercises (e.g., running, carrying weights, digging trenches) to improve endurance and to pray that she might be strong, healthy, beautiful, skilled, and industrious. She began the small-scale practice of all forms of women's work, such as making birch bark basketry, making twine and thread, sewing, dressing and tanning hides, root digging, and berry picking (Teit 1900, 315; 1906, 264; 1909, 588). It was important for a woman to be accomplished in these activities; adherence to such societal gender norms would have improved her status and thus her ability to secure a good mate. During the puberty training, some girls carried a small birch bark basket with a leather thong (Teit 1909, 588) and hung miniature birch vessels on poles or in nearby trees (Teit 1906, 265; 1909, 587). Birch bark was also used as a canvas upon which to paint pictures during her isolation (Teit 1906, 265). The Stl'at'imx girl "tore sheets of birch-bark into small shreds, which she dropped as she walked along, praying that her hands might be tireless, and that she might be able to make neat and fine birch-bark work," (Teit 1906, 265). In addition, birch bark was used in a Nlaka'pamux contraceptive ritual to prevent further pregnancies. The woman in childbirth who desired no more children would "take the afterbirth, stick it with an old bone awl, wrap it in fishnet, and then in a piece of birch bark, and place it high up in a particular kind of tree," (Turner et. al. 1990, 190). The above examples clearly indicate that there was not only a socio-economic relationship between Canadian Plateau women and birch bark but also a spiritual one.

CONCLUSION

Archaeological and ethnographic records reveal that bark technologies are numerous and that their economic and social importance is considerable. We show that birch bark was integrated into Canadian Plateau culture in many ways. Birch bark technologies were important in everyday tasks of economic life, such as harvesting, transporting, cooking, and storing foodstuffs. Archaeologically, birch bark has often been found to be associated with graves, housepits, and cache pits. We also show that birch bark played a special role in women's work and identity. Birch bark containers found in the archaeological record identify a technology that is produced and owned specifically by women. For this reason, birch bark basketry can be used to document

their activities across the landscape. In addition to utilitarian purposes, birch bark containers functioned as a female symbol. Examining women's multi-faceted relationship with birch bark sheds light on how their intimate knowledge of one material – birch bark – can and does inform a culture. The material is both transformed by and transforms the culture because of the close (in this case distinctly female) relationship between maker and product. In examining the use of birch bark on the Canadian Plateau, we see the spiritual attachment that people feel towards their work as well as how their society prepares them to perform their culturally prescribed jobs. Birch bark and women become linked in a complex, circular relationship involving creating the vessels; harvesting, collecting, and storing food; and then passing this knowledge on to young girls. This pattern of enculturation is repeated and passed down through generations.

APPENDIX 1

Ethnographic and archaeological references to birch bark use on the Canadian Plateau

| BIRCH BARK USE | ETHNOGRAPHIC SOURCES | ARCHAEOLOGICAL SOURCES |
|------------------------------------|---|--|
| MULTIPURPOSE | | |
| Containers, baskets, pails, basins | British Columbia Heritage Conservation Branch 1980, 295; Haeberlin et al. 1928, 198, 362, 385; Hayden 2005, 83; Hunn et al. 1998, 532; Hill-Tout 1899, 12, 55, 56; Ignace 1998, 209; Jenness 1963, 355, 359, 362; Kennedy and Bouchard 1998a, 178, 180; Lepofsky 2000, 116; Lyons and Merilees 1995, 82; Matthew 1986a, 2, 5; 1986b, 6; Moerman 1998, 124; Palmer 1975, 35, 36; Parish et al. 1996, 30; Romanoff 1992, 238; Ray 1942, 114, 140, 148, 160, 182, 196; Steedman 1930, 485; Teit 1900, 187, 200, 201, 235; 1906, 205, 216, 232; 1909, 477-82, 496; 1930, 186, 193; Thornburn 2003; Turner 1992, 422; 1998, 154-55; Turner et al. 1980, 89, 90; 1990, 37, 189, 190; 2000, 1284 | Beirne and Pokotylo 1979, sec.3, 3, 374; Billy et al. 2011; Blake 1974, 35; Carlson 1980, 94; Ketcheson 1979, 23; Prentiss et al. 2005; Richards and Rousseau 1982, 96; Sanger 1968, 124, 179; 1970, 19, 101; Smith 1900, 437; Stryd 1970, 7; 1972, 22; 1973, 69; 1985, 78; Stryd and Hills 1972, 199, 205-6 |
| FOOD-RELATED | | |
| Cooking vessels | Chamberlain 1892, 24; Hill-Tout 1899, 12; Jenness 1963, 364; Matthew 1986a, 2, 3, 7; Palmer 1975, 36; Ray 1942, 136; Steedman 1930, 485; Teit 1900, 200, 235; 1909, 517; Turner 1998, 155 | |

| BIRCH BARK USE | ETHNOGRAPHIC SOURCES | ARCHAEOLOGICAL SOURCES |
|---|---|--|
| Trays | Haeblerlin et al. 1928, 352; Matthew 1986a, 5; 1986b, 5; Teit 1900, 202; 1906, 216, 282; 1909, 496, 500, 515; 1930, 186 | |
| Dishes | Moerman 1998, 124; Ray 1942, 142; Teit 1906, 216 | Smith 1900, 437 |
| Cups | Haeblerlin et al. 1928, 352; Matthew 1986b, 5; Teit 1900, 200, 313, 315, 331; 1909, 501; 1930, 186 | |
| Utensils | Jenness 1963, 359; Palmer 1975, 35 | |
| Food wrapping | Hill-Tout 1899, 12, 57; Moerman 1998, 124; Teit 1900, 199; 1906, 223; Turner 1998, 155; Turner et al. 1990, 37, 189 | Hayden 2000b; Richards and Rousseau 1982, 96; Sanger 1970, 20, 22; Stryd 1973, 70; Wilson 1973, 10; 1980, 31 |
| CONSTRUCTION MATERIAL | | |
| Lining of underground storage pits | Hunn et al. 1998, 532; Lepofsky 2000, 116; Moerman 1998, 124; Teit 1900, 234; Turner 1998, 155; Turner et al., 1990, 37 | Nicholas and Westfall forthcoming; Prentiss 2010a, 49, 122; Richards and Rousseau 1982, 96; Von Krogh 1978, 29, 96 |
| Birch bark lining in earth oven | Ray 1942, 138 | |
| Roofing and walling of housepits | Moerman 1998, 124; Turner et al. 1990, 37; Wyatt 1998a, 192 | |
| Roofing and siding for temporary shelters | Jenness 1963, 91; Turner 1998, 155 | |
| Roofing | Hunn et al. 1998, 532 | |
| BURIAL | | |
| Line and cover graves | Smith 1913, 36; Stryd and Baker 1968, 55; Teit 1900, 328, 336; 1906, 269; Turner 1998, 155 | Richards and Rousseau 1987, 38; Smith 1899, 159-61 |
| Corpse wrapping | Teit 1900, 336; 1906, 269 | Richards and Rousseau 1987, 47; Smith 1899, 159, 161; Teit 1900, 336 |
| Containers in grave | | Pokotylo et al. 1987, 3-4; Sanger 1968, 124, 140; Smith 1900, 437; Stryd 1970 7; 1985, 77-78 |
| Canoe on top of grave | Ray 1939, 63; Teit 1930, 252-53 | |

| BIRCH BARK USE | ETHNOGRAPHIC SOURCES | ARCHAEOLOGICAL SOURCES |
|---|--|--|
| Baby carrier in grave | Teit 1900, 329 | |
| Pieces and rolls in or over top of grave | Teit 1900, 328, 330; Smith 1913, 36 | Smith 1899, 160; 1900, 434, 435, 440; Stryd 1974, 29, 31; 1985, 77-78 |
| TRANSPORTATION | | |
| Canoes | Chamberlain 1892, 22; Hunn et al. 1998, 532; Jenness 1963, 108, 364; Kennedy and Bouchard 1998a, 181; Moerman 1998, 123, 124; Parish et al. 1996, 30; Teit 1906, 229; Turner 1998, 154, 155; Turner et al. 1980, 89, 90; 1990, 37, 189, 190; Ray 1942, 155 | |
| Canoe bailers | Teit 1906, 230; Ray 1942, 158 | |
| Canoe flooring and hole repair | Teit 1930, 212 | |
| Toboggans | Teit 1900, 281; Parish et al. 1996, 30; Ray 1942, 159; Turner 1998, 155 | |
| CHILDCARE | | |
| Baby cradles and carriers | Hill-Tout 1899, 49; Ignace 1998, 210; Jenness 1963, 362, 373; Matthew 1986b, 7; Moerman 1998, 124; Palmer 1975, 36; Parish et al. 1996, 30; Teit 1900, 306; 1906, 261; 1909, 585, 787; Turner 1998, 156; Turner et al. 1980, 89; 1990, 37, 189, 190; Ray 1942, 200; Wyatt 1998a, 196 | |
| Conduit tubes to carry off urine of infants | Palmer 1975, 36; Ray 1942, 200; Teit 1900, 306; 1906, 261; 1909, 585, 787 | |
| FIRE | | |
| Torches | Ray 1942, 113 | Mitchell 1970, 59, 63; Nicholas and Westfall forthcoming; Smith 1899, 160-61; Wittke et al. 2004, 145; Wilson 1973, 10 |
| "Slow matches" | Turner 1998, 55, 156 | |
| ENTERTAINMENT | | |
| Basket drum | Ray 1942, 185 | |
| Playing cards | Teit 1900, 276, 381; 1906, 249; Turner et al. 1990, 37; Moerman 1998, 124 | |
| Decorations | Moerman 1998, 124 | |
| Gaming ring | | Stryd 1970, 8 |

| BIRCH BARK USE | ETHNOGRAPHIC SOURCES | ARCHAEOLOGICAL SOURCES |
|--|--|---|
| Decorated bark | Teit 1906, 265 | Stryd 1970, 8; 1972, 23, 44 |
| WORN ON BODY | | |
| Breastplate armour | Teit 1912, 319 | |
| Mask | Teit 1900, 299 | |
| Splint for broken bones | Turner 1998, 155 | |
| MISCELLANEOUS | | |
| Paper | Moerman 1998, 124; Turner et al. 1990, 190 | |
| Rodent deterrent | Turner 1998, 155 | |
| Lashing to bind tools | Turner 1998, 155 | |
| Dip-net ring | | Stryd 1972, 23, 44 |
| Inner bark to make dye | Moerman 1998, 124 | |
| Inner bark boiled as medicinal for sore eyes | Chamberlain 1892, 29 | |
| USE NOT SUGGESTED | | |
| Sheets | | Nicholas and Westfall forthcoming; Richards and Rousseau 1982, 96; Stryd 1972, 21; 1985, 74, 78 |
| Rolls: unburnt or not described | | Beirme and Pokotylo 1979, sec. 3, 23; Billy et al. 2011; Lepofsky 2000, 116; McMurdo 1974, 1; Nicholas and Westfall forthcoming; Sanger 1968, 124; Smith 1899, 130; Stryd 1972, 21, 24; 1985, 75, 78; Stryd and Hills 1972, 205-6; Von Krogh 1978, 29, 93, 96, 99; Wilson 1980, 37; Wollstonecroft 2000, 103, 119 |

| BIRCH BARK USE | ETHNOGRAPHIC SOURCES | ARCHAEOLOGICAL SOURCES |
|---|----------------------|---|
| Rolls: partially burnt | | Lepofsky 2000, 116; Nicholas and Westfall, forthcoming; Sanger 1970, 101; Smith 1899, 130; Turner 1996, 59 |
| Fragments | Smith 1913, 11 | Carlson 1980, 99; Endo 2010, 146; Hayden 2000a, 329; Nicholas and Westfall forthcoming; Smith 1899, 160; 1913, 11; Stryd 1972, 19; Wollstonecroft 2000, 103 |
| Fragments and/or rolls in cultural depression | | Carlson 1978, 53; Nicholas and Westfall forthcoming; Prentiss 2010b, 122; Stryd 1985, 75; Wilson 1973, 10; 1980, 31, 37 |
| Fragments: stitched | Smith 1913, 25 | Blake 1974, 35; Hayden 2000a, 329; 2005, 83; Smith 1900, 412 |
| Birch bark rolled around a stick | | Nicholas and Westfall forthcoming |

REFERENCES

- Adovasio, J.M., J. Donahue, and R. Stuckenrath. 1990. "The Meadowcroft Rockshelter Radiocarbon Chronology, 1975-1990." *American Antiquity* 55 (2): 348-54.
- Adovasio, J.M., J.D. Gunn, J. Donahue, and R. Stuckenrath. 1978. "Meadowcroft Rockshelter, 1977: An Overview." *American Antiquity*, 43 (4): 632-51.
- Adovasio, J.M., O. Soffer, and J. Page. 2007. *The Invisible Sex: Uncovering the True Roles of Women in Prehistory*. New York: Smithsonian Books and HarperCollins.
- Alexander, D. 1992a. "Environmental Units." In *A Complex Culture of the British Columbia Plateau: Traditional Stl'atl'imx Resource Use*, ed. B. Hayden, 47-98. Vancouver: UBC Press.
- . 1992b. "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: Traditional Stl'atl'imx Resource Use*, ed. B. Hayden, 99-176. Vancouver: UBC Press.
- Arno, S.F., and R.P. Hammerly. 2007. *Northwest Trees*, 2nd ed. Seattle: Mountaineers Books.
- Beirne, P.D., and D.L. Pokotylo. 1979. "Hat Creek Project: Inventory, Assessment and Evaluation of the Cultural Heritage Resources." Unpublished report, British Columbia Archaeology Branch, Victoria.

- Bernick, K. 1999. "Feminist Approaches to Pacific Northwest Archaeology." *Northwest Anthropological Research Notes* 33: 177-262.
- Bernick, K., and S.K. Zacharias. 1995. "The Status of Women in British Columbia Archaeology." *Canadian Journal of Archaeology* 19: 79-86.
- Billy, N., S. Villeneuve, A. Adolph, N. Endo, and E. Carlson. 2011. "Results of the Sxetl' Basket Excavations at Six Mile Rapids along the Fraser River, British Columbia." Poster presented at Society for American Archaeology 76th Annual Meeting, March 30-April 3. Sacramento, California.
- Blake, M.T. 1974. "Ollie Site (EeRk 9) Final Report." Unpublished report, British Columbia Archaeology Branch, Victoria.
- Bourdieu, P. 1977 [1972]. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.
- Brayshaw, T.C. 1996. *Catkin-Bearing Plants of British Columbia*, 2nd ed. Victoria: Royal British Columbia Museum.
- British Columbia Heritage Conservation Branch. 1980. "Lillooet-Fraser Heritage Resource Study." Ministry of Provincial Secretary and Government Service, Victoria.
- Brown, R. 1868. "On the Vegetable Products Used by the Northwest American Indians, as Food and Medicine, in the Arts, and in Superstitious Rites." *Transactions of the Botanical Society of Edinburgh* (1866-68) 9: 378-96.
- Brunton, B.B. 1998. "Kootenai." In *Handbook of North American Indians*. Vol. 12: *Plateau*, ed. D.E. Walker Jr., 223-37. Washington: Smithsonian Institution.
- Carlson, C.C. 1978. "The Curr Site (EdRa 22): Archaeological Excavations at a Winter Village Site near Kamloops, British Columbia." Unpublished report, Heritage Conservation Branch, Victoria.
- . 1980. "Excavations at the Curr Site." In *The Archaeology of Kamloops*, Publication no. 7, 87-125. Burnaby: SFU Archaeology Press.
- Chamberlain, A.F. 1892. "Report on the Kootenay Indians of South-Eastern British Columbia." In *Eighth Report on the North-Western Tribes of Canada*, 5-71. London: British Association for the Advancement of Science.
- Clark, J.G.D. 1954. *Excavations at Star Carr: An Early Mesolithic Site at Seamer near Scarborough, Yorkshire*. Cambridge: University of Cambridge Press.
- Conkey, M.W., and J.D. Spector. 1984. "Archaeology and the Study of Gender." *Advances in Archaeological Method and Theory* 7: 1-38.
- Costin, C.L. 1996. "Exploring the Relationship between Gender and Craft in Complex Societies: Methodological and Theoretical Issues of Gender Attribution." In *Gender and Archaeology*, ed. Rita P. Wright, 111-40. Philadelphia: University of Pennsylvania Press.
- Croft, S. N.d. "A Preliminary Study of Botanical Macrofossil Remains from Selected Sites in Lillooet Area of the Interior Plateau, British Columbia." Unpublished manuscript, Department of Biological Sciences, Simon Fraser University.
- . 2012. "Traces of the Past: Microscopic Residue Analysis on the Canadian Plateau, British Columbia." MA thesis, University of Calgary.

- Croft, Shannon and Rolf W. Mathewes. 2013. "Barking up the Right Tree: Understanding Birch Bark Artifacts from the Canadian Plateau, British Columbia," *BC Studies* 180 (Winter 2013/14), 83-122.
- Dawson, G.M. 1891. "Notes on the Shuswap People of British Columbia." *Proceedings and Transactions of the Royal Society of Canada* 9 (2): 3-44.
- Dehelean, C.A., C. Şoica, I. Ledeti, M. Aluaş, I. Zupko, A. Găluşcan, S. Cinta-Pinzaru, and M. Munteanu. 2012. "Study of the Betulin Enriched Birch Bark Extracts Effects on Human Carcinoma Cells and Ear Inflammation." *Chemistry Central Journal* 6 (137): 1-9.
- de Laguna, Frederica. 1936. "An Archaeological Reconnaissance of the Middle and Lower Yukon Valley, Alaska." *American Antiquity* 2 (1): 6-12.
- Delorit, R.J. 1970. *An Illustrated Taxonomy Manual of Weed Seeds*. River Falls, WI: Agronomy Publications.
- Dobres, M.-A.C. 1995. "Gender and Prehistoric Technology: On the Social Agency of Technical Strategies." *World Archaeology* 27 (1): 25-49.
- Douglas, G.W., G.B. Straley, D. Meidinger, and J. Pojar, eds. 1998. *Illustrated Flora of British Columbia*. Vol. 2: *Dicotyledons (Balsaminaceae through Cuscutaceae)*. Victoria: British Columbia Ministry of Forests.
- Endo, N. 2010. "Archaeobotanical Analysis." In "Report of the 2009 University of Montana Investigations at the Bridge River Site (EeR1 4)," 143-48. Missoula: University of Montana. Unpublished report, Bridge River Indian Band and Stl'atl'imx First Nation Offices, Lillooet.
- Fair, S.W. 2006. *Alaska Native Art: Tradition, Innovation, Continuity*, ed. Jean Blodgett. Fairbanks: University of Alaska Press.
- Farrar, J.L. 1995. *Trees in Canada*. Markham: Fitzhenry and Whiteside Ltd. and Canadian Forest Service.
- Florian, M.-L.E. 1990. "Plant Anatomy: An Illustrated Aid to Identification." In *The Conservation of Artifacts Made from Plant Materials*, ed. M.-L. Florian, D.P. Kronkright, and R.E. Norton, 1-28. Princeton: J. Paul Getty Trust and Princeton University Press.
- Gero, J.M., and M.W. Conkey. 1991. *Engendering Archaeology: Women and Prehistory*. Oxford: Basil Blackwell.
- Haeblerlin, H.K., J.A. Teit, and H.H. Roberts. 1928. "Coiled Basketry in British Columbia and Surrounding Region." In *Bureau of American Ethnology Annual Report* 41: 119-484.
- Hail, Barbara A., and Kate C. Duncan. 1989. The Catalogue. In *Out of the North: The Subarctic Collection of the Haffenreffer Museum of Anthropology*, Studies in Anthropology and Material Culture Vol. V, 141-292. Bristol: Haffenreffer Museum of Anthropology and Brown University.
- Hayden, Brian. 1997. "Observations on the Prehistoric Social and Economic Structure of the North American Plateau." *World Archaeology* 29 (2): 242-61.
- . 2000a. "Site Formation Processes at Keatley Creek." In *The Ancient Past of Keatley Creek*. Vol. 1: *Taphonomy*, ed. B. Hayden, 299-334. Burnaby: SFU Archaeology Press.
- . 2000b. "Excavations in Housepit 109." In *The Ancient Past of Keatley Creek*, Vol. 3: CD Rom, ed. B. Hayden. Burnaby: SFU Archaeology Press.

- . 2005. *The Pithouses of Keatley Creek: Complex Hunter-Gatherers of the Northwest Plateau*, 2nd ed. Burnaby: SFU Archaeology Press.
- Helm, J. 1981. *Handbook of North American Indians*. Vol. 6: *Subarctic*. ed. J. Helm. Washington: Smithsonian Institution.
- Hill-Tout, C. 1899 [1978]. *The Salish People: The Local Contribution of Charles Hill-Tout*. Vol. 1: *The Thompson and Okanagan*, ed. Ralph Maud. Vancouver: Talonbooks.
- Hosie, R.C. 1979. *Native Trees of Canada*, 8th ed. Ottawa: Fitzhenry and Whiteside, Canadian Forestry Service, and the Canadian Government Publishing Centre.
- Hunn, E.S. 1981. "On the Relative Contribution of Men and Women to Subsistence among Hunter-Gatherers of the Columbia Plateau: A Comparison with Ethnographic Atlas Summaries." *Journal of Ethnobiology* 1 (1): 124-34.
- Hunn, E.S., N.J. Turner, and D.H. French. 1998. "Ethnobiology and Subsistence." In *Handbook of North American Indians*. Vol. 12: *Plateau*, ed. D.E. Walker Jr., 525-45. Washington: Smithsonian Institution.
- Ignace, M.B. 1998. "Shuswap." In *Handbook of North American Indians*. Vol. 12: *Plateau*, ed. D.E. Walker Jr., 203-19. Washington: Smithsonian Institution.
- Jenness, D. 1963. "Tribes of the Cordillera." In *The Indians of Canada*, 6th ed. Anthropological Series 15, Bulletin 65: 351-76. Ottawa: National Museum of Canada.
- Kennedy, D., and R.T. Bouchard. 1998a. "Lillooet." In *Handbook of North American Indians*. Vol. 12: *Plateau*, ed. D.E. Walker Jr., 174-90. Washington: Smithsonian Institution.
- . 1998b. "Northern Okanagan, Lakes, and Coville." In *Handbook of North American Indians*. Vol. 12: *Plateau*, ed. D.E. Walker Jr., 238-52. Washington: Smithsonian Institution.
- Ketcheson, M.V. 1979. "Floral Analysis of Archaeological Sites in the Hat Creek Valley." Unpublished report, Department of Anthropology and Sociology, University of British Columbia, Vancouver.
- Kidd, K.E. 1963. "Archaeological Investigations in Quetico Park 1963." *Transactions of the Royal Canadian Institute* 34 (71): 106-10.
- . 1965. "Birch-Bark Scrolls in Archaeological Contexts." *American Antiquity* 30 (4): 480-83.
- Krasutsky, P.A. 2006. "Birch Bark Research and Development." *Natural Product Reports* 23: 919-42.
- Kroeber, A.L. 1939. *Cultural and Natural Areas of Native North America*. Berkeley: University of California Press.
- Kuhnlein, H.V., and N.J. Turner. 1991. *Traditional Plant Foods of Canadian Indigenous Peoples: Nutrition, Botany and Use*. Philadelphia: Gordon and Breach Science Publishers.
- Kuipers, A.H. 2002. *Salish Etymological Dictionary*. University of Montana Occasional Papers in Linguistics 16. Missoula: University of Montana.
- Lane, R.B. 1981. "Chilcotin." In *Handbook of North American Indians*. Vol. 6: *Subarctic*, ed. J. Helm, 402-12. Washington: Smithsonian Institution.
- Langemann, E.G. 1987. "Zooarchaeology of the Lillooet Region." PhD diss., Simon Fraser University.

- Lepofsky, D. 2000. "Site Formation Processes at Keatley Creek: The Paleoethnobotanical Evidence." In *The Ancient Past of Keatley Creek*. Vol. 1: *Taphonomy*, ed. B.D. Hayden, 105-34. Burnaby: SFU Archaeology Press.
- . 2004. "Paleoethnobotany in the Northwest." In *People and Plants in Ancient Western North America*, ed. P.E. Minnis, 367-464. Washington: Smithsonian Books.
- Lepofsky, D., K.D. Kusmer, B. Hayden, and K.P. Lertzman. 1996. "Reconstructing Prehistoric Socioeconomies from Paleoethnobotanical and Zooarchaeological Data: An Example from the British Columbia Plateau." *Journal of Ethnobiology* 16 (1): 31-62.
- 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*, ed. W.C. Prentiss and I. Kuijt, 115-39. Salt Lake City: University of Utah Press.
- Lyons, Chester P., and Bill Merilees. 1995. *Trees, Shrubs & Flowers to Know in British Columbia & Washington*. Vancouver: Lone Pine Publishing.
- Macoun, J.M. 1890. "Cooking Quamash." *Garden and Forest: A Journal of Horticulture, Landscape Art, and Forestry* 3 (125): 343.
- Martin, A.C., and W.D. Barkley. 1961. *Seed Identification Manual*. Berkeley: University of California Press.
- Mathewes, R.W. 1980. "Plant Remains from the Lillooet Archaeological Project, BC." Paper presented at Botany 80 conference, University of British Columbia, Vancouver, Canada, July 12-16. Botanical Society of America, Canadian Botanical Association.
- Maton, K. 2012. "Habitus." In *Pierre Bourdieu: Key Concepts*, 2nd ed., ed. M. Grenfell, 48-64. Durham: Acumen Publishing.
- Matthew, M. 1986a. *Foods of the Shuswap*. Shuswap Cultural Series, Book 2. Secwepemc Cultural Education Society, Kamloops.
- . 1986b. *Technology of the Shuswap*. Shuswap Cultural Series, Book 5. Secwepemc Cultural Education Society, Kamloops.
- McMurdo, J. 1974. "A Preliminary Report on Excavations at the Juniper Beach Site EeRg 13." Unpublished report, British Columbia Archaeology Branch, Victoria.
- Mitchell, D.H. 1970. "Archaeological Investigation on the Chilcotin Plateau, 1968." *Syesis* 3 (1): 45-65.
- Moerman, D.E. 1998. *Native American Ethnobotany*. Toronto: University of Toronto Press.
- Moss, M.L. 1993. "Shellfish, Gender, and Status on the Northwest Coast: Reconciling Archaeological, Ethnographic, and Ethnohistorical Records of the Tlingit." *American Anthropologist* 95 (3): 631-52.
- . 1999. "Engendering Archaeology in the Pacific Northwest." *Northwest Anthropological Research Notes* 33 (2): 245-62.
- Mshvildadze, V., J. Legault, S. Lavoie, C. Gauthier, and A. Pichette. 2007. "Anticancer Diarylheptanoid Glycosides from the Inner Bark of *Betula papyrifera*." *Phytochemistry* 68: 2531-36.
- Nicholas, G.P., and L. Westfall. Forthcoming. "Long-Term Secwepemc Plant Use: Initial Results of Archaeological and Archaeobotanical Investigations in the Interior Plateau, British Columbia." In *Secwepemc People and Plants: Research*

- Papers in Shuswap Ethnobotany*, ed. M.B. Ignace, N.J. Turner, and S. Peacock. Contributions in Ethnobiology, No. 1.
- Nicolaides, M. 2010. "The Proof Is in the Pits: A Paleoethnobotanical Analysis of Earth Ovens from the White Rock Springs Site (EeRj 226), an Ancient Root Processing Locale on the Canadian Plateau." MA thesis, University of Calgary.
- Norton, H.H. 1981. "Plant Use in Kaigani Haida Culture: Correction of an Ethnohistorical Oversight." *Economic Botany* 33: 434-49.
- . 1985. "Women and Resources of the Northwest Coast: Documents from the 18th and Early 19th Centuries." PhD diss., University of Washington.
- Palmer, G. 1975. "Shuswap Indian Ethnobotany." *Syesis* 8: 29-81.
- Panshin, A.J., and C. de Zeeuw. 1980. *Textbook of Wood Technology: Structure, Identification, Properties, and Uses of the Commercial Woods of the United States and Canada*, 4th ed. New York: McGraw-Hill.
- Parish, R.R. Coupé, and D. Lloyd, eds. 1996. *Plants of Southern Interior British Columbia*. Vancouver: Lone Pine Publishing.
- Peacock, S.L. 1998. "Putting Down Roots: The Emergence of Wild Plant Food Production on the Canadian Plateau." PhD diss., University of Victoria.
- Pokotylo, D.L., M.E. Binkley, and A.J. Curtin. 1987. "The Cache Creek Burial Site (EeRh 1), British Columbia." *Contributions to Human History* 1: 1-14.
- Prentiss, A.M. 2010a. "Stratigraphy, Features and Dating." In "Report of the 2009 University of Montana Investigations at the Bridge River Site (EeR14)," 18-55. Missoula: University of Montana. Unpublished report, Bridge River Indian Band and Stl'atl'imx First Nation Offices, Lillooet.
- . 2010b. "Conclusions." In "Report of the 2009 University of Montana Investigations at the Bridge River Site (EeR14)," 121-137. Missoula: University of Montana. Unpublished report, Bridge River Indian Band and Stl'atl'imx First Nation Offices, Lillooet.
- Prentiss, A.M., G. Cross, T. Foor, M. Hogan, D. Markle, and D.S. Clarke. 2008. "Evolution of a Late Prehistoric Winter Village on the Interior Plateau of British Columbia: Geophysical Investigations, Radiocarbon Dating, and Spatial Analysis of the Bridge River Site." *American Antiquity* 73 (1): 59-81.
- Prentiss, W.C., M. Lenert, T.A. Foor, N.B. Goodale, and T. Schlegel. 2003. "Calibrated Radiocarbon Dating at Keatley Creek: The Chronology of Occupation at a Complex Hunter-Gatherer Village." *American Antiquity* 68 (4): 719-35.
- Prentiss, A.M., and I. Kuijt. 2012. *People of the Middle Fraser Canyon: An Archaeological History*. Vancouver: UBC Press.
- 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 (EeR14)." Missoula: University of Montana. Unpublished report, Bridge River Indian Band and Stl'atl'imx First Nation Offices, Lillooet.
- Ray, V.F. 1939. *Cultural Relations in the Plateau of Northwestern America*, vol. 3. Publications of the Frederick Webb Hodge Anniversary Publication Fund. Los Angeles: Southwest Museum.

- . 1942. "Culture Element Distributions." In *Cultural Relations in the Plateau of Northwestern America*, vol. 22. *Anthropological Records* (University of California) 8 (2): 99-257.
- Richards, T.H., and M.K. Rousseau. 1982. "Archaeological Investigations on Kamloops Indian Reserve Number 1, Kamloops, British Columbia." Unpublished report, Heritage Conservation Branch, Victoria.
- . 1987. *Late Prehistoric Cultural Horizons on the Canadian Plateau*. Publication no. 16. Burnaby: SFU Archaeology Press.
- Romanoff, S. 1992. "Fraser Lillooet Salmon Fishing." In *A Complex Culture of the British Columbia Plateau: Traditional St'atl'imx Resource Use*, ed. B. Hayden, 222-65. Vancouver: UBC Press.
- Rousseau, M.K. 2004. "A Culture Historic Synthesis and Changes in Human Mobility, Sedentism, Subsistence, Settlement, and Population on the Canadian Plateau, 7000-200 BP." In *Complex Hunter-Gatherers: Evolution and Organization of Prehistoric Communities on the Plateau of Northwestern North America*, ed. W.C. Prentiss and I. Kuijt, 3-22. Salt Lake City: University of Utah Press.
- Sami, A., M. Taru, K. Salme, and Y.-K. Jari. 2006. "Pharmacological Properties of the Ubiquitous Natural Product Betulin." *European Journal of Pharmaceutical Sciences* 29: 1-13.
- Sanger, D. 1968. *The Chase Burial Site EeQw: 1, British Columbia*. Contributions to Anthropology 6, Archaeology Paper no. 2, Bulletin 224. Ottawa: National Museums of Canada.
- . 1970. "The Archaeology of the Lochnore-Nesikep Locality, British Columbia." *Syesis* 3 (1): 1-129.
- Shikov, Alexander N., G.I. Djachuk, D.V. Sergeev, O.N. Pozharitskaya, E.V. Esaulenko, V.M. Kosman, and V.G. Makarov. 2011. "Birch Bark Extract as Therapy for Chronic Hepatitis C: A Pilot Study." *Phytomedicine* 18: 807-10.
- Sjöström, E. 1993. *Wood Chemistry: Fundamentals and Applications*, 2nd ed. San Diego: Elsevier Academic Press.
- Smith, H.I. 1899. "Archaeology of Lytton, British Columbia." In *Memoirs of the American Museum of Natural History, the Jesup North Pacific Expedition*, vol. 1, pt. 3, 129-61. New York: AMS Press.
- . 1900. "Archaeology of the Thompson River Region." In *Memoirs of the American Museum of Natural History, the Jesup North Pacific Expedition*, vol. 1, pt 6, 401-54. New York: AMS Press.
- . 1913. "The Archaeological Collection from the Southern Interior of British Columbia, Microform." *Museum of the Geological Survey Canada* no. 1290. Ottawa: Government Printing Bureau.
- Smith, Huron H. 1932. "Ethnobotany of the Ojibwe Indians." *Bulletin of the Public Museum of Milwaukee* 4: 327-525.
- Steedman, E.V. 1930. "Ethnobotany of the Thompson Indians of British Columbia." *Annual Report of the Bureau of American Ethnology* 45: 441-552.
- Steinbright, J. 1985. "Birch Bark Baskets." In *From Skins, Trees, Quills and Beads: The Work of Nine Athabaskans*, 7-22. Alaska: Institute of Alaska Native Arts.
- Street, Martin, Michael Baales, Erwin Cziesla, Sönke Hartz, Martin Heinen, Olaf Jöris, Ingrid Koch, Clemens Pasda, Thomas Terberger, and Jürgen Vollbrecht.

2001. "Final Paleolithic and Mesolithic Research in Reunified Germany." *Journal of World Prehistory* 15 (4): 365-453.
- Stryd, A.H. 1970. *Preliminary Report of the 1970 Archaeological Excavations near Lillooet, British Columbia*. Report on file with the British Columbia Archaeology Branch, Victoria.
- . 1972. "Housepit Archaeology at Lillooet, BC: The 1970 Field Season." *BC Studies* 14: 17-46.
- . 1973. "The Later Prehistory of the Lillooet Area, British Columbia." PhD diss., University of Calgary.
- . 1974. "Lillooet Archaeological Project: 1974 Field Season." *Cariboo College Papers in Archaeology* 1. Kamloops: Cariboo College.
- . 1978. "An Introduction to the Lillooet Archaeological Project." In *Reports of the Lillooet Archaeological Project*, ed. A.H. Stryd and S. Lawhead, 1-21. Ottawa: National Museum of Man, Mercury Series, Archaeological Survey of Canada Paper 73.
- . 1980. "A Review of the Recent Activities Undertaken by the Lillooet Archaeological Project." *The Midden* 12 (2): 5-20.
- . 1985. "Lillooet-Pioneer Road Upgrading Project Lillooet, BC: Detailed Heritage Resource Inventory and Impact Assessment." Unpublished report, British Columbia Archaeology Branch, Victoria.
- Stryd, A.H., and J. Baker. 1968. "Salvage Excavations at Lillooet British Columbia." *Syesis* 1: 47-56.
- Stryd, A.H., and L.V. Hills. 1972. "An Archaeological Site Survey of the Lillooet-Big Bar Area, British Columbia." *Syesis* 5: 191-209.
- Syms, Leigh. 1979. "The Devils Lake-Sourisford Burial Complex on the Northeastern Plains." *Plains Anthropologist* 24 (86): 283-308.
- Teit, James A. 1900. "The Thompson Indians of British Columbia." In *Memoirs of the American Museum of Natural History, the Jesup North Pacific Expedition*, vol. 2, pt. 4, ed. F. Boas, 161-392. New York: AMS Press.
- . 1906. "The Lillooet Indians." In *Memoirs of the American Museum of Natural History, the Jesup North Pacific Expedition*, vol. 2, pt. 5, ed. F. Boas, 192-300. New York: AMS Press.
- . 1909. "The Shuswap." In *Memoirs of the American Museum of Natural History, the Jesup North Pacific Expedition*, vol. 2, pt. 7, ed. F. Boas, 443-813. New York: AMS Press.
- . 1912. "Traditions of the Lillooet Indians of British Columbia." *Journal of American Folklore* 25 (98): 287-371.
- . 1930. "The Salishan Tribes of the Western Plateaus." In *Forty-Fifth Annual Report of the Bureau of American Ethnology 1927-1928*, ed. F. Boas, 23-396. Washington: Bureau of American Ethnology, Smithsonian Institution.
- Thomas, J. 1996. *Time, Culture and Identity: An Interpretive Archaeology*. London: Routledge.
- Thornburn, O. 2003. "Emerging Voices: An Analysis of Subarctic Aboriginal Basketry." MA thesis, Carleton University.
- Tobey, M.L. 1981. "Carrier." In *Handbook of North American Indians*. Vol. 6: *Subarctic*, ed. J. Helm, 413-32. Washington: Smithsonian Institution.

- Tringham, Ruth E. 1991. "Households with Faces: The Challenge of Gender in Prehistoric Architectural Remains." In *Engendering Archaeology: Women and Prehistory*, eds. J.M. Gero and M.W. Conkey, 93-131.
- Turner, N.J. 1988. "Ethnobotany of Coniferous Trees in Thompson and Lillooet Interior Salish of British Columbia." *Economic Botany* 42 (2): 177-94.
- . 1992. "Plant Resources of the Stl'atl'imx (Fraser River Lillooet) People: A Window into the Past." In *A Complex Culture of the British Columbia Plateau: Traditional Stl'atl'imx Resource Use*, ed. B. Hayden, 405-769. Vancouver: UBC Press.
- . 1996. "Dans une Hotte: L'importance de la vannerie dans l'économie des peuples chasseurs-pêcheur--cueilleurs du Nord-Ouest de l'Amérique du Nord" [Into a basket carried on the back: The importance of basketry in hunting/fishing/foraging economies in northwestern North America]. *Anthropologie et Sociétés* (special issue on contemporary ecological anthropology) 20 (3): 55-84.
- . 1997. *Food Plants of Interior First Peoples*, 2nd ed. Vancouver: UBC Press.
- . 1998. *Plant Technology of First Peoples in British Columbia*, 2nd ed. Vancouver: UBC Press.
- . 2003. "Passing on the News: Women's Work, Traditional Knowledge and Plant Resource Management in Indigenous Societies of North-Western North America." In *Women and Plants: Gender Relations in Biodiversity Management and Conservation*, ed. Patricia L. Howard, 133-49. London: Zed Books.
- Turner, N.J., R. Bouchard, and D.I.D. Kennedy. 1980. *Ethnobotany of the Okanagan-Colville Indians of British Columbia and Washington*. Victoria: British Columbia Provincial Museum, Occasional papers of the British Columbia Provincial Museum, Paper 21.
- Turner, N.J., M.B. Ignace, and R. Ignace. 2000. "Traditional Ecological Knowledge and Wisdom of Aboriginal Peoples in British Columbia." *Ecological Applications* 10 (5): 1275-87.
- Turner, N.J., L.C. Thompson, M.T. Thompson, and A.Z. York. 1990. *Thompson Ethnobotany: Knowledge and Usage of Plants by the Thompson Indians of British Columbia*. Victoria: Royal British Columbia Museum.
- USDA, NRCS. 2008. The PLANTS Database. National Plant Data Team, Greensboro, NC, 27401-4901 USA. Available at <http://plants.usda.gov>.
- Vickers, C. 1945. "Archaeology in the Rock and Pelican Lake Area of South-Central Manitoba." *American Antiquity* 11 (2): 88-94.
- Von Krogh, H. 1978. "Archaeological Investigations in the Spences Bridge Locality, British Columbia." Unpublished report, Heritage Conservation Branch, Victoria.
- Walker, D.E. 1998. *Handbook of North American Indians*. Vol. 12: *Plateau*, ed. D.E. Walker Jr. Washington: Smithsonian Institution.
- Webber, A.P. 1978. "Wigwamataw: Old Birch Bark Containers." *American Indian Art* 4 (1): 56-61.
- Welsh, S.L., C.W. Crompton, and S.E. Clemants. 2004. "Chenopodiaceae Goosefoot Family." In *Flora of North America North of Mexico*, vol. 4. Ed. Flora of North America Editorial Committee. New York and Oxford. Available at http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=10185.

- Wickwire, W. 1993. "Women in Ethnography: The Research of James A. Teit." *Ethnohistory* 40 (4): 539-62.
- Wilson, R.L. 1973. "Salvage Excavations in the Vicinity of Kamloops, BC." Unpublished report, British Columbia Archaeology Branch, Victoria.
- . 1980. "Archaeological Investigation near Kamloops." In *The Archaeology of Kamloops*, Publication no. 7, 1-86. Burnaby: SFU Archaeology Press.
- Wittke, K.L., B. Hayden, and M.-A. Lauwerys. 2004. "A Coiled Basket Fragment and Other Organic Artifacts from the Keatley Creek Site, British Columbia." *Canadian Journal of Archaeology* 28: 144-50.
- 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 to 160+/- 50 Uncal B.P.), a Late Prehistoric Hunter-Gatherer Site on the Southern Interior Plateau, British Columbia, Canada." *Vegetation History and Archaeobotany* 11: 61-70.
- Wright, M.C. 2003. "The Woman's Lodge: Constructing Gender on the Nineteenth-Century Pacific Northwest Plateau." *Frontiers: A Journal of Women Studies* 24 (1): 1-18.
- Wyatt, D. 1998a. "Thompson." In *Handbook of North American Indians*. Vol. 12: *Plateau*, ed. D.E. Walker Jr., 191-202. Washington: Smithsonian Institution.
- . 1998b. "Nicola." In *Handbook of North American Indians*. Vol. 12: *Plateau*, ed. D.E. Walker Jr., 220-22. Washington: Smithsonian Institution.

ACKNOWLEDGMENTS

We are very grateful to the late Dr. Len Hills, his interest and encouragement in the early manuscript made publication possible. We are thankful to Drs. Dana Lepofsky, Gerry Oetelaar, and Brian Kooyman for their suggestions and editorial assistance. Drs. Nancy Turner and Bill Poser provided the authors with helpful linguistic information. Richard Mackie and Al Mackie provided many valuable suggestions. Two anonymous reviewers also strengthened and improved the work. Research was carried out at Rolf Mathewes's Paleoecology Laboratory, Department of Biological Sciences, Simon Fraser University, Burnaby, British Columbia. All photographs and map images are by Shannon Croft.