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Continuity and Knowledge Transmission on the Northwest Coast: Insights from Wet Site EkTb-9, Triquet Island, Ḥúláẇitx̌v Tribal Area, British Columbia, Canada

Alisha Gauvreau[1*]

[1]Department of Anthropology, University of Victoria, Victoria, Canada.

[*]alishagauvreau@gmail.com

Abstract Paleoethnobotanical wet site investigations enhance our understanding of ancestral people's relationships with plants and how they have evolved and persisted into the present. Archaeological records of human-plant interactions were historically underutilized or underreported at sites along the Northwest Coast of British Columbia, Canada. Recent advances in interdisciplinary and community-based research have increased awareness of the importance of studying wet site assemblages in the region. Site EkTb-9, Triquet Island, within the Ḥúláẇitx̌v Tribal Area of Haíłzaqv (Heiltsuk) Nation Territory, is the only mid-Holocene wet site on British Columbia's outer central coast that has been subject to focused investigations. This case study provides a description of the wooden artifact assemblage from EkTb-9 with consideration in the context of other select wet sites in British Columbia. The enduring relationships that Indigenous Peoples of the Northwest Coast maintain with the varied plant communities represented in these regional wet site assemblages demonstrate continuity and perpetuation of ancestral plant-related knowledge, technologies and land management practices over several hundred generations. Collectively, these data enable an exploration of the interactivity of wet sites, social practice, and knowledge transmission spanning the early Holocene to the present day.

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Introduction

> "*Every woven or stitched container, every fishnet, every digging stick, every dugout canoe reflects an immense array of complex knowledge about plants and their materials, where to find them, how and when to harvest them, how to prepare them for use, the techniques of creating the final product, and finally, how to use or apply the finished item in procuring food, creating shelter, or whatever other purpose is intended. All of this knowledge is built up over generations of experimentation and observation and is passed on to succeeding generations through experiential learning, demonstration, and instruction."* Nancy Turner (2014:334).

The relationship between the archaeological past, ethnobotanical research, and wet sites on the Northwest Coast (NWC) of British Columbia (BC), Canada, is complex and multifaceted. Wet sites are created through social practices and the discard of vegetal cultural material in water saturated contexts where anaerobic (low oxygen) conditions occur (peat bogs, lake beds, intertidal zones) (Bernick 2019). While paleoethnobotanical evidence can be fragmentary and subject to preservation bias, wet sites can reveal lasting records of the processes and activities of ancestral generations and their varied relationships with plants (Hill 2019; Hoffmann et al. 2016; Speller and Forbes 2022). Preserved pollen and macrobotanical analyses also provide information about environmental conditions (climate; forest

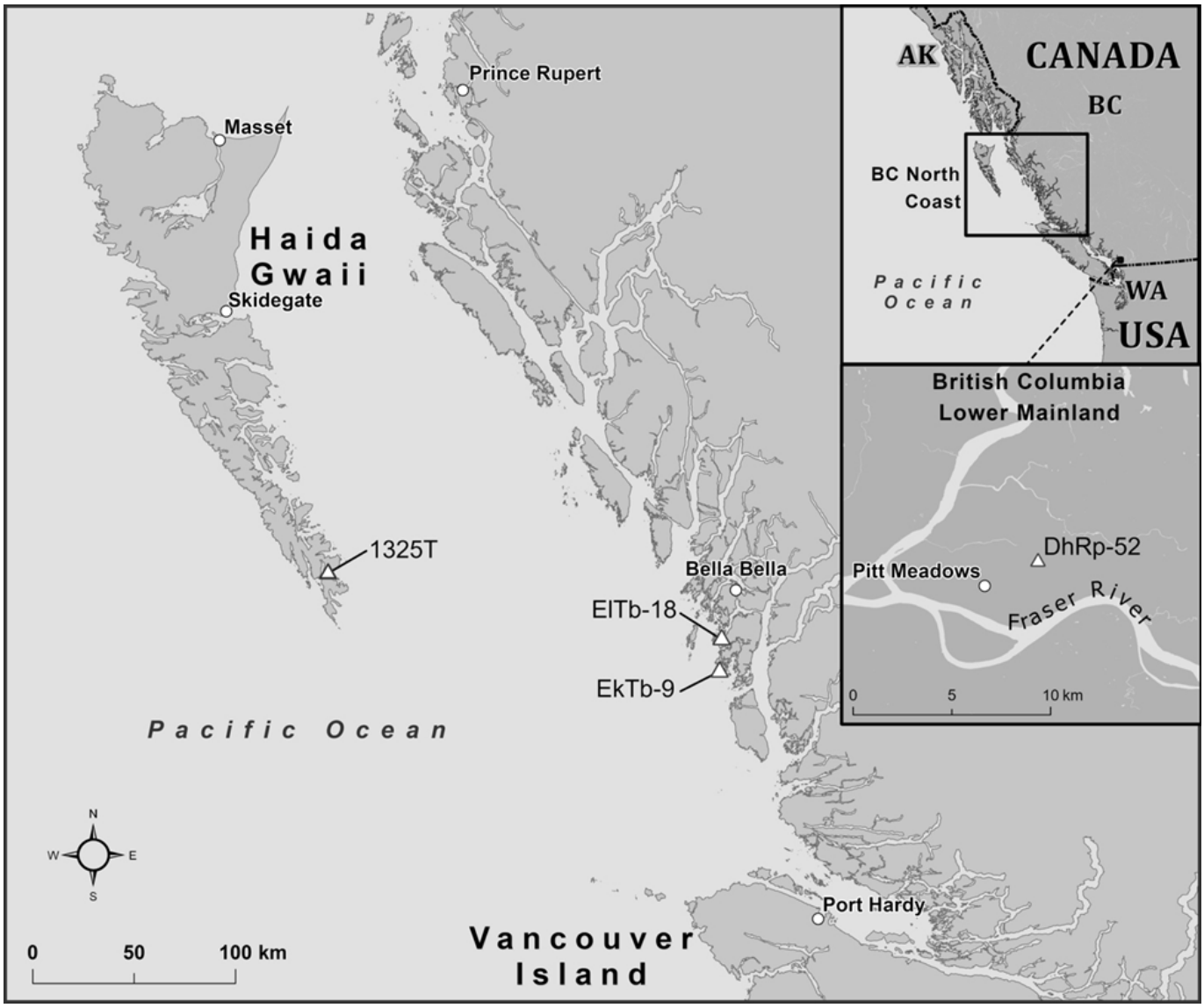

Figure 1 Study area map showing location of wet sites on the NWC of BC mentioned in text. Prepared by Keith Holmes (Hakai Institute); used with permission.

composition) during past occupations and how these conditions changed over time (Eldridge 2019).

Paleoethnobotanical studies that incorporate Indigenous knowledge (oral histories, narratives; interviews with descendent communities), and analysis of macrobotanical and wooden artifact assemblages can provide a more holistic understanding of human-plant interactions through time. Current trends in interdisciplinary research on the NWC emphasize the importance of integrating Indigenous knowledge in paleoethnobotanical analyses to explore the cultural importance of plants (e.g., Armstrong et al. 2023; Lepofsky and Lertzman 2008; Lepofsky and Lyons 2013; Lyons and Ritchie 2017). These and similar studies have improved our understanding of historical and contemporary plant management practices and have identified applications for evolving Indigenous governance and stewardship initiatives on the NWC.

Following this trend, this case study provides a description of the wooden artifact assemblage from wet site EkTb-9, located on Triquet Island in the Nuláwitxv Tribal area of Haíłzaqv (Heiltsuk) Nation Territory on the NWC of BC (Gauvreau 2024). The modest mid-Holocene-aged wet site assemblage from

EkTb-9 is considered in the context of select BC wet sites, with a focus on the enduring and varied relationships that Indigenous Peoples maintain with the plant communities represented in these regional wet site assemblages (Cohen 2014; Fedje et al. 2001; Hoffmann et al. 2016; McLaren et al. 2015, 2019). Collectively, these data enable an exploration of the interactivity of wet sites, social practice, and knowledge transmission spanning the early Holocene to the present day.

Methods

Study Location

Deglaciation of the outer NWC was underway by ca. 18,000–16,000 cal yrs BP, and by ca. 13,800 cal yrs BP, the diminishment of ice influenced regional sea-levels and the growth and spread of post-glacial vegetation (Mackie et al. 2018; Shaw et al. 2020). Through the phenomenon of a sea-level hinge, the outer central coast of BC has maintained a stable relative sea level since ca. 14,500 cal yrs BP (McLaren et al. 2014, 2015; Shugar et al. 2014). Human presence is documented on the NWC by ca. 14,000–13,000 years ago (Gauvreau et al. 2023), however, only a handful of outer coastal sites are known to pre-date ca. 12,000 cal yrs BP (Vogelaar 2017). With a 14,000-year record of repeated human occupation and investment, EkTb-9 is a critical component of the post-glacial record of the NWC (Gauvreau et al. 2023; Gauvreau 2024).

Triquet Island is located approximately 25 km west of the Pacific mainland coast of BC within the Hakai Lúxvbálís Conservancy (Figure 1). Despite the small size of the hypermaritime island (144 ha), seven archaeological sites (EkTb-3, 8, 9 and 11-14) are recorded there. Of these, EkTb-9 is a permanent outer coastal village site that is centrally located along a protected northern facing bay (Figure 1). Shell midden deposits have a surface area greater than 17,000 m^2 and extend up to 6 m below surface along the northern extent of the site. Peat accumulations are limited to southwestern areas subject to persistent water saturation. There are estuarian root gardens along the northern bay, established berry bushes across the island, and bark-stripped western redcedar trees at the southern end of the site.

The pollen assemblage from mid-Holocene peat deposits (Strata VIIb to VI) indicate presence of arboreal taxa consistent with a cool, wet, rainforest climate, including spruce (*Picea* spp.), western hemlock (*Tsuga heterophylla*), and few cedar (Cupressaceae) as well as herbaceous taxa (grasses [Poaceae], sedges [Cyperaceae], asters [Asteraceae], umbellifers [Apiaceae]), and aquatic plants (pond-lily [*Nuphar spp.*], cattail [*Typha latifolia*], peat mosses [*Sphagnum spp.*]) (Lucas 2013; Hebda 2020). Identified macrobotanical specimens include species that thrive in moist riparian or nearshore environments (red elderberry seeds [*Sambucus racemosa*], spruce roots and cones, and western hemlock cones and needles). During the late Holocene (ca. 5,500–450 cal yrs BP), western redcedar (*Thuja plicata*) and yellow cedar (*Xanthocyparis nootkatensis*) joined the stands of spruce and hemlock and a rapidly developing understory rich in salal (*Gaultheria shallon*), ferns, and berry bushes (Hebda 2020). The mid-Holocene faunal assemblage demonstrates specialized marine-based subsistence targeting fish, shellfish, and sea-mammals. Greenling (*Hexagrammos sp.*), rockfish (*Sebastes sp.*), and Pacific herring (*Clupea pallasii*) dominate the assemblage, whereas salmon (*Oncorhynchus sp.*) represent a mere 0.2% (Gauvreau et al. 2023; Gauvreau 2024).

Data Collection

EkTb-9 was recorded in 2009 and subject to further investigation from 2012–2017; detailed descriptions of field and laboratory methods are previously published (Gauvreau et al. 2023; Gauvreau 2024; McLaren et al. 2015, 2019) and not repeated here. Peat deposits encountered in the excavation trench were removed in 25 x 25 x 5 cm sections; some sections were wet screened through 3 mm mesh at the site while others were individually wrapped in polytarp, packed into totes, and transported to cold storage for later processing. The packed peat sections were processed at the Quadra Island Ecological Observatory operated by the Hakai Institute. Recovered vegetal material was packaged in plastic containers/bags filled with water and refrigerated.

Analyses

Preserved wood demonstrating evidence of potential and/or obvious signs of human modification were inventoried, described, and subject to analysis at the University of Victoria (UVic), the Royal BC Museum (RBCM), or the Pacific Northwest Archaeological Services (PNAS) Laboratory. Nine of the wood artifacts were selected for cellular analysis. Of these, six were examined by Hawes and Croes (2013), and four were examined at the RBCM for this study. Cellular analysis involved the following steps: (1) removal of small thin section with razor blade, (2)

mounting thin section on glass microscope slide, (3) examination with compound microscope (100–400x resolution), and (4) identification of diagnostic anatomical characteristics (tangential, radial, cross section) where possible (Florian et al. 1990; Friedman 1978, 2005; Hoadley 1990; Panshin and de Zeeuw 1990).

Following analysis, wood artifacts were sewn into plastic mesh bags and submerged in containers filled with a mixture of 50% Polyethylene Glycol (PEG) 400 mol wt and 50% water to initiate the stabilization process (Florian et al. 1990). The containers were stored for nine months and were periodically checked to confirm they remained free of mold. As the water evaporated over time, the ratio of PEG was gradually increased to support stabilization. Each specimen was inspected prior to initiating the drying process due to their variable size and density. Once subject to air-drying, they were monitored for evidence of cracking/checking and promptly resubmerged to resume the stabilization process, as applicable.

Results

A total of 850 wood artifacts classified into 20 types were recovered from deposits spanning ca. 7,788–5,604 cal yrs BP (Table 1; Figure 2). Most wood artifacts are from Stratum VI (58%; ca. 6,700–5,600 cal yrs BP) and Stratum VIIIb (29%; ca. 7,500–7,100 cal yrs BP). Wood chips are the most abundant artifact type, 60% of which derive from Stratum VI and 27% from Stratum VIIIb. A sample of the wood chips (n=43; 8.5%) range from 1.6 to 13 cm long, 0.2 to 2.8 cm wide, and 0.2 to 1.9 cm thick. Approximately 33% of the woodchips, 5% of the split wood, and 8% of the split sticks exhibited burning/charring. One tool, three tool tips, three pieces of worked wood and one artifact of unknown type exhibited fire-hardening (Figure 2). A few wedges, split roots (some spruce) and abundant chopped wood were recovered from Stratum VI. Two carved wood balls/knobs were recovered from Stratum VIIIb. Bipoints from Stratum VI are of variable lengths (10 to 21 cm) and exhibit multiple tool marks. Evidence of composite tool technology from Stratum VIIIb and VI includes an

Table 1 Wood artifacts per stratum recovered from EkTb-9.

	Strata ca. 7,788–5,604 cal yrs BP					
Type	**V/VI**	**VI**	**VI/VII**	**VIIIb**	**IX**	**Site Total**
Atlatl throwing board	0	0	0	1	0	1
Ball/knob	0	0	0	2	0	2
Barkstrip	0	6	0	2	0	8
Bipoint	0	5	0	0	0	5
Board	0	4	0	0	0	4
Carved	0	1	0	0	0	1
Carved?	1	1	0	0	0	2
Chopped wood	1	23	1	12	3	40
Fishhook fragment	0	1	0	2	0	3
Harpoon foreshaft	0	1	0	0	0	1
Point	0	7	0	3	0	10
Split root	0	10	1	2	0	13
Split stick	6	30	0	47	1	84
Split wood	0	77	0	59	0	136
Tool	0	1	0	1	0	2
Tool tip	0	5	0	0	0	5
Tool?	0	1	0	3	0	4
Wedge	0	2	0	0	0	2
Woodchip	15	305	11	135	38	504
Worked root	0	0	0	1	0	1
Worked wood	0	9	1	4	0	14
Worked wood?	1	6	0	0	0	7
Bark wrapped Stick	0	1	0	0	0	1
Total	24	496	14	274	42	850

Figure 2 Select wood artifacts from Strata VIIIb-VI: Harpoon foreshaft (i EkTb-9:828), tool tips (ii EkTb-9:895; iii EkTb-9:803; iv EkTb-9:870; v EkTb-9:824; vi EkTb-9:698; bipoints (vii–xiv EkTb-9:825 - 827); fish hook (viii EkTb-9:749) ; carved ball (ix EkTb-9:763); bark-wrapped stick (x EkTb-9:783); wedge (xi EkTb-9:866); damaged point (xii EkTb-9:906); unknown (xv a-d) EkTb-9:884.

atlatl throwing board, bipoints, fishhooks, a harpoon foreshaft, and a bark wrapped stick. Pieces of worked wood exhibit different modification types (carved; whittled; chopped) and were either too fragmented to further categorize or could not be specifically classified as one or the other.

Table 2 describes the wood artifacts subject to cellular analysis for this study. Earlier analyses conducted on select specimens indicated that most were made of Sitka spruce (*Picea sitchensis*) or western hemlock, however, two artifacts (atlatl throwing board; fishhook barb) were made of Douglas fir (*Pseudotsuga menziesii*) and a split stick was made of yellow cedar (McLaren et al. 2019). Consistent with these earlier analyses, the bipoint and piece of worked wood (type unknown) were made of spruce, and the bark-wrapped stick and harpoon foreshaft were made of Western redcedar (Table 2; Figure 2).

Discussion

Results from EkTb-9 reveal that plant harvesting and use, a specialized vegetal marine tool kit; use of watercraft (inferred), woodworking and composite tool technology were well established on the NWC by the mid-Holocene. The bark wrapped stick is a significant example of composite tool technology, indicative of the innovative combination of multiple material types, including those that may have been procured at separate times and/or places. For example, EkTb-9's mid-Holocene lithic assemblage includes utilized obsidian microblades and a pigment stone (graphite) that were both imported to the site (Gauvreau et al. 2023). It is possible that a precision cutting tool was created by hafting a microblade to the stick, or that fibers were attached to create a brush for pigment application (art; personal adornment) (Stewart 1984). Although the bark wrapped cedar stick, harpoon foreshaft, and pollen assemblage signal the early presence of cedar on the island (ca. 6,700–5,600 cal yrs BP), cedar may have been imported to the site like the artifacts made of Douglas fir (Lucas 2013; McLaren et al. 2019).

Abundant wood artifacts in Strata VI and VIIIb signal periods of increased activity, and the absence of artifacts in Stratum VII is likely a product of the palaeotsunami that occurred ca. 6,931–6,314 cal yrs BP (Stratum VIIIa) (Gauvreau et al. 2023). The smaller, wider bipoints were likely used as fishing gorges, whereas longer, narrower bipoints were likely used for spearing, and the carved wooden balls may be fishing floats (Stewart 1984). Presence of worked roots, bark, branches and wood indicate use of all tree parts for specific, though varied, purposes. Burnt and charred wood and botanicals were used as fuel, though may also represent discard of processed plants that served food, medicinal, or ritual purposes (Cohen 2014). Wedges, woodchips, chopped and split wood, and split sticks suggest large to fine scale woodworking was occurring at the southern extent of the site for over 2,000 years. Tool tips from EkTb-9 demonstrate similar attributes to digging stick fragments recovered from other NWC wet sites and the presence of estuarian root gardens at EkTb-9 infer continuity of these technologies and associated cultivation practices (e.g., Hoffmann et al. 2016).

The assemblage of wood artifacts from EkTb-9 is like those of early-Holocene wet site Kilgii Gwaay

Table 2 Description of select wood artifacts from EkTb-9 (Stratum VI, ca. 6,700–5,600 cal yrs BP) subject to cellular analysis for this study.

Artifact	DBS (cm)	Dimensions (L x W x H) (cm)	Description and Sample Location
EkTb-9: 783; Bark-wrapped stick	145 – 150	3.4 x 0.8 x 0.3	Small flat rectangular handle; carved, smoothed; (inferred) distal end wrapped with thin bark strip. Broken on both ends. Sample: flattened edge opposite bark strip.
EkTb-9: 828; Harpoon foreshaft	175–180	22.7 x 1.3 x 1.2	Tapered cylindrical shaft; carved, smoothed. Shaft is widest at proximal end; tapers toward distal end; both ends rounded, smoothed. Sample: distal end.
EkTb-9:826; Bipoint	160 – 170	14.5 x 0.8 x 0.5	Carved, whittled and abraded into smooth cylinder tapering to opposing points. Sample: pointed end.
EkTb-9:884; Worked - unknown type	138 – 145	3.3 x 2.9 x 2.0	Carefully worked, carved, smoothed, burnt; artifact has 5 sides; tapers from rectangular proximal end to finely tapered distal edge; two fire hardened lateral faces (spade-shaped). Sample: lateral surface.

(1325T) on Ellen Island, Haida Gwaii, in Haida Nation territory (Cohen 2014; Fedje et al. 2001; Mackie et al. 2011) and mid-to-late Holocene wet site, DhRp-52, in Maple Ridge near the confluence of the Pitt and Fraser Rivers in Katzie First Nation territory (Hoffmann et al. 2016). Kilgii Gwaay is the oldest wet site currently known on the NWC (Cohen 2014; Fedje et al. 2001; Mackie et al. 2011). While Kilgii Gwaay was occupied prior to sea-level transgression (ca. 10,600 cal yrs BP), and DhRp-52 was occupied following sea-level regression (ca. 6,000 cal yrs BP), site EkTb-9 was subject to the post-glacial sea-level hinge and was repeatedly occupied between ca. 14,000 and 450 years ago (Cohen 2014; Gauvreau et al. 2023; Gauvreau 2024; Hoffmann et al. 2016; McLaren et al. 2014). Although the post-glacial sea level constrained the occupation of Kilgii Gwaay, over 100 wood artifacts were recovered, including stakes, wedges, planks, withes, twine, and composite tools (Cohen 2014). These were primarily made of Sitka spruce or western hemlock and indicative of well-developed woodworking technology and the use of watercraft (inferred) (Cohen 2014). Preliminary evidence of early -Holocene (ca. 10,640–10,517 cal yrs BP) wet site deposits consistent in age with those of Kilgii Gwaay were also identified in the vicinity of Triquet Island at nearby wet site ElTb-18 (Kildit Narrows) on Hunter Island (Figure 1; McLaren et al. 2019).

Excavations at the 3,800-year-old wetland garden site DhRp-52 produced 185 wood tool fragments, 3,768 specimens of wapato tubers and other garden specimens (Figure 1; Hoffmann et al. 2016). Distal ends (tool tips) of digging sticks dominated the DhRp -52 assemblage (n=149) and analyzed specimens were made from fir (*Abies* spp.) and western hemlock (Hoffmann et al. 2016). The assemblages from DhRp-52, Kilgii Gwaay and EkTb-9 indicate locally dominant conifers (fir, spruce, and hemlock) were used to produce many of the same products and tools (planks, wedges, digging sticks) during the early and mid-Holocene that are known to be made of cedar today and all Nations of the NWC have oral historical records that tell of ancestral relationship with these coniferous species (Boas 1932; Turner 2014). The assemblages from Kilgii Gwaii and EkTb-9 also indicate that seafaring, marine adaptations, plant technologies, and other aspects of the socio-cultural complexity underpinning NWC culture began in the absence of cedar and salmon and much earlier than some had initially hypothesized (Coupland 1998; Donald 2003; Hebda and Mathewes 1984; Turner 1998).

Results from EkTb-9, Kilgii Gwaay, and DhRp-52 demonstrate long-term people-plant relationships on the NWC, as all the identified plant species are known to be of great cultural importance to the Haíłzaqv, Haida, and Katzie Nation's today (Gauvreau et al. 2023; Gauvreau 2024; Hoffmann et al. 2016; Lyons et al. 2021; Turner 2014). Technologies related to tree species identified in Table 3 were developed and practiced by ancestral peoples throughout the mid to late Holocene, and likely

Table 3 Turner (2014) known Indigenous uses for tree species recovered from EkTb-9.

Species[1]	Technology	Food	Medicine	Turner (2014) Page #
Douglas fir *Pseudotsuga menziesii* (Pinaceae) *máwáĺas*	Harpoon and spear shafts, dip net poles and hoops, arrow shafts, fish-barbecuing stakes; bark slabs split off standing trees and used for shelter covering, siding; thick bark and wood hot-burning fuels	-	Decoction drank in sweathouse for purification	339, 340, 344, 428
Sitka spruce *Picea sitchensis* (Pinaceae) *ḥṇíẇas*	Bows, wedges, blanket pins, arrows and arrow points, tongs, clubs, implement handles, ladders, drying racks, containers, fish traps, deadfalls, shelters; pitch for sealing canoes and baskets, waterproofing, glue	-	Pitch as salve (wounds, slivers); tea from inner bark applied to rashes, eczema, sores; tips boiled in house and branches used on floor to keep sickness away; disinfectant	340, 344, 422, 428
Western hemlock *Tsuga heterophylla* (Pinaceae) *Lúq̓vás*	Bentwood fishhooks, harpoon shafts, fish weir stakes, points, paddles; harvesting herring eggs	Cambium and inner bark tissues eaten; cooked/dried; served with grease, berries	Infusion/decoction of bark for colds, tuberculosis, ulcers, internal injuries	276, 340, 344, 423, 424, 425
Western redcedar *Thuja plicata* (Cupressaceae) *dṅ̓ýás*	Dugout canoes, house posts, totem poles, boxes, pegs, fish weirs, arrow shafts and points; wood and shredded bark as tinder, kindling, fire drills, hearths; branches, roots for baskets, mats, clothing, cordage	-	Infusion of boughs for colds; also used as inhalant for coughs, colds	339, 340, 342, 423
Yellow cedar *Xanthocyparis nootkatensis* (Cupressaceae) *díẇás*	Inner bark for baskets, mats, clothing, blankets; bows, canoe paddles, carving	-	-	340, 342

[1] Common (English), scientific (Latin), and Haíłzaqv (Haíłzaqvḷa) names provided.

earlier, as demonstrated by the assemblage from Kilgii Gwaay. The perpetuation of these practices from an immemorial past to the present day demonstrates continuity among NWC cultures and the power of knowledge transmission over several hundred generations. The diversity of plants at EkTb-9 and elsewhere along the NWC, and the enduring relationships that Indigenous people maintain with these plant communities, represents "a complex product of the history, dynamics, and development of

[regional] flora […] over time and of the interweaving of human migration and settlement with the synchronous acquisition, transmission, and adaptation of knowledge, practices, and beliefs about these flora" (Turner 2014:29).

Woodworking practices evidenced at EkTb-9 are perpetuated in their current forms by contemporary Haíłzaqv carvers, weavers, and gardeners and these activities are supported by several Haíłzaqv organizations (Qqs Projects Society; Haíłzaqv Káxḷá Society; Qíɬcutkv Wellness Project) to promote cultural revitalization, community healing, knowledge perpetuation, language and skill development, and youth empowerment. Aligned with these goals, the Haíłzaqv Integrated Resource Management Department (HIRMD), and Qᵓíxᵓitasu Yímᵓázalas Elroy White (Central Coast Archaeology [CCA]), have facilitated youth trips to Triquet Island to monitor the site and share Haíłzaqv knowledge and history through a Mᵓn̓úxvit approach (White et al. 2024).[1] Like other wet sites on the NWC, EkTb-9 remains an "encultured place full of meaning, of teaching and learning, of associating with the ancestors, and the rest of the world" (Hill 2019:68). Every single wood chip, tool tip, and wedge recovered from wet sites like Kilgii Gwaay, DhRp-52, and EkTb-9, and those in the carving sheds of coastal Indigenous peoples today, reflect transmission of complex and dynamic knowledge of plants and associated technologies on the NWC of BC.

Notes

[1]The Mᵓn̓úxvit (uniting or becoming one) approach builds on the internalist concept in alignment with Haíłzaqv language, protocols and cultural knowledge.

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Declarations

Ethics statement: Heiltsuk Tribal Council c/o HCEC, approved of this research per the conditions of the Heiltsuk Band Research Registration Agreement (2016–2024). This study complies with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans. The study was conducted per the terms and conditions the UVic's Human Research Ethics - Community Engaged Research Project Registration Protocol (Approval Number: 19-0104-01) and those of Heritage Conservation Act Permit 2011-0171, issued to Dr. Duncan McLaren by the BC Archaeology Branch, Ministry of Forests.

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References Cited

Armstrong, C.G., N. Lyons, A.C. McAlvay, P.M. Ritchie, D. Lepofsky, and M. Blake. 2023. Historical Ecology of Forest Garden Management in Laxyuubm Ts'msyen and Beyond. *Ecosystems and People* 19. DOI:10.1080/26395916.2022.2160823.

Boas, F. 1932. *Bella Bella Tales*. American Folklore Society. G.E. Stechert and Co., New York, NY.

Bernick, K. 2019. Introduction: Wet-site Archaeology from a Northwest Coast Perspective. In *Waterlogged: Examples and Procedures for Northwest Coast Archaeologists*, edited by K. Bernick, pp. 1–14. Washington State University Press, Pullman, WA.

Cohen, J. 2014. Paleoethnobotany of Kilgii Gwaay: A 10,700-year-old Ancestral Haida Archaeological Wet Site. Unpublished Master's Thesis, Department of Anthropology, University of Victoria, Victoria, BC, Canada.

Donald, L. 2003. The Northwest Coast as a Study Area: Natural, Prehistoric, and Ethnographic Issues. In *Emerging from the Mist: Studies in Northwest Coast Culture History*, edited by G. Matson, G. Coupland, and Q. Mackie, pp. 289–327. UNBC Press, Vancouver, BC.

Eldridge, M. 2019. Wet Sites: A Guide to Finding Them. In *Waterlogged: Examples and Procedures for Northwest Coast Archaeologists*, edited by G. Matson, pp. 17–37. Washington State University Press, Pullman, WA.

Fedje, D., R. Wigen, Q. Mackie, C. Lake, and I. Sumpter. 2001. Preliminary Results from Investigations at Kilgii Gwaay: An Early Holocene Archaeological Site on Ellen Island, Haida Gwaii, British Columbia. *Canadian Journal of Archaeology* 25:98–120.

Florian, M.E., D.P. Kronkright, and R.E. Norton. 1990. *The Conservation of Artifacts Made from Plant Materials*. Getty Conservation Institute, Los Angeles, CA.

Friedman, J. 1978. Wood Identification by Microscopic Examination, A Guide for the Archaeologist on the Northwest Coast of North America. Heritage Record No. 5. Royal British Columbia Museum, Victoria, BC.

Friedman, J. 2005. The Prehistoric Uses of Wood at the Ozette Archaeological Site. Ozette Archaeological Project Research Report. Washington State University Department of Anthropology Reports of Investigations 68. National Park Service, Northwest Regional Office, WA.

Gauvreau, A. 2024. EkTb-9, Triquet Island, Núláwitxv Tribal Area, British Columbia, Canada: A Persistent Place of Human Occupation and Investment in Haíłzaqv Territory. PhD Dissertation, Department of Anthropology, University of Victoria, Victoria, BC.

Gauvreau, A., D. Fedje, A. Dyck, Q. Mackie, C.F.G. Hebda, K. Holmes, E. White, W. Housty, R. Housty, and D. McLaren. 2023. Geo-archaeology and Haíłzaqv Oral History: Long-term Human Investment and Resource Use at EkTb-9, Triquet Island, N̓úláẁitx̌v Tribal Area, Central Coast, British Columbia, Canada. *Journal of Archaeological Science: Reports* 49:1–32. DOI:10.1016/j.jasrep.2023.103884.

Hawes, K., and D. Croes. 2013. Archaeological Analysis and Conservation of Organic Wood, Charcoal, and Artifacts, Triquet Island Archaeological Site (EkTb-9). In *Report for the Hakai Ancient Landscapes Archaeology Project: 2011 and 2012 Field Seasons (Permit 2011-171)*, edited by D. McLaren, 168–175. Archaeology Branch, Ministry of Forests, Victoria, BC.

Hebda, R.J., and R.W. Mathewes. 1984. Holocene History of Cedar and Native Indian Cultures of the North American Pacific Coast. *Science* 222:711–713.

Hebda, C.F.G. 2020. Preliminary Pollen Analysis: EkTb-9 Layer X and XIb, Triquet Island. Unpublished Report. Victoria, British Columbia.

Hill, G. 2019. Perceptions of Wetland Ecology in Cowichan Traditional Territory, Vancouver Island. In *Waterlogged: Examples and Procedures for Northwest Coast Archaeologists*, edited by K. Bernick, pp. 61–76. Washington State University Press, Pullman, WA.

Hoadley, R.B. 1990. *Identifying Wood: Accurate Results with Simple Tools*. The Taunton Press, Newtown, CT.

Hoffmann, T., N. Lyons, D. Miller, A. Diaz, A. Homan, S. Huddlestan, and R. Leon. 2016. Engineered Feature Used to Enhance Gardening at a 3800-year-old Site on the Pacific Northwest Coast. *Science Advances* 2. DOI:10.1126/sciadv.1601282.

Lepofsky, D., and K. Lertzman. 2008. Documenting Ancient Plant Management in the Northwest of North America. *Botany* 86:129–145. DOI:10.1139/B07-094.

Lepofsky, D., and N. Lyons. 2013. The Secret Past Life of Plants: Paleoethnobotany in British Columbia. *BC Studies* 179. DOI:10.14288/bcs.v0i179.184108.

Lucas, J. 2013. Palynology Report from EkTb-9. In *Report for the Hakai Ancient Landscapes Archaeology*

Project: 2011 and 2012 Field Seasons (Permit 2011-171), edited by D. McLaren, pp. 274–302. Archaeology Branch, Ministry of Forests, Victoria, BC.

Lyons, N., and M. Ritchie. The Archaeology of Camas Production and Exchange on the Northwest Coast: With Evidence from a Sts'ailes (Chehalis) Village on the Harrison River, British Columbia. *Journal of Ethnobiology* 37 (2):346–367. DOI:10.2993/0278-0771-37.2.346.

Mackie, Q., D. Fedje, D. McLaren, N. Smith, and I. Mckechnie. 2011. Early Environments and Archaeology of Coastal British Columbia. In *Trekking the Shore: Changing Coastlines and the Antiquity of Coastal Settlement*, edited by N.F. Bicho, J.A. Haws and L.G. Davis, pp. 51–103. Springer, New York, NY.

Mackie, Q., D. Fedje, and D. McLaren. 2018. Archaeology and Sea Level Change on the British Columbia Coast. *Canadian Journal of Archaeology* 42:74 –91.

McLaren, D., D. Fedje, M.B. Hay, Q. Mackie, I.J. Walker, D.H. Shugar, J.B.R. Eamer, O.B. Lian, and C. Neudorf. 2014. A Post-Glacial Sea Level Hinge on the Central Pacific Coast of Canada. *Quaternary Science Reviews* 97:148–69. DOI:10.1016/ j.quascirev.2014.05.023.

McLaren, D., F. Rahemtulla, E. White, D. Fedje. 2015. Prerogatives, Sea Level, and the Strength of Persistent Places: Archaeological Evidence for Long -Term Occupation of the Central Coast of British Columbia. *BC Studies* 187. DOI:10.14288/ bcs.v0i187.186161.

McLaren, D., K.L. Hawes, T. Graham, A. Gauvreau, J.M. Cohen, and D.R. Croes. 2019. Early and Middle Holocene Waterlogged Materials from Archaeological Sites on Central Coast of British Columbia. In *Waterlogged: Examples and Procedures for Northwest Coast Archaeologists*, edited by G. Matson, pp. 169–192. Washington State University Press, Pullman, WA.

Panshin, A.J., and C. de Zeeuw. 1980. *Textbook of Wood Technology*. McGraw Hill Inc., New York, NY.

Shaw, J., J.V. Barrie, K.W. Conway, D.G. Lintern, and R. Kung. 2020. Glaciation of the Northern British Columbia Continental Shelf: the Geomorphic Evidence Derived from Multibeam Bathymetric Data. *Boreas* 49:17–37.

Shugar, D.H., I.J. Walker, O.B. Lian, J.B.R. Eamer, C. Neudorf, D. McLaren, and D. Fedje. 2014. Post-glacial Sea-Level Change along the Pacific Coast of North America. *Quaternary Science Reviews* 97:170–192. DOI:10.1016/j.quascirev.2014.05.022

Speller, J., and V. Forbes. 2022. On the Role of Peat Bogs as Components of Indigenous Cultural Landscapes in Northern North America. *Arctic, Antarctic, and Alpine Research* 54:96–110.

Stewart, H. 1984. *Cedar*. University of Washington Press, Seattle, WA.

Turner, N. 1998. *Plant Technology of British Columbia First Peoples*. UBC Press, Vancouver, BC.

Turner, N. 2014. *Ancient Pathways, Ancestral Knowledge: Ethnobotany and Ecological Wisdom of Indigenous Peoples of Northwestern North America*. McGill-Queen's University Press, Montreal, QC.

Vogelaar, C. 2017. Using GIS Modelling as a Tool to Search for Late Pleistocene and Early Holocene Archaeology on Quadra Island, British Columbia. Unpublished Master's Thesis, Department of Anthropology, University of Victoria, Victoria, BC, Canada.

White, E., K.A. Artelle, E. Brown, K. Brown, D.E. Chen, and W. Housty. 2024. M□ núxv□ it Model for Centering Indigenous Knowledge and Governance. *Conservation Biology* 38. DOI:10.1111/cobi.14398.