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Centering Indigenous Cultural Resurgence to Improve Ecological Restoration: Learnings from the Revitalization of Cultural Keystone Places of the Quw'utsun Peoples

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Positionality We are Indigenous and non-Indigenous women scientists with training from colonial institutions. The stories herein emerge from, and are part of, our work alongside co-researchers Quw'utsun (Cowichan Tribes) and Spune'luxutth (Penelakut Tribe), who are both Hul'q'umi'num-speaking, Coast Salish successors of the historic Quw'utsun (Cowichan) Nation. Our research is situated in their territories, in places known today as Duncan and Penelakut Island, British Columbia (BC), Canada. Sachs is a fifth-generation settler from the West Kootenay region of BC, the lands of Ktunaxa, Sinixt, and Syilx Peoples. Grenz is an Nlaka'pamux woman of mixed ancestry and member of the Lytton First Nation, who grew up in Delta, BC on the lands of scəw̓ aθən məsteyəxʷ (Tsawwassen) and xʷməθkʷəy̓əm (Musqueam) First Nations. Martin is a fifth-generation settler who was born and grew up on Salt Spring Island, BC, on the lands of the Quw'utsun, Spune'luxutth and W̱SÁNEĆ Peoples. Grenz and Martin met as new members in the Faculty of Forestry at the University of British Columbia in 2021 and soon realized they shared many research interests, community connections, and research ethics. In 2022, Martin hired Sachs as a field technician and later taught her as an undergraduate student in her *Conservation Planning and Decision Making* course. Sachs is now pursuing a PhD under the supervision of Grenz. The research we collectively present herein is inseparable from the Quw'utsun and Spune'luxutth Peoples and places it emerges from. Its value relies on continued and deepening relationships between co-researchers that form the basis of ethical consent through time.

Abstract Many places of ancestral and cultural importance to the Quw'utsun (Cowichan) Nation, have long been recognized by settlers as important contributors to biodiversity as habitat for rare and/or at-risk species and ecosystems. This recognition has resulted in numerous settler-led ecological restoration efforts of cultural keystone places such as Garry oak (*Quercus garryana*) meadows, Western red cedar (*Thuja plicata*) forests, and Pacific salmon (*Oncorhynchus spp.*) estuaries. While such efforts are well-intentioned, lack of understanding of pre-colonial baselines such as historical uses and stewardship practices and exclusion of cultural practices via the focus on fortress conservation have contributed to poor long-term restoration outcomes. Our research alongside Quw'utsun (Cowichan Tribes) and Spune'luxutth (Penelakut Tribe), is showing that centering cultural resurgence in restoration planning is a critical methodology that ensures projects respect the true history of lands, uphold community values, are culturally appropriate, protect Indigenous knowledges from misuse and misapplication, and ensure the reciprocal, human-land relationships required for long-term successful outcomes. Our learnings have broad implications for land restoration that suggest that finding ways to strengthen human relationships (Indigenous and non-Indigenous) to land, could provide the commitment and stewardship needed for lands to thrive into the future.

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Introduction

We are in a unique and exciting time in history when two transformational shifts are taking place. The first is a paradigm shift for Western science, particularly within the fields of conservation and restoration ecology, as both are embracing and actively seeking traditional ecological knowledges to inform them after a long history of denigrating their value (Shackeroff and Campbell 2007; Wickham et al. 2022). The second is the cultural resurgence occurring within Indigenous communities, as they [we] work to reclaim and revitalize aspects such as languages, art, food systems, land and water stewardship, and governance (Asch et al. 2018; Corntassel 2020; Grenz 2020; Joseph and Turner 2020; Lake et al. 2017). Although these two transformations may appear distinct whilst occurring along parallel trajectories, we contend that they are inherently interdependent and should be pursued in tandem. This integrated approach is exemplified by the restoration outcomes of cultural keystone places (CKPs) of the Cowichan Nation's, Quw'utsun (Cowichan), and Spune'luxutth (Penelakut) Peoples.

Today, CKPs, specific locations that hold profound cultural, spiritual, ecological, and historical significance for Indigenous communities and other cultural groups (Cuerrier et al. 2015), are often stewarded by well-intentioned, non-Indigenous peoples. While their efforts can often be credited with decades-long protection of these places from colonial, capitalistic values, their ecological restoration efforts can fall short in terms of both efficacy and meaningful inclusion of the Indigenous Peoples of those lands (Grenz and Armstrong 2023). While the fields of historical ecology and ethnobiology have long acknowledged the value of Indigenous knowledges and have worked tirelessly to preserve, recover, and document them (McClenachan et al. 2024), the fields of conservation and ecology are only recently waking up to their importance, often with little or no knowledge of these original fields working within this knowledge space. The inexperience of restoration practitioners looking to improve ecological outcomes by attempting to bring together Western science and Indigenous knowledges, often described as braiding, weaving, and two-eyed seeing (e.g., Kimmerer 2013; Reid et al. 2021), has left Indigenous knowledges and communities vulnerable not only to extractive practices, but also to the fragmentation and misapplication of their knowledges such that their full benefit cannot be realized (Armstrong et al. 2024).

Within the context of British Columbia (BC), Canada, many Indigenous Nations were forced to protect and preserve their cultures in secret during a period of colonial rule that outlawed their [our] practices and dispossessed them [us] of their [our] lands (Joseph and Turner 2020). Today, as communities heal and reconciliation efforts advance—through initiatives such as the Truth and Reconciliation Commission of Canada (Truth and Reconciliation Commission of Canada 2015) and the 2019 enactment of Bill 41, which aligns BC with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP [Government of British Columbia 2019; Legislative Assembly of British Columbia 2019])—Indigenous communities are enacting cultural resurgence. Defined as the active and ongoing reclamation of cultural practices such as language, traditions, art, ceremonies, governance, foods, and land stewardship (Coulthard 2014), cultural resurgence is seldom acknowledged in restoration ecology or integrated into restoration planning (Grenz 2020).

There are other examples in BC of cultural resurgence being enacted by Indigenous communities as they [we] work to reclaim their [our] traditional food systems (Joseph and Turner 2020). Hul'q'umi'num' and W̱SÁNEĆ Coast Salish Nations are revitalizing clam gardens in the Salish Sea, strengthening food sovereignty, land-based learning opportunities, and intertidal ecosystem health (Augustine and Dearden 2014; Olsen 2019; Wickham et al. 2022). *Kwetlal* (*Camassia quamash*, *Camassia leichtlinii*, and camas) food systems are being reinstated in lək̓ʷəŋən (Lekwungen) territory through traditional harvesting and pit cooking practices, invasive species removal, and educational campaigns (Corntassel and Bryce 2012). While distinct and place-based, these initiatives demonstrate connections between cultural resurgence tied to foodways and the recovery of threatened ecosystems.

Working alongside Quw'utsun and Spune'luxutth Peoples, both successors of Cowichan Nation, in the Salish Sea, Pacific Northwest of North America, we are undertaking ecological restoration and conservation research at CKPs to address Nation-identified concerns such as the impacts of multiple cumulative stressors (e.g., land use change and climate change) on native plants, animals, and ecosystems. In practice, this positions the Quw'utsun and Spune'luxutth communities we work alongside as "co-

researchers"—we work together as equal partners to determine the research process, from developing questions to interpreting and sharing findings, to ultimately ensure that outcomes center their values and priorities (Grenz 2020; Wilson 2008). As our research together has progressed, our relationships with communities have deepened, and we have become engaged in other community initiatives such as site interpretation, field schools, and language revitalization at our research sites and more broadly. We have come to recognize that cultural resurgence is a critical and often overlooked land-healing methodology. This perspective challenges the conventional restoration paradigms we were trained in and initially operated within. By centering cultural resurgence as a methodological foundation, our work has been transformed into a holistic, relational practice. This approach not only strengthens connections between land, culture, and community, but also offers a meaningful pathway toward reconciliation—understood here as the transformative process, grounded in truth, of building respectful relationships between Indigenous and non-Indigenous peoples, as well as with lands and waters (Asch et al. 2018; Truth and Reconciliation Commission of Canada 2015). We use autoethnography to reflect on our work at three Cowichan Nation CKPs, each shaped by differing colonial histories and stages of resurgence. We illustrate how cultural resurgence, through the reclamation of Indigenous land stewardship practices and foodways, enhances the health and resilience of ecosystems which depend on human relationship.

Methods

We use autoethnography and elements of Indigenous Research Methodologies (IRMs) to reflect on our respective experiences and observations conducting ecological restoration and conservation research at three CKPs of the Quw'utsun and Spune'luxutth Peoples (Figures 1 and 2). Autoethnography is a qualitative research method described as "both process and product," combining personal narratives and reflections with broader cultural meaning (Ellis et al. 2011). It positions the researcher not as an objective observer, but as a relational participant whose experiences, values, and transformations are part of the knowledge generated. This aligns with IRMs, where placing the researcher within the research and self-reflexivity are key components (Grenz 2020; Kovach 2021; Wilson 2008).

Rather than simply aligning with decolonizing methodologies, our approach intentionally goes beyond decolonization. While decolonization seeks to dismantle colonial structures and challenge Western dominance in knowledge production, it can, in inexperienced hands, risk perpetuating fragmentation, tokenism, or even reproducing extractive research practices under the guise of inclusion (Tuck and Yang 2012). Indigenization, by contrast, moves beyond inclusion within existing paradigms and re-centers Indigenous epistemologies, ontologies, and axiologies as foundational to the research process (Pidgeon 2019; Wilson 2008). We follow an IRM that prioritizes relational accountability, reciprocity, and respect, ensuring that knowledge production is grounded in the cultural resurgence and worldviews of the communities with whom we work. This approach prevents the dislocation of axiology from Indigenous epistemologies and affirms that knowledge is not only contextual, but sacred, relational, and lived (Kovach 2021; Wilson 2008).

Quw'utsun Nation Territory Description

Quw'utsun (Cowichan Tribes) and Spune'luxutth (Penelakut Tribe), are both Hul'q'umi'num-speaking, Coast Salish successors of the historic Quw'utsun (Cowichan) Nation in the place known today as British Columbia (BC), Canada. The term Coast Salish broadly refers to diverse Indigenous Peoples whose rich and complex homelands are in the coastal regions of the Pacific Northwest, spanning across the imposed international border. These homelands extend roughly from the northern Salish Sea within south-coastal BC, down to the mouth of the Columbia River in areas of western Washington and northwestern Oregon, United States. Quw'utsun and Spune'luxutth Peoples were part of the Quw'utsun Nation before the arrival of Europeans. This Nation was broken up by the crown government with the creation of the reserve system and imposition of the Indian Act (Cowichan Tribes 2024). Originating in 1876 to assimilate First Nations through mechanisms of colonial land dispossession and cultural erasure, the Indian Act, amended, remains the primary law governing Indian status, band governance, and reserve lands in Canada (Indian Act 1985). The present-day Quw'utsun (Cowichan) and Spune'luxutth (Penelakut) are among six (Stz'uminus [Chemainus], Halalt, Lyackson, and Hwlitsum) successors to the historic Quw'utsun Nation whose original territory, spanning 376,308 ha of continuous area, was reduced and

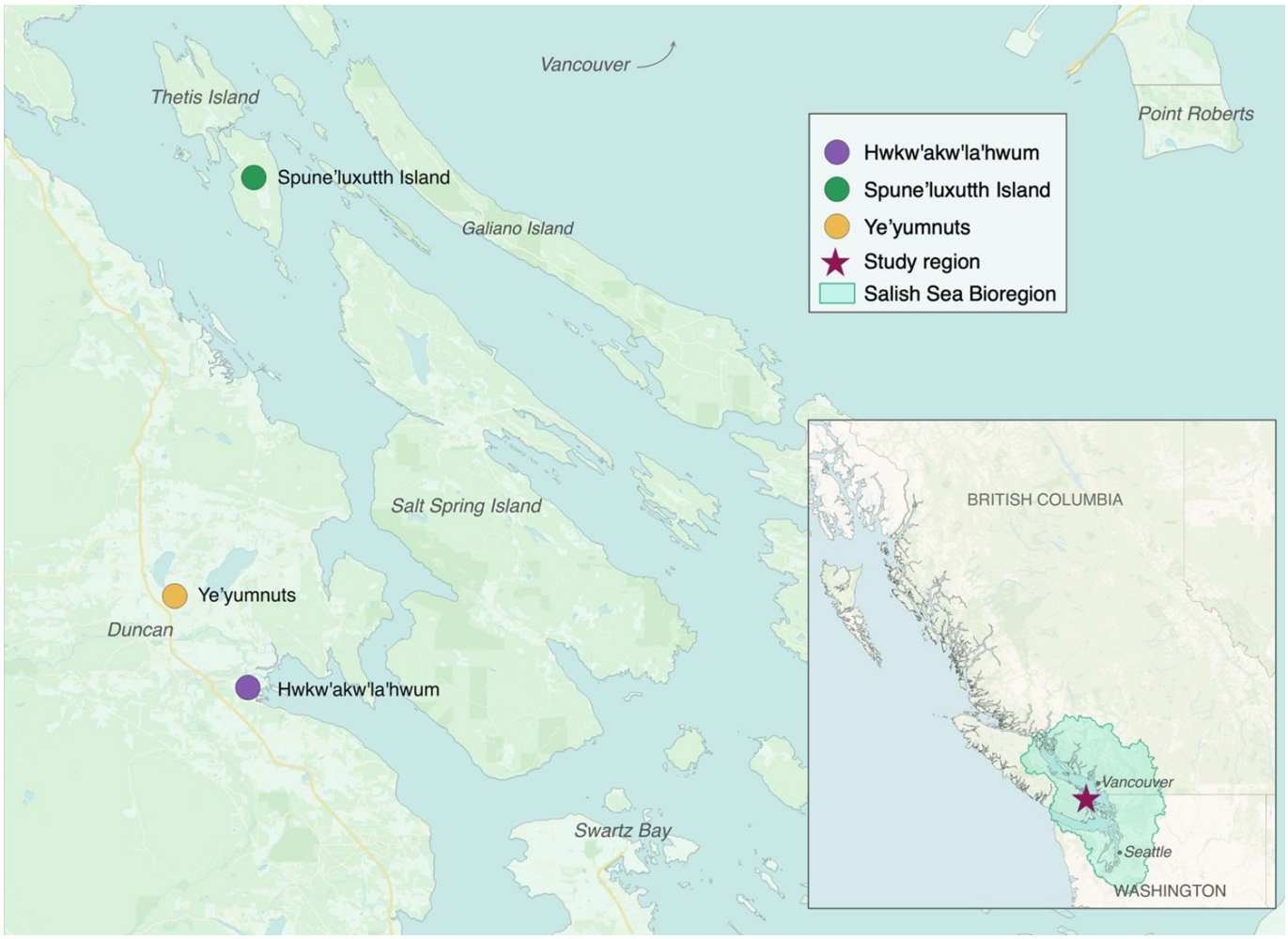

Figure 1 Map of study sites at three CKPs on Quw'utsun (Hwkw'akw'la'hwum [purple] and Ye'yumnuts [yellow]) and Spune'luxutth (Spune'luxutth Island [green]) lands. The study region (red star) is within the Salish Sea Bioregion (blue) and the broader Pacific Northwest. Reference Map layer for the Salish Sea Bioregion accessed through Salish Sea Atlas (Flower 2021).

fragmented into small, disconnected parcels under this legal framework. Today, Cowichan Tribes, the largest single First Nation Band by population in BC, holds nine reserves totaling 2,389 ha. Quw'utsun Peoples fished the Fraser River, as far away as Yale and Lulu Island (now the site of Vancouver International Airport, which was a Quw'utsun traditional summer base camp). They traveled all over the southern half of Vancouver Island, the Gulf Islands and as far south as Sumas and Nooksak in Washington State. The Quw'utsun population is estimated to have been 15,000 people prior to contact (Cowichan Tribes 2024).

Quw'utsun Nation traditional territory sits in the rain shadow of Vancouver Island and the Olympic Peninsula and is home to the highly developed moist maritime subzone of the Coastal Douglas-fir Biogeoclimatic Zone, known for its unique and endangered ecosystems—from wetlands and estuaries to rocky outcrops, Garry oak (*Quercus garryana*) meadows, and various forest types generally dominated by coastal Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) (Meidinger and Pojar 1991).

Ye'yumnuts

Ye'yumnuts, a sacred ancestral site of the Quw'utsun, is in the place now referred to as Duncan, on Vancouver Island, BC, along Somenos Creek, an important canoe route that linked the ocean to inland areas. Archaeological evidence reveals Quw'utsun use

Figure 2 The three CKP study sites. Top left: Hwkw'akw'la'hwum, where restoration is ongoing for conversion of the degraded farm site to revitalized Quw'utsun estuary food system. Bottom left: Spune'luxutth Island, where Indigenous-led deer stewardship has remained intact even in colonial times, regulating deer populations which benefits cedar forest plant communities as Indigenous food systems. Right: S'amuna' looking towards Ye'yumnuts, where Indigenous land stewardship has been disrupted for over a century and settler-led restoration efforts have seen minimal success. Photos (in order): Nature Trust BC, Sachs, Grenz.

and occupation spanning over 1,300 years, from 2,800 –800 years BP (McLay et al. 2009, 2013). The site includes cooking features with plant and fish remains and evidence of extensive management for camas (*C. quamash and C. leichtlinii)* production through weeding, transplanting, and cultural fire practices in the surrounding Garry oak meadows (Turner 2014). After being stolen and sold as farmland in 1876, Ye'yumnuts was used as pasture for over a century and later slated for residential development in 1992 (Commemorating Ye'yumnuts 2023). The discovery of its archaeological significance led to efforts to protect it, preserving an important ancestral site which includes a legacy-state Quw'utsun food system, referred to today as a Garry oak ecosystem, of which only 1-5% remain in BC (Lea 2006).

Currently, Ye'yumnuts is being restored as an historic interpretive site and food system led by Cowichan Tribes and an interdisciplinary team of researchers including archaeologists and anthropologists. My (Grenz) involvement focused on ecological restoration of the site which included ethnographic work, such as interviews with Quw'utsun Elders. While work is on-going, the site now hosts land-based learning for students, with interpretive infrastructure under development, and has held traditional feasts in recent years.

Hwkw'akw'la'hwum

The Cowichan Bay Estuary is near the City of Duncan, BC, in Quw'utsun territory where the Xwulqw'selu Sta'lo' (Koksilah River) and Quw'utsun Sta'lo' (Cowichan River) flow into the Salish Sea after joining together. This place embodies a legacy-state Indigenous food system, meaning its ecology reflects the colonially disrupted history of land and water stewardship by Quw'utsun Peoples where only remnants of their diverse traditional plant foods, medicines, and marine proteins remain today (Hul'qumi'num Treaty Group 2005). The area has been further degraded by the impacts of the forestry industry, agriculture, and other development. Extensive diking (circa late 1800s) completely altered

the 363-hectare estuary, draining large portions of it to make it suitable for farming. Today, the Cowichan Estuary Restoration Project (CERP)—the largest estuary restoration project ever on Vancouver Island, led by The Nature Trust of British Columbia, Cowichan Tribes, and the Indigenous Ecology Lab (Grenz)—aims to revitalize this ecosystem and build climate resilience. This will involve the removal of over two kilometers of failing agricultural dikes, including those surrounding an old farm site. Prior to colonization, this site was used extensively to cultivate and harvest traditional foods, and known to the Quw'utsun as Hwkw'akw'la'hwum, meaning "little dog salmon creek" in Hul'q'umi'num (Williams 2025). Through the CERP, Hwkw'akw'la'hwum is being reclaimed and revitalized to a Quw'utsun estuarine intertidal food system. Our research will be contributing to the development of a culturally centered restoration plan which includes historical ecological studies of intact portions of the estuary to assess legacy states of the food system and reconstruct precolonial baselines, assisting with reconnecting intertidal channels where farmland has been imposed for over a century to encourage habitat for salt marsh, marine riparian areas, and flood fringe forests (Estuary Resilience 2024), the construction of a 5-acre plant nursery to raise plant stock and seed for the project, and facilitating cultural opportunities on the land and reducing barriers to Quw'utsun access.

Spune'luxutth

Spune'luxutth (Penelakut) Island, the largest of four Penelakut reserves today, is culturally and ecologically unique in the densely settler-occupied, southern Gulf Islands archipelago. Here, Spune'luxutth' is an independent community enacting Indigenous land stewardship as they have always done, managing resources and traditional foodways through the Penelakut Tumuhw (Land) Code (Penelakut Tribe 2024). Importantly, this includes hunting black-tailed deer (*Odocoileus hemionus columbianus*), regulating their populations in a landscape where deer are otherwise hyperabundant and reach up to ten times pre-colonial densities due to hunting suppression, habitat expansion, and extirpation of predators (Arcese et al. 2014; Martin et al. 2011).

Spune'luxutth (Penelakut) Island is the only entire island in the Canadian Salish sea that has been lived on and stewarded continuously by an Indigenous community. However, it was not unscathed by colonization. Colonial disruption on the island began with arrival of British surveyors in 1851, followed by attack during the colonial war of 1863, and extended through the Kuper Island Residential School, located on the island from 1889–1975 (Arnett 1999). Penelakut Tribe has reclaimed stewardship of their island, practicing culture grounded in strong relationships to lands and resources (Penelakut Tribe 2024). The island supports, among others, the wettest of the Coastal Douglas Fir (CDF) forests, dominated by Western redcedar (*Thuja plicata*). We refer to these ecosystems as "cedar forests" here.

Cedar forests throughout the CDF were quickly cleared for colonial agriculture during colonization, leading to their scarcity today (Green et al. 1989). However, they have always been managed as food systems by Quw'utsun Peoples, enhancing harvests of berries, roots, rhizomes, and inner bark of trees, maintaining diverse understory plant communities (Turner 2014). Colonization and the severing of Indigenous stewardship, including hunting of black-tailed deer, has contributed to deer hyperabundance throughout the Salish Sea and resulting ecological degradation of native plant and animal communities (Arcese et al. 2014; Martin et al. 2011). Remnant cedar forests have been severely impacted with over-browsing leading to the simplification of the understory vegetation structure, loss of plant diversity favoring browsing-tolerant species, and degradation of habitat for native birds and pollinators (Beckett 2022; Martin et al. 2011). Spune'luxutth Island is thus an important biocultural baseline where Indigenous deer stewardship has been continuous, even in colonial times.

My (Martin) relationship with Spune'luxutth began 20 years ago as I worked alongside Elders, knowledge holders and settler community members to help protect sacred burial grounds at Syuhe'mun (Walker's Hook, Salt Spring Island). This collective action was the beginning of a deeper understanding of the history of where I was born and the continued impacts of colonization on the Spune'luxutth People. Since then, my team (Conservation Decisions Lab) has been working in service to support Spune'luxutth and other Coast Salish Nations in culture and land revitalization and landback (David Suzuki Foundation 2025; NDN Collective 2025; Pieratos et al. 2021).

I (Sachs) was introduced to Spune'luxutth Island as an undergraduate student and field technician in Dr. Martin's Conservation Decisions Lab in 2022, co-researching alongside Spune'luxutth Tribe. We

assessed cedar forest health through vegetation surveys on the island, in comparison to neighboring, settler-managed islands where Indigenous deer stewardship has been largely excluded since colonization. I am expanding on this research in my graduate studies with Martin and Grenz, interviewing Spune'luxutth' Elders and knowledge holders to highlight relationships between cultural deer stewardship and the resilience of cedar forests as Indigenous food systems.

Results

Ye'yumnuts and Hwkw'akw'la'hwum

I (Grenz) am an Nlaka'pamux woman of mixed ancestry and member of the Lytton First Nation, who grew up, pursued post-secondary education, and established my career in Coast Salish territories. My identity as an Indigenous woman had little to do with my career as a restoration ecologist—until many years of restoration failures, and early work with Land Guardians (Nation-hired stewards who monitor lands and waters, protect cultural resources, and enforce Indigenous laws on their territories), made me realize that it needed to. For me, both Ye'yumnuts and Hwkw'akw'la'hwum projects represent a timeline of my own personal reconciliation as an Indigenous ecologist trained by Western science. Ye'yumuts, almost a decade ago, was the place where much of my own unlearning and relearning had to occur. It is here that I learned that archaeologists and anthropologists working at the site were not simply working on their own, independent projects that had nothing to do with me. I learned that their work had *everything* to do with my task of creating a restoration plan for the highly degraded site. I held relics in my own hands, listened to the stories shared by Elders, and for the first time in my life, became interested in history. Through those experiences, learning and walking with an awareness of the significance of this cultural keystone place to my Quw'utsun friends, a term I was not even aware of at the time, I realized that site degradation was a symptom of a greater problem, and successful restoration required new measures to evaluate success (Grenz 2024). Site degradation I witnessed, such as the encroachment of the Garry oak ecosystem by native species, coastal Douglas fir, and snow berry (*Symphoricarpos albus*), and the dense thatch layers inhibiting the growth of the common camas (*C. quamash*) and lily species such as chocolate lily (*Fritillaria affinis*) were a symptom of the loss of human relationship with the land. Upon this realization, the loss of Quw'utsun land stewardship practices became apparent everywhere I looked. I came to realize standard measures of ecological health and planning were wrong for these places—it wasn't simply about native plant presence and condition nor casting invasive species as the primary threat to them. The more I engaged with the archaeologists, anthropologists, and knowledge keepers, I realized that restoration planning not only required meaningful inclusion of Indigenous knowledges but also needed to facilitate opportunities for the revitalization of culture—both learning about it and practicing it on the land. I could see that focusing on building relationship with place through increased access, such as learning opportunities and spaces (Figure 3), could also resolve some of the challenges associated with ecological restoration by promoting ongoing stewardship rooted in reciprocity. In this context, I finally understood what the phrase, "We [Indigenous Peoples] are the land," meant. Our own personal, cultural, and spiritual health is reflected by the land. That in healing ourselves, the land will be healed and that in healing the land, we will heal ourselves. Ye'yumnuts taught me that CKPs have spirit and are our teachers if we learn to listen to them. I recognized that our work was not simply to restore them, but a responsibility to work in reciprocity with these teachers by telling their story, caring for them, and strengthening relationships with them.

More recently, as I have begun working on Hwkw'akw'la'hwum, Quw'utsun culture has come first. The work has been grounded in honoring the truth of those lands through historical ecology, and aligned with the values, needs, and vision of the community. As I stood one day, looking over a site that is the ultimate confrontation with colonialism upon the land—stolen, diked, and subjected to agrarian-style farming for a century—to be restored to a Quw'utsun intertidal food system, I had a vision. I could see and hear people on the land, talking and harvesting. I could see the youth learning to hunt ducks and fish salmon on the restored channels. I could see people gathered, cooking and eating together. As our project has progressed, I saw one of my visions come to life as I watched Quw'utsun gather and cook the first feast on those lands in over one hundred years. I sat beside an Elder at the fire, watching him eat his clams, salmon, and potatoes, while looking at the beginnings of the five-acre plant nursery being installed to provide plants for the immense site (Figure 4). Centering culture has

Figure 3 Ye'yumnuts. Top left: learning from Elder Luschiim, Dr. Arvid Charlie. Top right: integration of interpretive elements. Bottom right: encroachment of Garry oak meadow by Douglas-fir. Bottom left: enabling land-based learning (construction of covered teaching area). Photos by Grenz.

transformed my work to include elements I never learned about during my colonial education or career, such as finding ways to facilitate access and landback. Through this reconciliation within me, I am able to help enact reconciliation on the land. I now work with a sense of hope and a confidence in our outcomes that I have never had before. We [Indigenous Peoples] are, indeed, the land, and I can already see how our collective resurgence is transforming and healing landscapes and people for the benefit of all relations.

Spune'luxutth

I (Martin) am a fifth-generation settler, conservation scientist, and mother. I was born on and grew up on Salt Spring Island part of the unceded territories of the Quw'utsun, Spune'luxutth, and W̱SÁNEĆ Peoples. Surrounded by the evidence of the histories of these Peoples in the culturally modified trees, clam gardens and shell middens, oak meadows and the ancient burials, I sought out knowledge from family and teachers throughout my childhood about the history of this place but was offered very little. I came to realize that the evidence of Indigenous occupation of this land was actively being erased as part of the colonial project in which I was born into. Stories shared with me from early settler families confirmed this erasure. They told of the days when shell middens were mined for use as road base; the roads were so bright they'd light the way home at night. I learned of land, tree, and cave burials that were present at the time of colonization but had since "disappeared," and

Figure 4 Hwkw'akw'la'hwum. Top left: Part of large-scale restoration of the estuary including 2km of dike removal. Right: Traditional Quw'utsun feast at Hwkw'akw'la'hwum farm site to be revitalized. Bottom middle: On-site native plant nursery to support food systems revitalization. Bottom left: Signage at Hwkw'akw'la'hwum. Photos (in order): Nature Trust BC, Grenz, Sachs.

in my lifetime I witnessed the continuation of this erasure—ancient burials desecrated by development, culturally modified old growth cedars and firs logged, and camas gardens smothered by settler homes, farms, and gardens.

The forests, meadows, and intertidal zones of the Salish Sea became my teachers. Watching the changes in the ecology of the island as the settler population of Salt Spring Island expanded from <1000 when I was born to >12000 today, were motivators for pursuing a career in conservation. I was trained in a discipline that viewed humans as the problem and keeping humans out of areas as the solution—fortress conservation (Sapignoli and Hitchcock 2023). Since completing my doctoral studies in 2005, I've been unlearning and decolonizing the way I work in conservation, learning that re-establishing healthy human-nature relationships is the most important work of conservation.

I (Sachs) am a young researcher and fifth-generation settler living in the Inland Temperate Rainforest of BC on unceded Ktunaxa, Sinixt, and Syilx territories. I grew up learning beneath tree canopies that were cleared more extensively each year of my childhood, a pattern that grounded in me a commitment to protecting and restoring forests. I pursued undergraduate studies in Forest Sciences which brought me to Coast Salish territories and led me to work in various outdoor research positions. Along this path, I was trained to see ecosystems through a Western scientific lens—as webs of species, interactions, and processes, too often unraveling in the hands of human extraction. This framing heightened my anxiety for our planet and compelled me to "find solutions".

However, as I set out to assess impacts of hyperabundant deer on cedar forests throughout the Salish Sea, as described below, Spune'luxutth shifted my perspective. I've listened to Elders describe their

forests as highly managed places—where traditional foods, medicines, and technologies have been enhanced over generations—and witnessed the scarcity of these same resources where their stewardship has been excluded. I now see these places not just as ecosystems but as complex Indigenous food systems rooted in human relationship.

As part of the Conservation Decisions Lab's work on understanding and predicting cumulative effects in the Salish Sea, we (Martin, Sachs, and our field crew) survey islands of differing deer densities to understand the impacts of deer hyperabundance and other stressors. As we began our work on islands experiencing high deer densities, the only sounds in the forest were crisp conifer needles and dry branches snapping underfoot, as over-browsing had swapped lush understory vegetation for desert-like conditions. Without hunting or natural predators (wolves and cougars were extirpated by settlers in the early 1900s), it became clear that when deer were at high densities, the lands struggled to provide for them. The few plants remaining were low-nutrient starvation foods like sword fern (*Polystichum munitum*) and invasive English holly (*Ilex aquifolium*)—the forests naked and quiet. Noting the buildup of wildfire fuels, defoliated shrubs, and lack of understory vegetation which many songbirds rely on for nesting and foraging and pollinators require to thrive, we ranked deer hyperabundance high on the list of threats facing these places, among fire suppression, climate change, rural development, and forestry. However, as we moved from these islands where Indigenous land stewardship has long been severed, to Spune'luxutth Island where Spune'luxutth Tribe continues hunting today, we experienced a stark difference. Guiding us to our plots, our Spune'luxutth co-researchers shared stories about the importance of deer to nourish their community. We enjoyed cool shade of diverse understory trees and shrubs weaving additional canopies beneath towering cedars and Douglas-firs. This ecological complexity hosted songbirds, calling from the branches of Pacific crab-apple (*Malus fusca*) and cascara (*Frangula purshiana*) trees. We heard them clearly, as our footsteps fell quiet on the mossy forest floor. Berries sweetened the air, signaling healthy soils, wildlife habitat, and a diversity of foods (Figure 5). We learned that the ecological silence we previously felt in those high-deer-density forests was indeed the silencing of Coast Salish stewardship.

Spune'luxutth teaches us that ecological restoration must aim beyond management of a single species like deer or recovering native plant communities. By centering cultural resurgence, we (restoration ecologists and practitioners) must work toward dismantling barriers preventing Indigenous communities from accessing and managing their traditional foods. This is an essential step toward ecosystem recovery in fundamentally cultural landscapes.

We are learning to align our research with this understanding. Our initial analyses, based on conventional measures of vegetation and deer alone, documented declines in understory plant communities on high-deer-density islands, describing unraveling ecosystems, but not the Indigenous food systems before us that held immense potential for healing. It became clear that the story of our data required deeper context.

Interviews with Spune'luxutth Elders and knowledge keepers have deepened our understanding of pre-colonial deer stewardship and helped refine our research questions to center culturally relevant plant species, which are often the most palatable to deer and thus disproportionately impacted by insufficient deer management. Spune'luxutth reminds us that the stewardship these forests require is embedded in reciprocal human relationships with lands and waters, including Indigenous-led deer hunting. Through applying an Indigenous food systems lens in our research, we advocate that the healing of these relationships is integral to both Indigenous food sovereignty and the restoration of cedar forests in the Salish Sea.

Discussion

Our experiences working alongside Quw'utsun Peoples at three CKPs with differing colonial histories and stages of revitalization—Ye'yumnuts, Hwkw'akw'la'hwum, and Spune'luxutth—demonstrate each place serves as critical traditional ecological knowledge keepers, offering teachings that reconstruct the past and guide future restoration efforts. These CKPs revealed not only the risks of erasure posed by Western restoration practices (Grenz and Armstrong 2023), but also the tendency to mischaracterize, misdiagnose, and mistreat ecological degradation due to a limited understanding of historical human-land relationships.

Considering that the "extent of traditional resource management undertaken" and the intensity,

Figure 5 Cedar forest understories where deer populations are hyperabundant (left: Ruckle Park, Salt Spring Island) versus stewarded through continuous hunting by Spune'luxutth Tribe (right: Spune'luxutth Island). Photos by Sachs.

frequency, and diversity of use by humans are all critical indicators of CKPs (Cuerrier et al. 2015), the loss of reciprocal human-land relationships is unsurprisingly antithetical to their wellbeing. This further aligns with calls to dismantle and transform colonial systems of environmental management that inhibit Indigenous stewardship practices through land dispossession and centralized governance structures (Artelle et al. 2021). To overcome this, we must redefine what efficacy means in restoration to center aspects of cultural resurgence, such as Indigenous languages, ceremonies, land stewardship practices, and laws, instead of conventional objectives like species lists that match a reference, endangered, or "at -risk" condition. While the latter objectives hold value, CKPs teach us that they emerge downstream of healthy relationships between People, culture, and place, and thus cannot be restored in isolation. This resonates with the use of biocultural indicators for social-ecological resilience and sustainability, which reflect the interdependence of ecological and cultural wellbeing (Dacks et al. 2019; Sterling et al. 2017).

Our experiences with Ye'yumnuts, Hwk-w'akw'la'hwum, and Spune'luxutth underscore how colonial conceptions of them misinterpret environmental degradation as isolated issues rather than symptoms of disrupted human-land relationships. We thus join many others (e.g., Wickham et al. 2022) in challenging the notions that humans are inherently harmful to the Earth. We advocate instead for restoration practices that restore traditional relationships with land. For instance, Spune'luxutth offers a compelling contrast: its relatively intact Indigenous, culturally based governance and stewardship, visibly distinguish it from nearby islands where Indigenous stewardship has been severed and colonial governance dominates. While some point to deer hyperabundance on these nearby islands as the cause of ecological degradation, this framing overlooks the root issue, which lies in broken Indigenous relationships with the land. The loss of Coast Salish hunting practices post-colonization has enabled deer hyperabundance, triggering the cascade of ecological impacts we observe in cedar forests today (McComb et al. in review).

In contrast to Spune'luxutth, sites like Ye'yumnuts, where Indigenous land stewardship and governance have been disrupted for over a century, face significant challenges. Surrounded by settler development and under colonial government control, these CKPs have seen limited restoration success despite repeated efforts such as invasive species removal and native planting. While recent efforts to include Indigenous knowledges in restoration are well-

intentioned, they often fall short of achieving long-term, desired ecological outcomes such as the recovery of threatened plant and wildlife communities. This is due to the extraction of these Indigenous knowledges from their grounding in axiology and epistemology (Armstrong et al. 2024; Grenz and Armstrong 2023). Additionally, the application of Indigenous knowledge without historical ecological context or limited access to the full, Indigenous-led implementation of traditional stewardship practices, such as cultural fire management in Garry oak meadows (Turner 2014), limits their effectiveness. These efforts also fail to facilitate or enable the strengthening of human-land relationships rooted in reciprocity, which are essential for the long-term health and resilience of culturally shaped ecosystems.

As we turn to the immense challenge of restoring a CKP like Hwkw'akw'la'hwum, where very little remains of the Quw'utsun intertidal food system it once was due to significant colonial transformation to diked, agrarian farmland more than a century ago, we draw on teachings from Ye'yumnuts and Spune'luxutth. This has allowed us to apply Quw'utsun cultural resurgence not as a symbolic gesture, but as the guiding methodology for restoration. In doing so, our approach departs from the common and misguided practice of selectively appropriating elements from Indigenous knowledge systems and labeling that as inclusion. Instead, it is grounded in the appropriate axiology and rooted in relationships and accountability. In addition to being guided by Quw'utsun values and community needs (Grenz 2020), Quw'utsun knowledge holders are integral to the decision-making processes that shape restoration efforts for their own territories (Artelle et al. 2021; Wickham et al. 2022). The involvement of historical ecologists and ethnoecologists within our interdisciplinary research team reflects a supporting role—bringing expertise that contributes to the establishment of precolonial baselines and providing additional lines of evidence for historical land use. Their work helps to address gaps in oral histories and provides knowledge of colonial-era land use that inform future actions grounded in truth-based practice, as we recognize that truth must come before reconciliation (Stein 2020).

Drawing from our experiences, we offer the following guidelines for cultural resurgence as a methodology for ecological restoration. It is essential that this approach is tailored to the specific histories, cultures, priorities, lands, and waters of the Indigenous Peoples involved. First, restoration efforts must be guided by Indigenous communities on their own territories, and thus require ongoing, respectful, and reciprocal relationships between communities and restoration practitioners and researchers. This includes ensuring Indigenous knowledge holders are integral to decision-making processes and that restoration outcomes reflect community-identified priorities. Second, we must work to understand pre-colonial baselines, so we can set restoration goals and ask research questions that are culturally, ecologically, and historically grounded. For us, this has meant listening deeply to Indigenous knowledge holders about how their lands have changed through time and collaborating with historical ecologists and ethnoecologists. Third, the restoration process must remain flexible, adapting to the evolving needs and values of communities, as well as unfolding climate futures and shifting social, political, and ecological conditions.

Finally, we emphasize the importance of reflexivity (Smith 2021) as a distinct and ongoing practice. This involves critically reflecting on our own positionalities—how who we are shapes what we see, what we value, how we are seen by others, and how this is reflected in our work. For researchers implementing cultural resurgence as a methodological approach to ecological restoration of CKPs, particularly those who are not from the places in which they work, including reflexivity as an intentional and continual practice supports greater accountability, humility, and alignment with community-led goals.

Each of these elements may generate tensions—in academic institutions, across disciplines, and within ourselves—as they challenge entrenched Western-scientific norms around research timelines, deliverables, power structures, and the epistemological foundations of ecology (Grenz 2020). Kovach (2021) reminds non-Indigenous allies of our [their] "role in pushing back against an all-consuming Eurocentrism" when working to advance Indigenous-led research. Additionally, as cultural resurgence is applied in restoration, and ecosystems receive the reciprocal human-land relationships they need to thrive, researchers must embrace shifting roles and responsibilities. Moments for researchers to step back are important indicators of success, as community-led land stewardship is at the heart of this methodology.

The intersection of Indigenous cultural resurgence and ecological restoration offers a

transformative framework for addressing the limitations of Western scientific practices for healing CKPs while advancing reconciliation. By positioning cultural resurgence as a foundational methodology, restoration efforts can transcend misguided and extractive approaches to embrace holistic, relational practices that honor the profound connections between land, culture, and community. The revitalization of Quw'utsun cultural keystone places demonstrates how centering culture—such as language, ceremonies, foods, and land-based learning—not only strengthens ecological health and resilience but also reaffirms Indigenous sovereignty and stewardship.

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Declarations

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References Cited

Asch, M., J. Borrows, and J. Tully, eds. 2018. Earth-Bound: Indigenous Resurgence and Environmental Reconciliation. In *Resurgence and Reconciliation*, pp. 49–82. University of Toronto Press, Toronto. DOI:10.3138/9781487519926-004.

Arcese, P., R. Schuster, L. Campbell, A. Barber, and T. Martin. 2014. Deer Density and Plant Palatability Predict Shrub Cover, Richness, Diversity and Aboriginal Food Value in a North American Archipelago. *Diversity and Distributions* 20:1368–1378. DOI:10.1111/ddi.12241.

Armstrong, C. G., J. Grenz, J. Zyp-Loring, J. LaFontaine, L. Main Johnson, and N. J. Turner. 2024. Ethnoecological Perspectives on Environmental Stewardship: Tenets and Basis of Reciprocity in Gitxsan and Nlɛʔkepmx (Nlaka'pamux) Territories. *People and Nature*. DOI:10.1002/pan3.10641.

Augustine, S., and P. Dearden. 2014. Changing Paradigms in Marine and Coastal Conservation: A Case Study of Clam Gardens in the Southern Gulf Islands, Canada: A Values-Based Approach to Coastal Conservation. *The Canadian Geographer / Le Géographe canadien* 58:305–314. DOI:10.1111/cag.12084.

Arnett, C. 1999. *The Terror of the Coast: Land Alienation and Colonial War on Vancouver Island and the Gulf Islands, 1849–1863*. Talonbooks, Burnaby, Canada.

Artelle, K. A., M. S. Adams, H. M. Bryan, C. T. Darimont, W. G. (Dúqváísḷa) Housty, J. E. Moody, M. F. Moody, D. (Muq'vas Glaw) Neasloss, C. N. Service, and J. Walkus. 2021. Decolonial Model of Environmental Management and Conservation: Insights from Indigenous-Led Grizzly Bear Stewardship in the Great Bear Rainforest. *Ethics, Policy and Environment* 24:283–323. DOI:10.1080/21550085.2021.2002624.

Beckett, K., E. Elle, C. Kremen, A. Sherwood, S. McComb, and T. Martin. 2022. Hyperabundant Black-Tailed Deer Impact Endangered Garry Oak Ecosystem Floral and Bumblebee Communities. *Global Ecology and Conservation* 38. DOI:10.1016/j.gecco.2022.e02237.

Commemorating Ye'yumnuts. 2023. Commemorating Ye'yumnuts - Farming Histories. Available at: https://sites.google.com/view/commemorating-yeyumnuts/settler-voices/farming-histories. Accessed on November 28, 2024.

Corntassel, J. 2020. Restorying Indigenous Landscapes: Community Regeneration and Resurgence. In *Plants, People, and Places: The Roles of Ethnobotany and Ethnoecology in Indigenous Peoples' Land Rights in Canada and Beyond*, edited by N. Turner, pp. 350–365. McGill-Queen's University Press, Montreal, Canada. DOI:10.2307/j.ctv153k6x6.

Corntassel, J., and C. Bryce. 2012. Practicing Sustainable Self-Determination: Indigenous Approaches to Cultural Restoration and Revitalization. *Brown Journal of World Affairs* 18:151–62.

Coulthard, G. S. 2014. *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition*. University of Minnesota Press, Minneapolis.

Cowichan Tribes. 2024. About Cowichan Tribes. Available at: https://cowichantribes.com/about-cowichan-tribes. Accessed on November 25, 2024.

Cuerrier, A., N. J. Turner, T. C. Gomes, A. Garibaldi, and A. Downing. 2015. Cultural Keystone Places: Conservation and Restoration in Cultural Landscapes. *Journal of Ethnobiology* 35:427–448. DOI:10.2993/0278-0771-35.3.427.

Dacks, R., T. Ticktin, A. Mawyer, S. Caillon, J. Claudet, P. Fabre, S. D. Jupiter, J. McCarter, M. Mejia, P. Pascua, E. Sterling, and S. Wongbusarakum. 2019. Developing Biocultural Indicators for Resource Management. *Conservation Science and Practice* 1:e38. DOI:10.1111/csp2.38.

David Suzuki Foundation. 2025. What Is Land Back? https://davidsuzuki.org/what-you-can-do/what-is-land-back/. Accessed on May 27, 2025.

Ellis, C., Adams, T. E., and A. P. Bochner. 2011. Autoethnography: An Overview. *Historical Social Research / Historische Sozialforschung* 36:273–290.

Estuary Resilience. 2024. Cowichan Estuary Restoration Project. Available at: https://www.estuaryresilience.ca/cowichan-estuary-restoration-project/. Accessed on October 9, 2024.

Flower, A. 2021. *Salish Sea Bioregion Boundary*. Salish Sea Atlas Data. Western Washington University, Bellingham, WA.

Government of British Columbia. 2019. Declaration on the Rights of Indigenous Peoples Act. SBC 2019, c. 44. Available at: https://canlii.ca/t/544c3. Accessed on November 28, 2024.

Green, A. J., L. J. P. van Vliet, and F. A. Kenney. 1989. Soils of the Gulf Islands of British Columbia: Volume 3. Soils of Galiano, Valdes, Thetis, Kuper, and Lesser Islands. Research Branch, Agriculture Canada, Ottawa, Canada.

Grenz, J. 2020. Healing the Land by Reclaiming an Indigenous Ecology: A Journey Exploring the Application of the Indigenous to Invasion Biology and Ecology. Doctoral dissertation, The University of British Columbia, Vancouver.

Grenz, J. 2024. *Medicine Wheel for the Planet: A Journey Toward Personal and Ecological Healing.* Knopf Canada, Toronto.

Grenz, J., and C. G. Armstrong. 2023. Pop-up Restoration in Colonial Contexts: Applying an Indigenous Food Systems Lens to Ecological Restoration. *Frontiers in Sustainable Food Systems* 7:1244790. DOI:10.3389/fsufs.2023.1244790.

Hul'qumi'num Treaty Group. 2005. Shxunutun's Tu Suleluxwtst: In the Footsteps of Our Ancestors. Interim Strategic Land Plan for the Hul'qumi'num Core Traditional Territory.

Indian Act. 1985. *Revised Statutes of Canada, 1985, c. I-5*. Available at: https://laws-lois.justice.gc.ca/eng/acts/i-5/. Accessed on May 26, 2025.

Joseph, L., and N. J. Turner. 2020. "The Old Foods Are the New Foods!": Erosion and Revitalization of Indigenous Food Systems in Northwestern North America. *Frontiers in Sustainable Food Systems* 4. DOI:10.3389/fsufs.2020.596237.

Kimmerer, R. W. 2013. *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. Milkweed Editions, New York.

Kovach, M. 2021. *Indigenous Methodologies: Characteristics, Conversations, and Contexts, Second edition*. University of Toronto Press, Toronto, Canada.

Lake, F. K., V. Wright, P. Morgan, M. McFadzen, D. McWethy, and C. Stevens-Rumann. 2017. Returning Fire to the Land: Celebrating Traditional Knowledge and Fire. *Journal of Forestry* 115:343–353. DOI:10.5849/jof.2016-043R2.

Lea, T. 2006. Historical Garry Oak Ecosystems of Vancouver Island, British Columbia, Pre-European Contact to the Present. *Davidsonia* 17:34–50.

Legislative Assembly of British Columbia. 2019. Bill 41—2019: Declaration on the Rights of Indigenous Peoples Act. 4th Session, 41st Parliament. Available at: https://www.bclaws.gov.bc.ca/civix/document/id/lc/billsprevious/4th41st:gov41-1. Accessed on November 28, 2024.

Martin T., P. Arcese, and N. Scheerder. 2011. Browsing down Our Natural Heritage: Deer Impacts on Vegetation Structure and Songbird Populations across an Island Archipelago. *Biological Conservation* 144:459–469. DOI:10.1016/j.biocon.2010.09.033.

McClenachan, L., T. Rick, R. Thurstan, A. Trant, P. Alagona, H. Alleway, C. Armstrong, R. Bliege Bird, N. Rubio-Cisneros, M. Clavero, A. Colonese, K. Cramer, A. Davis, J. Drew, M. Early-Capistrán, G. Gil-Romera, M. Grace, M. Hatch, E. Higgs, K. Hoffman, J. Jackson, A. Jerardino, M. LeFebvre, H.

Lotze, R. Mohammed, N. Morueta-Holme, C. Munteanu, A. Mychajliw, B. Newsom, A. O'Dea, D. Pauly, P. Szabó, J. Torres, J. Waldman, C. West, L. Xu, H. Yasuoka, P. Zu Ermgassen, and K. Van Houtan. 2024. Global Research Priorities for Historical Ecology to Inform Conservation. *Endangered Species Research* 54:285–310. DOI:10.3354/esr01338.

McLay, E., D. Brown, N. Oakes, and L. Oliver. 2009. Archaeological Investigations of Ground Penetrating Radar Mapping at Somenos Creek (DeRw-018). In *B.C. Report prepared for Timbercrest Estates Ltd.* Archaeology Branch, and Cowichan Tribes Hul'qumi'num Treaty Group. Unpublished.

McLay, E., D. Brown, N. Oakes, and L. Oliver. 2013. Archaeological Impact Assessment of Lot REMB Somenos Creek (DeRw-018). In *Timbercrest Estates Ltd., North Cowichan, B.C. Report prepared for Timbercrest Estates Ltd.* Archaeology Branch, and Cowichan Tribes Hul'qumi'num Treaty Group. Unpublished.

Meidinger, D. V., and J. Pojar, eds. 1991. *Ecosystems of British Columbia*. BC Ministry of Forests Research Branch, Victoria, Canada.

NDN Collective. 2025. LAND BACK. Available at: https://landback.org/. Accessed on May 27, 2025.

Olsen, J. 2019. W̱SÁNEĆ Clam Garden Restoration Project Final Report; Caring for and Kexals-Digging Clams in the W̱SÁNEĆ Territory. Parks Canada Agency, Gatineau, Canada.

Penelakut Tribe. 2024. Penelakut Tribe. Available at: https://penelakut.ca/. Accessed on November 28, 2024.

Pidgeon, M. 2019. Moving between Theory and Practice within an Indigenous Research Paradigm. *Qualitative Research* 19:418–436. DOI:10.1177/1468794118781380.

Pieratos, N. A., S. S. Manning, and N. Tilsen. 2021. Land Back: A Meta Narrative to Help Indigenous People Show up as Movement Leaders. *Leadership* 17:47–61. DOI:10.1177/1742715020976204.

Reid, A. J., L. E. Eckert, J. Lane, N. Young, S. G. Hinch, C. T. Darimont, S. J. Cooke, N. C. Ban, and A. Marshall. 2021. "Two-Eyed Seeing": An Indigenous Framework to Transform Fisheries Research and Management. *Fish and Fisheries* 22:243–261. DOI:10.1111/faf.12516.

Sapignoli, M., and R. K. Hitchcock. 2023. Fortress Conservation: Removals of Indigenous People from Protected Areas in the United States. In *People, Parks, and Power*, pp. 15–29. Springer International Publishing, Cham. DOI:10.1007/978-3-031-39268-9_2.

Shackeroff, J. M., and L. M. Campbell. 2007. Traditional Ecological Knowledge in Conservation Research: Problems and Prospects for Their Constructive Engagement. *Conservation and Society* 5:343–360.

Smith, L. T. 2021. Decolonizing Methodologies: Research and Indigenous Peoples. Zed Books, London.

Stein, S. 2020. 'Truth before Reconciliation': The Difficulties of Transforming Higher Education in Settler Colonial Contexts. Higher Education Research and Development 39:156–170. DOI:10.1080/07294360.2019.1666255.

Sterling, E. J., C. Filardi, A. Toomey, A. Sigouin, E. Betley, N. Gazit, J. Newell, S. Albert, D. Alvira, N. Bergamini, M. Blair, D. Boseto, K. Burrows, N. Bynum, S. Caillon, J. E. Caselle, J. Claudet, G. Cullman, R. Dacks, P. B. Eyzaguirre, S. Gray, J. Herrera, P. Kenilorea, K. Kinney, N. Kurashima, S. Macey, C. Malone, S. Mauli, J. McCarter, H. McMillen, P. Pascua, P. Pikacha, A. L. Porzecanski, P. De Robert, M. Salpeteur, M. Sirikolo, M. H. Stege, K. Stege, T. Ticktin, R. Vave, A. Wali, P. West, K. B. Winter, and S. D. Jupiter. 2017. Biocultural Approaches to Well-Being and Sustainability Indicators across Scales. *Nature Ecology and Evolution* 1:1798–1806. DOI:10.1038/s41559-017-0349-6.

Truth and Reconciliation Commission of Canada. 2015. Honouring the Truth, Reconciling for the Future: Summary of the Final Report of the Truth and Reconcilliation Commission of Canada. Truth and Reconcilliation Commission of Canada, Winnipeg, Manitoba.

Tuck, E., and W. Y. Yang. 2012. Decolonization Is Not a Metaphor. *Decolonization: Indigeneity, Education and Society* 1:1–40.

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

Wickham, S., S. Augustine, A. Forney, D. Mathews, N. Shackelford, J. Walkus, and A. Trant. 2022. Incorporating Place-Based Values into Ecological

Restoration. *Ecology and Society* 27:art32. DOI:10.5751/ES-13370-270332.

Williams, J. Q. 2025. First Person: Indigenous Agriculture and the Cowichan Estuary Restoration Project. Available at: https://thediscourse.ca/cowichan-valley/first-person-cowichan-estuary-indigenous-agriculture. Accessed on May 26, 2025.

Wilson, S. 2008. *Research Is Ceremony: Indigenous Research Methods*. Fernwood Publishing, Winnipeg, Canada.