

CULTURALLY MODIFIED TREES Part I





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Editorial Committee				
Guest Editor:	Jacob Earnshaw earnshaw@uvic.ca			
Assistant Editor:	Callum Abbott			
	calabbot@uvic.ca			
Copy Editors:	Colton Vogelaar colton.vogelaar@gmail.com			
	Nicole Westre			
	nicole.westre@hotmail.com			
	Genevieve Hill			
	asbc.midden@gmail.com			
Contributing Editors:	Brian Thom			
	bthom@uvic.ca			
	Drew MacLennan			
	Drew.MacLennan@gov.bc.ca			
	Peter Merchant			
	petermer@alumni.ubc.ca			
	Brian Pegg			
	brianpegg@gmail.com			
	Heather Pratt			
	Heather_Pratt@golder.com			
Subscriptions:	Jacob Salmen-Hartley jacob.salmen.hartley@gmail.com			

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asbc.membership@gmail.com

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Cover: "Cookie" sample of a double bark stripped CMT. The outer scar was taken off the healing lobe of an earlier scar dating to 1827. The majority of the original tree no longer exists. (Photo, J.Earnshaw)





EDITORS NOTES

VICTORIA STILL STUMPED BY TREES

by Kathryn Bernick

First Published in the The Midden Vol. XVI, No.5, December 1984)

"WHAT IS YOUR POSITION on culturally modified trees?"

Provincial Archaeologist Art Charlton was not available to answer my question, so I asked Brian Apland, Acting Head of Impact and Assessment:

"What is the current policy of the Heritage Conservation Branch?"

Apland replied that "there is no hard and fast policy" regarding CMTs (culturally modified trees), and that the Branch is "trying to establish a mechanism to set up a predictive model for use and distribution of this resource type for all areas of the coast." It will facilitate data collection in "impact situations," Apland said, adding that the Branch might also try to do something about preserving some CMTs-for example, those that are in parks, ecological reserves, etc.

Trees are a different kind of heritage site than what resource managers usually deal with. Because, Apland pointed out, with trees it is the actual heritage resource that the "developers" are after. Yes, of course. Are the logging companies, I wanted to know, putting pressure on the Branch to approve cutting permit applications? No, said Apland. But the companies do want to know what the HCB's position is.

Every time there's an upswing in the market for red cedar, hungry fallers come across culturally modified trees. What should they do? The Heritage Conservation Branch, operating with a steadily diminishing staff and reduced budget, has a lot of other things to think about in addition to trees. They are hopelessly behind--but they're working on it.

A year ago (Dec. 1983) several Branch staff members met with archaeologists who had been involved in recording CMTs. I wasn't there, but all the researchers I know who did participate emphasized the need to consider CMTs as "legitimate" heritage sites, and to find out more about them. The resource managers agreed that they needed to know more about CMTs. So, pending the availability of more information, the HCB put on hold all newly recorded CMT sites. That is, they are keeping the records in a separate file and are not going to assign

site numbers until the definition of a CMT site is worked out. For now, they are referring to them as "culturally modified tree areas," and are instructing survey projects NOT to record them on site inventory forms. The fact that none of the new tree information is being entered into the computer file is academic, considering the backlog in data entry (several thousand site forms). However, the result of not using standard inventory forms is that information deemed necessary by the Branch for effective management of heritage resources is not being recorded.

Meanwhile, the HCB arranged for two studies of culturally modified trees--one on the Queen Charlotte Islands and one on Meares Island. Both were in areas where logging is imminent (or already in progress) and where there has been vocal public denunciation of logging plans. I don't believe it is a coincidence. Money is apparently forthcoming for research that is disguised as an impact assessment of an area for which interested parties (industry, government) need some good press.

To my knowledge, the Branch has not commented, publicly or otherwise, on the results of the two CMT studies. They are "reviewing" the matter: they have not yet met to discuss among themselves the implications of the research reports--let alone to work out the definition of a "CMT site."

Understanding the procrastination is easier if you've seen the reports--which I have (in fact, I wrote one of them). Both studies demonstrated that culturally modified trees can potentially provide a wealth of information about aboriginal culture in early historic times as well as during the late prehistoric period.

It would have been simpler if the research results indicated that CMTs were expendable as far as heritage is concerned. Consider the millions of dollars worth of lumber they comprise, and the fact that technically neither trees nor tree sites are protected under the Heritage Conservation Act. No wonder the Branch keeps hoping that they're not "really" sites, and is planning yet another meeting with archaeologists to discuss CMTs.

Nevertheless, the HCB will, sooner or later , have to take a position. That is, if it survives the next round of reductions in the civil service ...(there are rumours).

We start this issue with an archived introduction written by one of The Midden's past Editors, Kathryn Bernick. Kitty wrote a number of important inquiries for the journal related to the province's lack of Culturally Modified Tree (CMT) protections prior to official realization of their heritage value. In 1984 she wrote the editorial "Victoria Still Stumped by Trees," reprinted here. That same year she submitted "Haida Trees: Remains of Canoe Manufacture in the Forests of Southern Masset Inlet" related to her pioneering work on CMTs in Haida Gwaii. 1984 was clearly a landmark year for CMT research as it also saw the submission of the first report for Arcas Associates' "Meares Island Aboriginal Tree Utilization Study" in Clayoquot Sound and the publication of "Cedar: Tree of Life to the Northwest Coast Indians" by Hilary Stewart, one of the ASBC's founding members. Stewart's simply titled, "Culturally Modified Trees", also published in Bernick's 1984 Midden issue is reprinted here as well as an introduction to those less familiar with CMTs. These publications marked a major turning point in the direction of archaeology in the province. Following considerable discussion the Provincial Archaeology Branch enacted policies for CMT protection, and today forest utilization features that pre-date 1846 are protected by the Heritage Conservation Act of 1996. Management of these sites are clearly defined in the Ministry of Forests' Forest Act and the Forest Practices Code of British Columbia. Research and identification of forest utilization features has continued ever since, helping to grow interest and familiarity about CMTs among archaeologists and the general public.

To date there are roughly 11,000 recorded CMT sites within BC containing over 200,000 CMT features (see Figure 1). Just under 30% of these sites are in the BC Interior, east of the coast mountain range. Of those roughly 70% on the coast, about 45% are contained on Vancouver Island and the adjacent mainland with another 55% on the Central and North Coasts.

Though CMTs may appear secure in their protections, and prolific in their appearance throughout archaeological inventory, three decades of scientific recognition has yet to answer many questions regarding aspects of identification, protection,, as well as their historical and scientific value. The vast majority of CMT data is confined to gray literature and are rarely the focus of academic or large scale professional study. Despite the extensive accumulation of CMT data throughout the province we have yet to realize much of their potential towards answering questions of pre-contact human settlement patterns, demographic trends, frequency and intensity of use, as well as changes in forest use and management practices during and after European contact.

This issue of *The Midden* is the first in what we hope will be a series of themed issues related to specific archaeological subjects in British Columbia. Volume 47, issues three and four focus exclusively on CMT related topics. Six new articles are presented showing a selection of studies and inquiries into Cultural Forests occurring around BC. Our Assistant Editor for this issue, Callum Abbott, investigates the transitional period of Aboriginal logging on the Central Coast from pre-contact through the contact-era. Adrian Sanders illustrates aspects of the cognized world of the Nlaka' pamux forest use in the Kwoiek Valley. My own submission outlines the values I believe Culturally Modified Forests hold for First Nations title to traditional lands in the aftermath of the Tsilhqot'in Ruling. Morley Eldridge puts forward decades of CMT research towards a question regarding the risk of over-use of cedar resources and associated conservation ethics of First Nations. Amanda Marshall probes the difficulties that plague the identification and study of Yellow Cedar CMTs through a case study of a contentious stand of cedar on the Sunshine Coast. Our final article by Jim Stafford provides notes and discussion on the identification of Red and Yellow cedar CMTs.

We hope you enjoy this themed double issue. ~Jacob Earnshaw, Guest Editor and ASBC President



RECORDED ARCHAEOLOGICAL SITES CONTAINING CMTS, 2017



Figure 1: Result of Provincial Archaeology Branch data request for all recorded CMT sites within BC, Sept 1 2017 (map courtesy of Keith Holmes and data collection by Diana Cooper).



ARCHIVES

Culturally Modified Trees

by Hilary Stewart

(first published in Midden Vol XVI, No.5, December 1984)

Drawings by the author

MANY OF THE OLD abandoned native village sites of the Northwest Coast still contain sturdy houseposts, massive roof beams, gable boards, and retainer planks. Museums house crest poles, dugout canoes, bentwood boxes and chests, and a variety of clothing and baskets, all made from western red cedar (*Thuja Plicata*). Although many of these date only to a hundred years ago, it is well evidenced that such items were an established part of the coastal cultures long before early explorers arrived.

The cedar is a long-lived tree, growing, under favourable conditions, to a height of 70 m and with a diameter of 4 m, occasionally more. The wood contains *thujaplicin*, a toxic substance which acts as a fungicide to resist rot in mature trees. Because many giant cedars are several hundred years old, some carry the scars of quite early woodworking and bark stripping--mute evidence



of their use.

Little attention was paid to this aspect of ethnology (or its association with archaeology) until relatively recently, when widespread logging operations brought increased awareness of this most interesting subject. In one area of the Queen Charlotte Islands alone, 123 Haida utilized trees have been documented by Richard Wilson (Wanagun), a Haida from Skidegate. These include the stumps and tops of felled trees (the trunk having been removed for use); trees with adzing, test holes, bark stripping scars; as well as canoe blanks-and an almost finished canoe.

One label given to a tree displaying evidence of use is culturally modified tree, abbreviated to CMT for convenience.

In the course of researching my republished cently book, CEDAR: Tree of Life to the Northwest Coast Indians, I became deeply interested in CMTs of cedar. With each visit to the Oueen Charlotte Islands and other coastal areas. I found, or was shown, trees with evidence of adzing and chiselling. They include examples of plank splitting, test holes, random adzing at the tree base, and chiselled cavities above the base.

Close inspection of the length, shape, and cleanness of the cuts in the wood



suggested that, in all cases, a sharp metal-bladed tool had been used. Adzes and chisels with iron blades were already in use when Cpt. James Cook, the first explorer



known to have landed on this coast, arrived in 1792, and he noted the eagerness of native people to trade for iron.

To my knowledge, no examples of woodwork done with stone tools are available for study. The grooved stone adze of the northern cultures does not have the fine bevelled edge of the southern elbow adze, and may have been a splitting tool rather than a cutting tool.

A fairly rare type of CMT is the tree which has had planks split from it by the use of wedges--particularly, interesting if the tree is still alive. One "plank-split" tree I studied in Barkley Sound appeared to have fallen with age, a long time ago, but it still retained a series of cut marks at one end of the face from which the plank had been split. The face measured an astounding 3 m long and 1.3 m wide.

Another category of CMT, one more often found, is the cedar with bark stripping scars. One type takes the form of a long, fairly narrow scar running several meters up the trunk; the base is a horizontally cut line, and the top tapers to a point. One I saw on Monas Island (off Tofino) had the scar of the initial very narrow strip of

CEDAR WITH SCAR OF PLANK SPLITTING - BELLA COOLA .

bark which had been pulled to test its straightness. (Alice Paul, a Westcoast basket maker, has described doing this: if the first strip is short, or if it twists, she rejects it and tries another tree.) Adjacent to the narrow scar was a much wider one that ran up higher. The bark puller must have approved of the qualities of the first strip and so taken one of full width, to use for making baskets, matting, rope, clothing, baby bedding.

On the Queen Charlotte Islands one can frequently find a cedar tree scarred from removal of a bark plank, sometimes two or three from the same trunk. These scars measure close to 1.5 m long by about 0.3 m wide, but it should be remembered that the sides have partially grown over, narrowing the original width. The Haida once used these as planks, threading sticks of salmonberry through the width, between the inner and outer bark, in order to keep them from curling. The bark planks were lightweight and easily transported for use in building a temporary shelter. They were also traded to the Tsimshian people on the mainland. The more one consciously looks for CMTs, the more they come to light. In areas once well populated with native peoples, one can walk into almost any forest where there are cedars and find a CMT of one type or another. Last week, in Vancouver's Stanley Park, I noticed a bark scarred tree, complete with adzing, only a stone's throw from the Public Aquarium.



BARK STRIPPING SCAR, WITH NEW BARK GROWING IN OVER SAPWOOD. INITIAL NARROW STRIP AT LEFT_ MONAS ISLAND.



REMOVAL - EACH ABOUT 1.5m x 0.3m. WINDY BAY_QUEEN CHARLOTTE IS.

Continued on next page

Much more survey, study, and research need to be done before logging destroys many of these important specimens--specimens which can shed light on early woodworking. This brief article is written in the hope that it will alert more people to be on the lookout for culturally modified trees, and to report them to this author or to the Archaeological Society of B.C.

~This article was first published in The Midden in 1984, in the early years of CMT research in BC. Hilary Stewart was a writer and artist known for her work with First Nations art and artifacts on the Northwest Coast. Her more notable books are Looking at Indian Art of the Northwest Coast (1979) and Cedar (1984). She had a close association with the ASBC before her passing in 2014 on Quadra Island.

BASE DND

RANDOM ADZING AT BASE OF TREE BARKLEY SOUND

Ancestral Heiltsuk Logging on the Central Coast of British Columbia

by Callum Abbott

Introduction

I present some results of archaeological surveys conducted in 2016 near Spiller Channel on the central coast of British Columbia. I focus exclusively on the eighteen Aboriginal logging sites observed during the 2016 surveys. In addition to presenting data collected at these Culturally Modified Tree (CMT) sites, I discuss intergenerational practices of sustainable forest management represented by these clusters of ancestral Heiltsuk logging features on the landscape. This is supplemented with a discussion of contact era Heiltsuk hand logging on the central coast. Taken together, these data sets weave a narrative of continuous land rights and title that persevere into the twenty first-century and beyond. I conclude by discussing some implications of these findings for the negotiations that take place at the nexus of Indigenous, archaeological, and development interest groups within the context of modern industrial logging.

Methods

A&A Trading (A&A) operations engineers contacted Central Coast Archaeology (CCA) and requested preliminary field reconnaissance of multiple proposed logging blocks within the study area. Agreements in place between A&A and the Heiltsuk Integrated Resource Management Department (HIRMD) mandate that A&A adhere to the principles and practices of ecosystem based management (EBM). In terms of the archaeological implications of these management strategies, A&A is committed to retaining 100% of CMTs and other archaeological site types wherever possible.

The archaeological surveys were conducted over eighteen days of field work in April and June, 2016. The survey crew composition varied but always consisted of the author as well as at least one representative from the Heiltsuk First Nation. Gitla-Elroy White of Central Coast Archaeology and A&A forestry engineers also assisted with a number of the surveys. The specific study area is found on the west side of Spiller Channel and Spiller Inlet approximately 40 kilometers northeast of Bella Bella (Figure 1). The study area is located in the core of Qúqvaỷáitx v territory (the calm water people-a tribe within the larger Heiltsuk First Nation). Two distinct archaeological CMT zones were identified by the survey teams: One at the northern end of Spiller Inlet near East Snass Lake and one to the south near Cheenis Lake (Figures 2-3).

The archaeological surveys consisted of multiple meandering pedestrian traverses with 2-5 crew members generally spaced 10-50 meters apart depending on terrain, forest type, and visibility. Traverses were guided by natural land and water features as well as the proposed



Figure 1: Overview Map of the Study Area

development boundaries. Development maps as well as information provided by the forestry engineering crews were used to identify areas of moderate and high potential for archaeological sites. Surface and subsurface exposures such as sparsely vegetated areas, tree throws, tree bases, root wads, creek banks, and rock outcrops were inspected for archaeological materials or modifications and tree stands were examined for cultural modifications. No cross-section inspections of stumps for embedded tapered bark strip scars were done due to the pre-impact assessment nature of the surveys, time-constraints, and thick moss growth. The locations of all identified CMTs were mapped and metric data were collected in accordance with Culturally Modified Trees of British Columbia: A Handbook for the Identification and Recording of Culturally Modified Trees (British Columbia Archaeology Branch 2001).

All CMTs were flagged and a 10 meter buffer was applied to the observed cultural features. The locations and extent of these archaeological sites were communicated to A&A forestry engineers both verbally and in writing. In accordance with EBM agreements in place, the proposed development boundaries were amended in order to protect the CMT sites from impacts associated with industrial timber harvesting activities.



Figure 2: CMT Zone North



Figure 3: CMT Zone South

Results

Eighteen archaeological CMT sites associated with Aboriginal logging activities were recorded during the 2016 surveys (Figures 4-9). Of these, fourteen are previously unrecorded sites and four are previously recorded (Whalen 2014). These CMT sites and the features therein are outlined in Table 1. The species utilized for all CMTs is western red cedar (*Thuja plicata*). Many more logging features were encountered during the surveys but they were assigned post-1846 cultural modification dates and therefore not archaeological CMTs protected under the *Heritage Conservation Act*. The antiquity of all CMTs was estimated by examining attributes such as healing lobe size, nurse tree diameter, absence of springboard notches, tool mark morphology, and spatial proximity to other CMTs.

Of particular significance is the typological and morphological diversity of the various cultural features observed during the 2016 surveys. These are direct evidence of Aboriginal logging techniques specific to the study area. Engaging with these sites through the lens of *communities of practice* provides a means of understanding the ways apprentices and masters, new-comers and old-timers, as well as their dynamic activities, identities, objects, technologies, and knowledge systems are pervasively enmeshed with one another via situated learning (Lave 1996, 2011; Lave and Wenger 1991; Wenger 1998). Central to the processes through which communities of practice are made and remade is participation in everyday activities. It is in these seemingly mundane doings that gestures are practiced, skills are grown, innovations are developed, and identities are negotiated. The material traces of these processes constitute a significant portion of the archaeological record, and their study offers insights about the larger frames of social engagement within which the actions of day-to-day life are embedded. It directly links artifacts, archaeological sites, and people through the physicality of skilled movement. Within this framework, knowing



Figure 4: FcTa-202 Undercut Feature

(quantity of features in brackets, if no number then n=1)										
Archaeological Site	FdTa-71		FdTa-72	FdTa-72		FdTa-73		FdTa-74		
Number of CMTs	<i>n</i> =3	<i>n</i> =3		<i>n</i> =6	<i>n</i> =6		<i>n</i> =1		<i>n</i> =3	
Aboriginal Logging	step-top stumps (3); log	step-top s	stumps (2); flat-t	nps (2); flat-top stump; basin- fla		flat-top stump; log section;		step-top stumps(3); missing	
Features ¹	sections (3))	top stum	ps (2); undercut	(2); undercut feature; missing		notch feature		sections (2); log sections (2);	
			se	ctions (2); log se	ctions (3)			crown log section		
Figures	Fig. 2			Fig. 2	Fig. 2		Figs. 2 & 6-7		Figs. 2 & 8	
Archaeological Site	FdTa-75 FdTa-76		FdTa-77	FdTa-78		FdTa-79		FdTa-80		
Number of CMTs	<i>n</i> =1	<i>n</i> =1 <i>n</i> =1		<i>n</i> =1	n=1		n=1		<i>n</i> =1	
Aboriginal Logging	flat-top stump;	top stump; step-top stump;		step-top stump	flat-top stump; log		basin-top stump; missing		basin-top stump	
Features ¹	undercut feature	log section			section		section; log section			
Figures	Fig. 2	Fig. 2		Fig. 2	Fig. 2		Fig. 2 Fig.		Fig. 2	
Archaeological Site	FdTa-81	FdTa∙		dTa-84	FcTa-163		FcTa-164			
Number of CMTs	<i>n</i> =1		n=1		n=1	<i>n</i> =1		<i>n</i> =3		
Aboriginal Logging	basin-top stur	mp flat-top stump		tump; missing	flat-top stump; missing flat-top stumps (2)		flat-top stumps (2); m	missing sections (3); log sections		
Features ¹			section	; log section;	section; log section; (2); plank featu		(2); plank features (2)	(2); logging detritus (3); crown log		
			loggi	ng detritus	logging detritus (2)		section; undercut feature; test hole feature			
Figures	Fig. 2	Figs. 2		gs. 2 & 5	Fig. 3		Fig. 3			
Archaeological Site	FcTa-165		F	FcTa-166		FcTa-202		FcTa-203		
Number of CMTs		<i>n</i> =1			<i>n</i> =1	<i>n</i> =1		n=1		
Aboriginal Logging	flat-top stump;	flat-top stump; missing section; log		g flat-top st	flat-top stump; log section		undercut feature		top stump; log section;	
Features ¹	section; logging detritus (2)							crown log section		

Figs. 3 & 9

Table 1: Aboriginal Logging CMT Sites Recorded During 2016 Surveys (quantity of features in brackets, if no number then n=1)



Fig. 3

Figures

Figure 5: R. Duncan & E. White Inspecting FdTa-84 Logging Detritus, a Feature Frequently Associated with Log Sections and Evidence of Aboriginal Logging Practices



Figs. 3 & 4

Figure 6: R. Duncan Recording FdTa-73 Flat-Top Stump

Fig. 3



Figure 7: FdTa-73 Log Section, Proximal End.



Figure 8: R. Ziegler of A&A Trading Flagging FdTa-74 Step-Top Stump in Accordance with EBM Agreements Concerning 100% Retention of Recorded CMTs (Photo E. White)



Figure 9: E. White Recording FcTa-166 Flat-Top Stump

and doing are ecological questions involving a developmental interdependence of bodies, materials, social relations, and environments (Walls 2012, 2015).

Based on the current data set, it is difficult to fully decipher the characteristics and extent of the communities of practice these CMT sites partially comprise. They lack sufficient chronological control, detailed attribute analyses, and suffer from a relatively small sample size. Nonetheless, the skill required to successfully prepare, fell, buck, and work a mature cedar tree into the many potential shapes and sizes of wooden implements (i.e., log sections, planks, wedges, bark boards, canoes, weir stakes, masks, etc.) is impressive (see also Stewart 1984:29-104). All the recorded cultural features within the 2016 surveys data set offer glimpses into specific moments during the operational sequences of highly skilled ancestral Heiltsuk woodworkers.

Contact Era Heiltsuk Hand Logging

Unfortunately, a careful review of Dyck's (1991) report

yields no data on Heiltsuk hand logging licence hold-

Throughout the 1800's and 1900's, Heiltsuk people continued their skilful woodworking and forest management

practices. These processes include the selection of standing trees, falling, log transportation, eventual and transformation of monumental flora into various forms of material culture. With the arrival of Europeans to the Northwest Coast came an alternative form of cedar consump-



ers for the Spiller Channel study area. The records maintained by the provincial archive are somewhat problematic because there are gaps in the database (Dyck 1991:9). However, it is comknowledge mon within the modern Heiltsuk community that many ancestral Heiltsuk people were active

Figure 10: Ocean Falls in 1921 Image I-58635 courtesy of the Royal BC Museum and Archives

tion: the capitalist market of Settler society. Archival data document these economic shifts in the form of ledgers and maps of hand logging licences, as well as timber sales licences for the central coast. Sandra Dyck's review of archival data sources provides an insightful history of forest management and harvest activities during the early 1900's and serves as a valuable tool for tracking where and when individuals held hand logging licences on the central coast (Dyck 1991).

For the majority of the years (1910-1948) detailed by Dyck (1991:21), Heiltsuk people consistently held more than half of all hand logging licences for this area of the Northwest Coast. For example, in 1918 ninety percent of licence holders on the central coast were Heiltsuk. These figures are unsurprising considering "commercial hand logging by coastal Natives was a logical extension of their traditional knowledge, woodworking skills, and intimate relationships with the land and sea" (Dyck 1991:14). During this time, Heiltsuk people actively participated in and influenced the burgeoning forest industry of coastal British Columbia. For many Heiltsuk hand loggers, their log booming destination would be the major sawmill operated by Pacific Mills, Ltd. located at the town of Ocean Falls (Rajala 2005:26; Figure 10). Precontact technologies were used to fell trees as well as process and transport the logs for many years but Heiltsuk people eventually began to integrate new technologies and materials into their cedar harvesting and forest management practices. For example, Jacob White-a hand logger and boat builder-is described as the first owner of a gas enhand loggers who held licences within their hereditary family territories (Gitla-Elroy White, personal communication 2017). Therefore, as in any form of archaeological and historical inquiry, the absence of evidence in Dyck's (1991) report and the provincial archive should not be taken as evidence of absence (Stahl 2004; Trouillot 1995, 2003; Wolf 1982; Wylie 1988, 2000, 2008). Indeed, many contact era hand logged stumps were observed during the 2016 Spiller Channel CMT surveys (White and Abbott 2016a, 2016b). These traces of more recent hand logging activity alongside ancient CMTs in conjunction with Heiltsuk oral histories of the study area offer tangible data with which to track the continuous use and management of these forests throughout the contact era.

Discussion

The data presented here are valuable fragments of the larger interconnections of Heiltsuk land rights and title on the central coast. Many more Aboriginal logging features are already recorded within and near the Spiller Channel study area (e.g., Gogal 2013a, 2013b; Maxwell and Vincent 1997; Whalen 2013) and Heiltsuk traditional territory as a whole (Maxwell et al. 1997:69-70). The ubiquity of these archaeological sites and cultural features in old growth forests of the Pacific Northwest triangulates with other studies (e.g., Hoffman et al. 2016; Jackley et al. 2015; McLaren et al. 2015; Trant et al. 2016) to demonstrate the long-term and prolific presence of Indigenous people–from distant offshore fisheries to the highest mountain peaks–within their traditional ter-

ritories. Intriguingly, Boas (1973[1932]:104) also offers ethnographic data that supports the widespread inhabitation of the central coast within the specific context of forest management by stating ancestral Heiltsuk people would "make a canoe out of a large cedar tree growing on top of a mountain."

The impression of a paleo-landscape teeming with activity and people is magnified when one considers highly ubiquitous CMT site types such as the "embedded scars" of ancient tapered bark strip CMTs. For example, Earnshaw's (2016) recent post-impact assessment study of harvested industrial cut blocks in Nuu-chah-nulth territory on the west coast of Vancouver Island suggests that more than 50% of all CMTs are unobservable using only standing tree pre-impact assessment survey methods. The transferability of these findings to the rest of the Northwest Coast is not unreasonable when one considers similar findings by other archaeologists (Arcas 1986; Eldridge and Eldridge 1988; Eldridge 1997; Owens 2007: Stryd and Eldridge 1993). The ubiquity of other archaeological site types such as shell middens, intertidal mariculture features, stone petroforms, house platforms, hearth features, and lithic scatters further increases one's appreciation and knowledge of past people continuously inhabiting the lands and seas of the central coast and, more generally, the Northwest Coast as a whole throughout the deep history of these rich environments.

These findings suggest ancestral Heiltsuk people inhabited much more than the fringes of land surrounding the intertidal zone where shell-bearing archaeological sites are most frequently located. For example, there are archaeological data in other regions of the Northwest Coast supporting the notion that cedar resource harvest sites are found far from modern shorelines (Stafford and Maxwell 2006; Stafford 2017, this volume). The existence of CMT sites in areas considered remote or inaccessible to people with access to technologies such as helicopters, caulk boots, and Stanfield sweaters speaks to the sophisticated knowledge systems and resilience of the people who thrived in and shaped these environments for millennia. Along the way they left traces of their activities that remain visible to First Nations and archaeologists in the present. As Ingold (1993:152) persuasively argues, "[...] the landscape is constituted as an enduring record of-and testimony to-the lives and works of past generations who have dwelt within it, and in so doing, have left there something of themselves." It is in this way that knowledge of ancestral forest management practices within Heiltsuk territory grows:

Using an Internalist approach, my knowledge of CMTs collaborates with my knowledge of my cultural history of my people, their tribes, and their histories. Over 10 years, I worked in the field with a number of archaeologists who held the contracts prior to my arrival and later I inherited these contracts. Employing knowledgeable field assistants and training new ones, all who contribute their own histories and sense of knowledge passed on by their family members, strengthens my knowledge of forest use, traditional felling practices, and use of wood and bark products for ceremonial and everyday use [Gitla-Elroy White, personal communication 2017].

A lifetime of living and working on the central coast enables a strong sense of the deep history of this place. Although my own praxis is much younger, I too find my understanding of Heiltsuk history is complemented by working with Heiltsuk field assistants and other archaeologists. Evidently situated learning within my own communities of (archaeological) practice is pivotal to my professional development and knowledge of the landscapes of the central coast.

The interdisciplinary field of historical ecology overlaps with the treatises set forth by Lave and Wenger (1991) regarding situated learning within communities of practice insofar as the practitioners of this discipline also study the historically-situated and dialectical interactions between people, landscapes, plants, cultural practices, and non-human animals (Armstrong et al. 2017; Balée 2006; Balée and Erikson 2006; Braje and Torben 2013; Cronon 1983; Lyons et al. 2016). Within this framework First Nations people are landscape stewards who pervasively modify and continually create anthropogenic ecosystems. The development and maintenance of existing ecologies through a process of "mimicking or enhancing certain conditions that foster plant growth under natural conditions" allows for long-term sustainable harvest activities (Deur 2002:13). The continued existence of mature old growth forests on the central coast after millennia of ancestral Heiltsuk cedar harvesting attests to this: Selective, partial, or rotational harvesting events are manifestations of skill and knowledge developed over vast swaths of time and space (Eldridge 2017, this volume; Turner 2014; Turner et al. 2013; Table 2). The Aboriginal logging CMT sites upon which I focus here are the traces of generations of sustainable forest management practices as well as markers of land-use and occupancy. Clearly people are not separate from the surrounding landscape but are enmeshed with it through practices of expanding upon ongoing ecological processes, systems, and structures-ecologies prompted by the forest management practices of previous generations. Indeed, people are bound up in the lives of the

Table 2: Selection of Heiltsuk Words Associated with Forest Knowledge and Use*

λáğmá	to chop a tree down with an axe, to fell a tree
<u> Žužvsḿt</u>	to cut off all hair, to clear an island of all its trees and vegetation
kvúkva	to chop with an axe
gńca	to adze, to use an adze
<u>kvúkvakváw</u> á	wood chips, debris left after chopping
Źáxva	to mark a tree (as by rubbing against it, or with paint)
<u>kvážtu</u> á	to sit on top of a tree (as e.g. a bird)
xváxv?it	to start to come loose (said of tree bark)
wuxvĩảls	base of a (standing) tree (including ground and underbrush); base, foundation of a house
wágit	thickness, diameter (of a tree or log), to be thick (said e.g. of a tree, a log)
dvlkń	covered with something over the whole length (as a tree with knots or one's body with bruises)
dvíláža	to fall down (said of a tree or anything tall)
ğlíx	pitch of a tree (used as chewing gum after cooking)
žkvm	inner and outer bark of any tree except cedar
hủínúžy	person good at climbing tree or poles (as a "high-rigger")
pása	to separate the inner bark of cedar from the outer bark
mlkvílá	to make rope by twisting inner cedar bark
dńvás	red cedar
dnás	inner bark of red cedar
díxy	vellow cedar bark
díwás	vellow cedar
tiskys	young vellow cedar
dádnsažút	to pull off red cedar bark
dágí	sheets of red cedar bark for making herring egg hoves or for roofing
dádíná	sheets of red cedar bark for making herring egg boxes of for roofing
otó	to split with the grain (as gedar); to show gracks (as ice, or a board exposed to the sup)
	bouche limbe or roote of order used for making baskets
2 darwinna	bead ring made out of red ceder bark
1;ž	rad order
11X	to make a coder bork mat
lixyiia	to finate a cedar bank finat
lining	in preat cedar boughs (as which making baskets)
lívů lívů	Innel red cedar bark mat
nwasgm 1616ž2a	te tru te get e geder leg
	to try to get a cedar log
ypa	to make a cedar bark mat (with a special kind of weave)
gga	to come loose (as the bark of cedar in May and June)
<u>Anx/a</u>	inner hemlock bark that is ready to be taken off the tree
luxy:luqya	to eat inner hemiock bark
<u> AaAmzağuayu</u>	sparks from burning dead hemlock (used by Raven in a story)
wnca	to be sunken, submerged (as the hemlock branches on which the herring spawn
háža	to build a canoe up in the woods
<u>Amgás</u>	yew tree
gámúla	black cod hook made of yew wood
<u>ávn</u> m	sharp-edged instrument made out of yew wood and used to make shakes or take bark off trees
hníwas	spruce tree
hníwasla	place studded with spruce trees
<u> Žúkvpa</u>	to get spruce roots (for making baskets)
ğvlíx	spruce pitch, chewing gum made out of spruce pitch
łńx	wild crabapples
łńxa	to get wild crabapples
łxpta	to go inland to get crabapples
łńx.más	wild crabapple tree

*= Heiltsuk Digital Dictionary (v.2.1). List compiled by Jennifer Carpenter, Culture & Heritage Manager, HIRMD/HCEC Heiltsuk words typed using the Heiltsuk Orthography Custom Unicode keyboard developed by Aidan Pine, UBC/FNEL

trees as much as the trees in the lives of the people (Ingold 1993:168; Sanders 2017, this volume; Watts 2013). The landscapes of the central coast are the antithesis of the *terra nullius incognita* imagined by some: They are carefully managed and intimately known cultural forests. During the contact era this knowledge and active management of these landscapes continue. Although complicated by the effects of colonialism, Heiltsuk people harvest cedar from the same cultural forests they always have while articulating with the new socio-political institutions and regulations of Settler society—one of many moments in the ongoing and long-term historical ecology of the central coast. This time of radical cultural, economic, settlement, and demographic transformation influences shifts in the technologies, techniques, access to particular harvest areas, distribution of harvested wood, and motivations for Aboriginal logging practices. Nonetheless, Heiltsuk people continue to access, use, and manage the same forests previous generations did since time immemorial. The archival data set of contact era Heiltsuk hand logging licences for the central coast is a link between the deep history of the region, the tumultuous times associated with the arrival of Europeans to the Northwest Coast, and the present. It is a facet of Heiltsuk land-use, sustainable forest management, intergenerational knowledge (re)generation and enskilment, as well as long-term landscape dwelling.

These processes persist in the twenty first-century. Much like during the early contact era discussed above, Hei-Itsuk people continue to assert and practice their rights to how cultural forests of the central coast are managed. This adaptation in the face of shifting needs and historical processes is a hallmark of Heiltsuk people in the past, the present, and will continue in the future. For example, ecosystem based management (EBM) agreements in place between the Heiltsuk Integrated Resource Management Department and various developers are modern extensions of ancient sustainable forest management strategies Heiltsuk people have always practiced. While the recording and protection of archaeological sites threatened by industrial timber harvesting is an important aspect of these management strategies, their implications spill out into many other components of how these landscapes are stewarded. Archaeologists-particularly First Nations archaeologists-are well situated to act as bridges between foresters and local Indigenous communities. Ensuring the needs of these diverse interest groups are met requires mutually open and transparent communication. A shared respect of the forest is at the heart of these supportive and meaningful collaborations.

Holistic approaches to resource management-in all of its diverse and interconnected forms-are where the strengths of EBM agreements lie. A&A Trading is to be commended for their participation and cooperation in these negotiations and compromises: Retaining 100% of recorded CMTs and conducting archaeological surveys of all proposed developments are not currently universal practices in BC forestry despite mounting evidence of the problematic nature of archaeological predictive modelling (Ebert 2000; Wheatley 2004). Without the opportunity to sufficiently investigate every locale slated for development, it is unlikely that CMTs and other archaeological site types will be adequately managed despite being protected by the *Heritage Conservation Act*. As outlined by Earnshaw (2016:176), "the harvesting of cedar and other forest resources is deeply connected to contemporary issues of occupation, ownership, and land rights." Taken together, this calls for a radical reassessment of what constitutes "best-practices" for CMT identification, survey methodologies, and management recommendations (see also Angelbeck 2008; Earnshaw 2017, this volume; Klassen et al. 2009).

Conclusion

Management of cultural forests on the central coast is, as it has always been, intimately entwined with the histories and ecologies that both shape and are shaped by past and present inhabitants of these vibrant landscapes. Some knowledge, technologies, techniques, and skills are altered through time yet innovative correspondence between Heiltsuk people and the many historical, ecological, social, material, political, and economic dynamics of their unceded traditional territories remains consistent. Holistic approaches to management strategies, such as ecosystem based management (EBM), are modern extensions of ancient and sustainable forest stewardship. The traces of these historical ecological processes are, in part, manifested by Aboriginal logging CMT sites-of which only a few are detailed here. Integrating archaeological insights with the multiplicity of knowledge systems and practices that contribute to healthy anthropogenic environments is an important step towards ensuring these cultural forests thrive for generations to come.

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Callum Abbott is a graduate student in the Anthropology department at the University of Victoria who specializes in coastal archaeology. In addition to his academic focus, he is actively involved in several consulting archaeology projects in British Columbia. He enjoys the diversity of archaeology that takes place in this province and looks forward to learning more about the fascinating histories of the people who have lived here since time immemorial.

Cedar-bark Harvesting and Dendrochronology in the Kwoiek Valley, Central Fraser Canyon, Southwest British Columbia:

Reading the Ancestors' Core Message

by Adrian Sanders

Abstract

Archaeological inquiry focused on cedar bark harvesting has been an understudied topic within the species' Salishan range. This is particularly evident when considering the frequency archaeologists encounter this signifier of occupation and land use practices, in comparison to other cultural signatures. The author draws from four consecutive field seasons of cedar bark harvesting investigations in order to better understand one community's relationship with the western red cedar-as a socially integrative being1. The author inquires into cultural concepts that may have given rise to methods of cedar bark harvesting in the Kwoiek Valley, southwest British Columbia, which point to refugia of harvesting knowledge, distinct within Nlaka'pamux groups. The article's focus is refined to a cluster of bark stripped trees that express a unique pattern in the Culturally Modified Tree (CMT) data in British Columbia-one of which is proposed to contain the single most bark stripped scar of any tree recorded in the province, and possibly anywhere in its entire Cascadian range. My thesis is that these cultural markers indicate a custom of bark removal derived from a conservation-based reverence for the cedar being, and that this social dynamic grew in part from place-at one fringe of the cedar's habitat.

> Consider a tree and a man and an axe. We observe that the axe flies through the air



Figure 1. Map showing project area, within its Central Fraser Canyon setting.

and makes certain sorts of gashes in a pre-existing cut in the side of the tree. If now we want to explain this set of phenomena, we shall be concerned with differences in the cut face of the tree, differences in the retina of the man, differences in his central nervous system, differences in his efferent neural messages, differences in the behavior of his muscles, differences in how the axe flies, to the differences which the axe then makes on the face of the tree. Our explanation will go round and round that circuit. In principle, if you want to explain or understand anything in human behavior, you are always dealing with total circuits, completed circuits. (Bateson 1970:465)

Introduction

Kwátkwlhp², western red cedar in Nlaka'pamux, is a cultural keystone species, regarded for its varied forms of raw material and medicine. Accordingly, it is highly revered. The distribution of Kwátkwlhp within the Nlaka'pamux territory is not as ubiquitous as in the territory of their Coast Salish, or Lower St'at'imc neighbours. The Nlaka'pamux territory spans the Lower and Central Fraser Canyon region between Yale and Spuzzum in the south to just south of Lillooet and Ashcroft (the latter along the Thompson River) in the north (Hill-Tout 1978:41; Teit 1900:168). The social-ecological patterning of plants, animals and people varies considerably within the Nlaka'pamux territory, influenced by distinct physiographic and climatic phenomenon. By the time the Fraser River is joined by the Thompson River at Lytton, the country is entirely dominated by dry zone biota. The country south of Lytton receives significantly more precipitation the further south one travels. The same is true of valleys that feed the Fraser from the west, making the Kwoiek Valley a relatively wet ecosystem within the larger Nlaka'pamux territory, being situated in the southern and western portion of the Fraser Canyon (Figure 1).

The aforementioned climatic phe-



Photo 1. Image showing the signature, upper cut of the rectangular bark strip scar.

nomenon appears to affect the cultural identity of the region's inhabitants. The linguistic distinction between the *Utá'mqtamux* ('people above') and the *Nku'kŭmamux* ('people below') described by Teit (1900:168) in reference to the centre of the Nlaka'pamux world in Lytton³, signifies the intrinsic relationship between people and the lands they inhabit. *Nlaqla'kîtîn* (Kanaka Bar) has been described as a liminal territory; its own space between two more-clearly defined areas and cultural expressions.⁴

Kwátkwlhp is dependent upon abundant groundwater, wet climatic conditions and is intolerant of extended drought. Correspondingly, it is observed that the *Kwátkwlhp* diminishes as one moves north in the Fraser Canyon, making the Kwoiek Valley the northern frontier watershed⁵ intersecting the Fraser Canyon with a significant *Kwátkwlhp* population from which to harvest reliably, and sustainably.

This article discusses a pair of anomalies within the realm of CMT phenomenon observed within the Kwoiek Valley. It examines firstly, why a particular CMT type—the rectangular bark strip (e.g., Photo 1)—is diagnostic of *sísek'w* (cedar bark) harvesting methods within the Kwoiek Valley but not elsewhere within the Nlaka'pamux territory where the harvesting methods either reflect both rectangular and tapered methods, with the overriding emphasis on the lat

 Table 1. Table expressing comparative distribution of cedar CMTs, and particularly bark stripped types within major watersheds surrounding the study area. Note the complete absence of bark-stripped *Kwátkwlhp* features north of Kwioek Valley⁶.

			СМТ	
Watershed	Location	Site	Count	Туре
Stein	Middle Valley	EbRk-11	1	arborgraph
Scuzzy		ElRj-1	186	?
Nahatlatch	<u>Nahatlatch</u> /FR confluence	DlRj-15	1	unknown
Skuzzy	Skuzzy/FR confluence	DlRj-16	186	rectangular
				tapered (n=441 or 91%) rectangular
Ainslie	Upper Valley	DlRi-66 ⁷	483	(n=26 or 5%)
Ainslie	Upper Valley	DlRi-64	?	rectangular/tapered
Anderson	Upper Valley	DlRi-61	1	rectangular
Anderson	Upper Valley	DlRi-60	4	rectangular
Anderson	Upper Valley	DlRi-77	?	tapered
				tapered (n=82 or 56%) rectangular (n=42 or
Anderson		DkRi-74	147	31%)

Table 2. Dendrochronological data on CMTs within the Kwoiek Valley.

Locality	CMT & scar No.	Scar Age (Ring Count)	Scar Date (with estimate)
EaRj-84	8 (scar 1)	294	before 1716 (~25 years)
EaRj-96	1 (scar 1)	287	1722
EaRj-75	1 (scar 2)	282	before 1728 (~12 years)
EaRj-70	2	279	1731
K4/T11	2 (scar 1)	264	before 1746 (much older)
EaRj-72	6 (scar 1)	245	1766
EaRj-71	1	242	before 1768 (much older)
EaRj-90	1 (scar 1)	226	1784
EaRj-70	2	223	before 1787 (much older)
EaRj-70	1	222	before 1788 (much older)
EaRj-90	1 (scar 1)	211	1799
K4/T11	1	209	1801 (<5 years)
EaRj-72	7 (scar 2)	208	1803
EaRj-72	7 (scar 1)	202	1809
EaRj-72	9 (scar 1)	201	1810
EaRj-84	5	199	before 1811 (>20 years)
EaRj-72	6 (scar 3)	198	1813
EaRj-70	1	194	before 1816 (~5 years)
EaRj-97	1 (scar 1)	182	before 1828

EaRj-97	1 (scar 1)	178	1832		
EaRj-94	3	172	1838		
EaRj-70	5	166	1844		
EaRj-97	1 (scar 1)	166	1844		
EaRj-72	2 (scar 1)	166	1845		
EaRj-72	4 (scar 1)	63	1848		
EaRj-72	6 (scar 2)	162	1849		
EaRj-72	1 (SE scar)	159	1851		
EaRj-97	1 (scar 1)	159	1851		
EaRj-72	1 (SE scar)	158	1852		
K4/T11	1	157	1853		
EaRj-72	9 (N scar)	155	before 1855 (>10 years)		
EaRj-70	2	145	1865		
EaRj-75	1 (scar 1)	145	1865		
EaRj-72	3	144	1866		
EaRj-70	4	141	1869		
EaRj-84	9 (scar 1)	132	1878		
EaRj-70	4	125	1885		
EaRj-71	2	129	1886		
EaRj-72	3 (scar 1)	125	1886		
EaRj-94	4	123	before 1887 (much older)		
EaRj-89	1	122	1888		
EaRj-96	3 (scar 1)	120	1889		
EaRj-72	9 (NW scar)	121	before 1889 (>20 years)		
EaRj-71	5	117	1893		
EaRj-71	5	11	1899		
EaRj-71	2	109	1901		
K4/T11	2 (scar 2)	106	before 1906 (~15 years)		
EaRj-96	4 (scar 1)	102	1907		
EaRj-96	5 (scar 1)	97	1912		
EaRj-96	6 (scar 1)	79	1930		
EaRj-96	1 (scar 1)	48	1953		
EaRj-72	4 (scar 2)	41	1970		
EaRj-72	3 (scar 2)	36	1975		
EaRj-72	4	n/a	n/a		

Table 2 (cont.). Dendrochronological data on CMTs within the Kwoiek Valley.

* All CMTs are western red cedar rectangular bark stripped, except for those from site EaRj-96, which are ponderosa pine pitch collection trees.

ter variety, or rely strictly on tapered methods (Table 1)? Secondly, it asks why a select number of CMTs were so heavily utilized, showing a significantly greater proportion of *sísek'w* harvesting than the majority of bark stripped trees?

Survey Context and Results

Survey covered the majority of the Kwoiek Creek riparian zone, along at least one bank, including mid-channel islands (creek level dependent), and along the lower seven km of the waterway. Smaller patches of survey areas were carried out throughout the Kwoiek Valley, and in areas along the west bank of the Fraser River directly north and south of the confluence with Kwoiek Creek for several kilometers. The result of this survey coverage over the course of four field seasons (2008-2011) was the recording of 202 CMTs, consisting of 295 distinct scars.8

From these CMT data, 54 dates (Table 2) were obtained using increment bore (42) methods expressed by Barret and Arno (1988), and Jozsa (1988) from 30 scars on 27 trees, and 12 dates from 12 scars on seven chain sawed cookies. All but five dates from five ponderosa pine trees cored and analyzed in 2011 were done so from *Kwátkwlhp* between May 16 and 18, 2011.⁹ The 12 scars from seven cookies were cut during the autumn of 2012, and analyzed by Fraser Bonner in the summer of 2013.

Discussion

All but ten of the 202 (~95%) *Kwát-kwlhp* CMTs constitute rectangular bark-stripped scars; seven trees with girdles, one aboriginally-logged tree, a trap tree, two kindling scars, and a plank removal scar. Even girdled trees use the same technology of bark removal as the prominent rectangular variety. One kindling scar is on a tree

Photo 2. Image showing example of coring healing lobe from a bark-stripped tree seasonally inundated by the Kwoiek Creek.

with a rectangular bark-strip. This leaves only five scars and three lone $Kw\acute{a}tk$ wlhp (~1.5%) in the entire valley that were modified using a technology other than removing the bark, but rather the use of an adze and wedge to fell a tree, and to remove solid wood chunks.

This evidence clearly indicates a unimodal technological tradition, reflecting a specific industry. The minimum temporality of this industry is expressed by proxy in the bark stripped scars (healing lobe) ages, which we know through dendrochronological analysis span a minimum of 259 years, from 1716-1975.

Of the 202 Kwátkwlhp CMTs, 128 have one scar, 44 have two scars, 16 have three scars, eight have four scars, three have five scars, two have six scars, and the one true anomaly has 12 scars.¹⁰ One question that arose from this data was why certain trees were selected for repeated sisek'w removal episodes, while others represent single use episodes, and still other trees seemingly suitable for sísek'w removal in the same patch were unmodified? The author takes four scars to suggest an unusual quantity when compared to available CMT data. Bark stripped trees with four or greater scars were recorded in contexts of CMT patches (five of eight), and three were recorded as lone CMTs. One of the latter-EaRj-97 CMT 1-stands alone in the forest, a short distance from the confluence with the Fraser, offering ease of access from the main precontact settlement Hoy-een. The other anomaly trees are further up the valley at EaRj-85 where CMT 2 shows six bark stripped scars, and EaRj-74 where CMT 2 shows 5 bark stripped scars.¹¹ Interestingly, of the six trees exceeding four scars all are immediately flanking Kwoiek Creek, and two overhang with scars removed below freshet levels. Along with other CMTs recorded along Kwoiek Creek that are similarly seasonally inundated by high creek levels (Photo 2)-including two at EaRj-72-these episodes of bark removal match

Photo 3. Image showing example of stacked stripped scar (foreground), each extending between 2-3 m, with single stripped tree in background.

the ethnographically accepted period for *sísek'w* harvest, during the pre-freshet, early spring.

The technological aspect of making careful incisions (top or bottom) in order to begin or remove the bark of a rectangular strip exceeding five, six, or seven meters is impressive to imagine, as are the relict scars to observe. The frequency with which these double or triple stacked barkremoval scars appear in the Kwoiek Valley is another CMT anomaly (Photos 3-5). There are numerous examples of single bark strip removals exceeding five and six meters, which indubitably signifies special technologies, and expertise. The majority of bark strips exceeding three meters are reflections of double and triple bark-stripped scars, some of which measured over five and six meters. However, others of great height are single strip removals; the most awesome being a 1.6 m long strip starting at a height of seven and a half meters, making the top cut over nine meters high. In this instance, the ground surface on the other side of the tree was an additional minimum of five meters lower, depending on the level of the Fraser River at the time of scarring (Photo 6).

It is impressive to imagine the skill and technique required in making these bark strips. After a period of amazement,

Photo 4. Image showing lower-middle section of a stacked bark-stripped girdle tree.

Photo 5. Image showing stacked rectangular barkstripped scars in the foreground.

Photo 6. Image showing the lower bark-stripped scar on the same tree with a scar height greater than nine meter, immediately flanking the Fraser River, visible in background.

the desire to record these features accurately inspired adequate methods of our own, possibly lending insight into past harvesting practices. One of numerous questions that came to mind—often while performing these acts of arbor-acrobatics—was why were the Kanaka going through the added efforts to collect *sísek*^w that was cut square at both ends? Was it a functional motivation that led to this harvesting technique, even in light of the associated risk, or was it a learned practice, carried on from prior times, that they identified with, and could be identified by—a custom?¹²

Both influences could be argued as dominant cultural motivators in their own regard, although the following explanation which bridges both cultural considerations is preferred. In consideration of the equidistance of *sisek*^{*iw*} material lost on either side of the removed strip from that remaining of the inverse material between the tapered vs. rectangular methods, it is doubly more productive to harvest bark using the rectangular stripping method. Further, and to the main thrust of this article, efforts taken to acquire the expertise of constructing ladders and scaffolding (e.g., Photos 6-8) in order to gain height for maximizing not only the single ground strip, but to make

Photo 7. Image showing Rodney making an accurate scar height measurement, using live limbs.

elevation strips throughout the tree is a pure expression of sustainable harvest by the Kanaka managing the *Kwátk-wlhp* population within Kwoiek Valley. Supporting this view is the paucity of evidence of girdled trees within the valley, a counter practice that kills the tree. While the practice of girdling is not wholly foreign to the valley, the only example of its use is on the candelabra tree, where three leading limbs were girdled, while still allowing other leaders to flourish, and thus promoting the tree's to survival (Photographs 9 and 10). This example adds to the evidence

of sophisticated means by which the local inhabitants developed their *sísek*^{*w*} harvesting management strategy. With this practice and system of preservation in place, the Kanaka could more confidently manage their local *Kwátkwlhp* needs, while engaging in the broader Salishan regional economy, and the burgeoning opportunities that arose with the Fur Trade (Maclachlan 1998:32, 33, 65), Gold Rush, and CPR railway construction periods.

The single greatest example of this custom is evinced in the lone candelabra Kwátkwlhp overhanging the lower section of the Kwoiek Creek, which exhibits a minimum of twelve bark removal scars (Photos 9, 10 and Figures 2-3). Dendrochronological analysis from four distinct scars associated with this being provides four dates: prior to 1828, 1832, 1844, and 1851, spanning a minimum use-life of 23 years, but very likely longer. This suggests that the social ecological relationship could have been a personal one, between Kwátkwlhp and sísek'w harvester, craft artificer, and trader.

Photo 8. Image showing the author coring an elevated scar lobe, using scaffolding.

Figure 2. Surface terrain map showing rough location of candelabra *Kwátkwlhp* in relation to Kwoiek Valley geography. The primary winter village settings are set just off the map, east of the train tracks, on the same second terrace above the north bank of the Kwoiek Creek/Fraser River confluence.

Photo 9. Image showing single bark-strip on lower trunk section (#9), and all three single rectangular (#1) and double girdle (#s 2-5) strips associated with the upper 'candelabra' section (see Figure 3).

Interpretation

Kwátkwlhp growing conditions within the Kwioek Valley are restricted to the riparian zone, where ground water is abundant; which in the valley's lower section comprising the focus area of the CMT survey is isolated due to the steep topographic relief, which sheds water rapidly. Based on this ecological constraint, *Kwátkwlhp* groves, and even specific Kwátkwlhp entities would be part of the local inhabitants' cognitive maps, factoring in to their phenomenological mobility patterns throughout the valley, to the extent of constituting mnemonic

Figure 3. Sketch of candelabra *Kwátkwlhp* showing orientation of twelve recorded bark strips, in relation to ground surface and seasonal creek level.

Photo 10. Image showing two standing-dead girdled leaders, and a third leader with a rectangular bark-strip atop the candelabra *Kwátkwlhp*. devices aiding in navigation. When it came time to harvest sísek'w, known locations were visited, with specific trees in mind. Once the *sísek'w* was harvested from the living Kwátkwlhp, its life force lived on, through oral accounts, recognizing which particular Kwátkwlhp offered itself, allow the weaving of a berry basket, baby cradle, or some other artifact. These inalienable heirlooms, wove tighter the interspecies lineages of Kwátkwlhp and people whom cohabit place, synergistically nurturing subsequent generations.

Artifact manufacture was not the sole nature of the gift exchange between people and Kwátkwlhp; sísek'w has long been har-Nlaka'pamux and other Salishan communi- residential complex. ties (Teit 1900:259, 1906:232; Pearl Hewitt pers. comm. 2014). In this light, Kwátkwlhp was an individual's, family's, or community's means for producing myriad essential tools, dwelling structural members, bedding, common and prestige wears, implements, medicines, regalia, dyes, and transportation vessels (Boas 1895; Teit 1900, Turner et al. 1990:95-96), as well as a means by which exotics-foods, raw materials, and crafted products could be acquired through trade and exchange.

Aiding in the practical aspect of this exchange network is the fact that Sluktlakten (Hill-Tout 1899), or according to Teit (1900:171) Nlaqla'kîtîn, located just north of the 'Kanaka flats' at the village of Hoythe Fraser River-its name baring its function-translated as "the crossing-place, [or] place for crossing the river" (Teit 1900:171).

People travelling the well-established trails that paralleled the Fraser River would have gained access to the Kanaka villages of Klukkanktan and Hoy-een (Good 1867) via this crossing point, encouraging interaction, and with it, trade and exchange centered at the villages. Kanaka Band member Francis Rodney Garcia (Rodney) communicated to the authour (pers. comm. 2009), "that's where the people used to cross in their canoes," pointing slightly northeast from a sentry position immediately flanking a pithouse village (EaRj-12) perched on a high hogs-back above the Fraser River,

Photo 11. Image showing Nlaqla'kîtîn, known canoe-crossing place, connecting the two villages of Klukkanktan and Hoy-een located on opposite banks vested as a trade item between neighbouring of the river, taken from the most elevated pithouse village in the Kwoiek

een (Good 1867), is the most renowned Photo 12. Image showing massive back-eddy (possibly Nkoiam) just downcanoe-crossing place along this section of river from Nlaqla'kîtîn, taken from same sentry pithouse village as previous image. Winter village of Hoy-een (EaRj-65) seen on extensive flat at head of back-eddy.

an elevated bench above a bend north along the Fraser River from Hoy-een. Following his arm southward, pointing slightly southward and below our position, he continued to explain, "... and they would end up in this giant back-eddy on the west side, which they could also use to return back to the east side"¹³ (Photos 11-12). It is possible that Rodney was pointing out what Hill-Tout (1899) recorded as Nkoiam, a toponym ascribed to a section of the waterway south of Sluktlakten meaning "eddy".

An extension of the gift exchange relationship involving *Kwátkwlhp* includes the custom of transplanting¹⁴, as indicated from a conversation with respected Nlaka'pamux elder Pearl Hewitt (2014):

People gift something from their territory when they visit other nations. That's how I figure that cedar tree got there [near Blue Earth Lake], because it was in the vicinity all on its own.... That is the only way that the cedar would have entered the territory—by gift.

When asked about the cultural context behind this isolated, transplanted *Kwátkwlhp*, deep in a cedar-barren land, a gift from a visiting southern Salishan (possibly Nlaka'pamux) neighbour, Pearl shared that the tree was planted to mark a place that is sacred to the recipient, "*It must have marked some sort of meeting place, along a trail, or a place important to somebody.*" Pearl recalled one such place:

My mother had a special place where she goes to, so if you want to put something their in her honour, you would plant a tree there, rather than a monument. The tree itself is the monument.... When we honour our deceased, we usually planted a tree in a significant place where they go.

Addressing the bipartite inquiry around the unique signature of rectangular bark stripped Kwátkwlhp, and the rare expression of intimate harvesting custom with certain Kwátkwlhp, I inquire whether the functional argument that wider trees with more bark allow for more sísek'w harvesting potential is satisfactory? Working from data and experience tied to the Kwoiek context, I am encouraged to move beyond this simplified explanation, and suggest not, in this instance. Drawing from the context of the six trees exceeding four scars, it is observed that they are far from conforming to the descriptions of what a sísek'^w harvester is seeking from a strictly functional perspective (unobstructed sections of bark suitable for taking clean strips, younger trees with more pliable bark, minimal limb presence, ease of access i.e., ground level etc.). Conversely, the bark removal scars on these trees show the ingenuity and challenge that was taken in the process.

The first part of the inquiry appears at first glance to be a dead ringer; rectangular stripping methods produce double the material than that of tapered methods, and in this measure, are expressive of a cultural custom spawned through a lineage of sound ecological management of one principle territorial resource. In simple terms, this is my thesis, although to fully appreciate the cultural aspect of this custom, we must move on to the second component of the inquiry.

The recurring pattern with which certain Kwátkwlhp were harvested from lends credence to the perspective previously introduced, that we are experiencing traces of a social-ecological relationship between an individual, family lineage, or community and the Kwátkwlhp. Such perspective draws from experiences of sensing certain archaeological contexts to be more than merely material expressions of past land use practices, appreciating them instead as areas of inherent power that attracted particular people, and practices. The latter perspective draws on the breadth of human faculties that may hold the answer to why certain rock-shelters were used for ceremonial use rather than strictly functional shelter, why certain rock faces or boulders were pecked or inscribed with paint and others left bare, and why certain trees were used in a recurring, more intimate manner while others seemingly suitable remain unmodified—it is a matter of an ontology that reveres the animate, and the gift (complete with training) that enables people to communicate with spiritually-potent nodes.

The recursive logic of these inquiries are guided by the wisdom of oral knowledge—the living history—which animates the discrete parcels of data obtained by archaeologists (i.e., CMTs), into a coloured and textured world of plant-animal-land-water-people interrelations.

Summation

The activity of *sísek'*^w harvesting by the Kanaka has been discussed as having developed, in part, through a unique set of environmental conditions, within an ecological edge, which allowed for an *in situ* cultural custom to form—that is—through a comparative difference. Difference in CMT harvesting methods was at the crux of an early-stage coastal graduate study inquiry on the theme, which postulates the following *identifier* influences, though not *identifiy* influences:

My data, sparse as they are in relation to the trees and sites yet to be explored and recorded, suggest that there is a difference in the way that trees are stripped, and that the difference may correlate with either language territory or time of alteration.(Hicks 1984:13)

Bateson (1970; a la Korzybski 1931) noted that difference is what is put on the map, while the rest is the territory. What this reasoning implies is that phenomenon that commonly arrests our attention is difference, rather than likeness. The author postulates that prior to the period of modern transit in the Fraser Canyon it was the difference¹⁵ in the distribution of the *Kwátkwlhp* within Kwoiek Valley from that to the north and east that gave rise to an expression of identity association, vis-à-vis sustainable management strategies associated with *sísek'w* harvesting, and unique customs involving the movement of both processed *sísek'w* and raw *Kwátkwlhp* throughout the broader Nlaka'pamux territory.

I contend that the unique *sísek*^w harvesting methods developed by the Kanaka arose through a balanced ethic of satisfying the communities' internal technological, medicinal, and spiritual needs, while accounting for a degree of external socially beneficial commerce. Teit (1900:259) confirms that "cedar-bark" was part of the complex of goods that were exchanged between "the Lytton band … with the Lower Thompsons," for which the Kanaka were the group furthest north along the Fraser River with a managed supply with which to engage such commerce. Cedar basket weaver Pearl Hewitt (2014 pers. comm.) shared that she receives cedar to-day from Lower Nlaka'pamux members, in exchange for "*local trade items such as juniper, sweet grass, and sage*."

The balancing of local management customs and intratribal socio-economic relations at its core, is an expression of social-ecological knowledge systems co-created, and transmitted over at minimum, the last three centuries, and were the archaeological visibility able to provide better temporal resolution, likely deeper into antiquity. Over this period, a narrative landscape has been woven, in part, through the sacred recognition of the *Kwátkwlhp* being's prominence, in life, and sacrifice.

Notes

¹The perspective that a cedar tree is a species, in an ultimate sense, logically leads to its strict treatment as a resource. Acknowledging the cedar foremost as an animate being embodies a perspective that its relationship within an indigenous cosmology nests it within a complex web of interconnection amongst other beings. This social-ecological relationship is observed within the gift exchange custom, discussed later in the chapter.

²The phonetics used by Nlaka'pamux members most closely associated with the Kanaka within Turner et. al's (1990:94-95) Thompson ethnobotanical analysis has been adopted here for the generic cedar tree, but compare the nomenclature for the myriad tree components and their applications—nine of which were expressed by elders within that study.

³ Regarded as such because this is where their deity Coyote's Son returned to earth from his celestial journey (Teit 1900:337). Spin'tlam, head chief of the Nlaka'pamux in 1858, in describing his peoples' territorial boundaries for which he had "jurisdiction" states, "[*a*]t Lytton is my center post. It is the middle of my house, and I sit there..." (in Hanna and Henry 1996).

⁴Teit (1900:171) classifies the Kanaka as the furthest group south comprising the upper division of the Nlaka'pamux, but notes under its related "Location" that "some Indians class it with the Lower Thompsons." He also notes prior that "[s]ome Indians think that the Si'ska ought to be included in the Lower Thompsons" (169), and they neighbour the Kanaka to the north.

⁵Sections of the Stein Valley also host cedar patches, although interestingly, the signature of harvesting is absent (see Table 1).

⁶Information provided herein is not intended as an exhaustive comparative analysis, rather, it provides resolution to the bipartite argument, supporting the position that the Kwoiek Valley offers the most northern ecology suitable to healthy *Kwátkwlhp* populations, a social-ecological context for its harvest, and a localized custom of rectangular *sísek'w* removal, with technological and aesthetic exceptions.

⁷DlRi-66 in the Ainslie watershed, along with DkRi-74 in the Anderson watershed offer representative sample sites for exhibiting *sísek'w* harvesting methods in the region, from focused studies targeting CMT-related data (Pegg et. al. 2013).

⁸This investigation is the result of a broader study, the particular aim of which constrained survey methods, and as such, data presented are expected to be non-exhaustive.

⁹The author would like to thank Francis Rodney Garcia, and John Arnett for their spirited collaboration during this period.

¹⁰These numbers represent the obvious scars with significant cultural indicators associated (i.e., cut marks and scar morphology). Often times there were features signifying significant lobes had closed in on themselves, barely detectable folds in the tree trunk area that took a keen study with knowledge of a trees scar-healing process to interpret. My sense is that if a cross section were available, many of these trees would reveal a greater number of scars, expressing a greater antiquity of *sísek*^{'w} harvesting in the valley, and following the thesis of this article, an endured, recurrent, yet conservancy-based use of particular trees. In fact, one of the cookies analyzed revealed precisely that—an earlier, grown over scar.

¹¹It is highly likely a number of CMTs were removed with the construction of the FSR, as it parallels closely Kwoiek Creek, particularly through the canyon section roughly corresponding to the survey coverage area, affecting the distribution pattern and quantity of extant CMTs.

¹²The evolution of a concept into an custom, requires a con-

tinuity of community in place, enabling a formation of praxis—the melding of practice (*sísek*^{'w} stripping), guided by a cosmological understanding of how it nests into a way of being with the land spirit (*Kwátkwlhp*).

¹³Simon Fraser's (Lamb 2007:110-115) account of navigation through the Fraser Canyon south of Lytton was a testament to the necessity of the land trail, which in the language his guide, a man well accustomed to canoe travel was called "*carrying places*".

¹⁴The social implications of gifting cedar trees to neighbouring communities with which established trade and exchange relations exist, where for instance the potential of transplanted cedar trees may lead to a viable cedar patch, and local resource, thus negating that prominent entity from the trade circle, appears at one level deleterious to the gifting individual, family, and community, unless, the perspective that an intra-tribal benefit is at the heart of the gift. Another possibility, is that local indigenous knowledge is aware that transplanted cedar may take, and live a long life, as is the case with the above example, but it is also known that a lone transplant will not result in a significant range extension, and therefore, constitutes a symbolic artifact of a social-ecological relationship.

¹⁵The likeness is not absent from this assessment; they persist in the territory of cedar distribution to the south and west, other biotic patterns shared across the Nlaka'pamux territory, and in other cultural institutions that arise therein.

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Adrian Sanders owns and operates Rhizome Cultural Heritage Research and Consulting Ltd., through which he facilitates an array of anthropological and archaeological studies, investigations, policy drafting, and educational opportunities. While a primary research focus is given to the St'at'imc, his broader interests span a holistic inderdisciplinary inquiry into Salishan lifeways, merging past and present.

THEMED ISSUES

This has been the first part of a double issue featuring a specific theme in BC archaeology. We are hoping that in the future other 'guest editors' could take on other themed issues in their respective interest areas and gather similar collections of articles for *The Midden* in the future.

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- submit all work in either OpenOffice or Microsoft Word
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- no page numbering
- bold and italics may be used where appropriate

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Image Of interest to BC archaeologists, aesthetically or scientifically interesting, or mystery object with included caption

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