



“The Old Foods Are the New Foods!”: Erosion and Revitalization of Indigenous Food Systems in Northwestern North America

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The global “nutrition transition” has had an immense impact on Indigenous Peoples of Northwestern North America. From an original diet comprised of mostly local plant and animal foods, including salmon, game, diverse plants, seaweed and other marine foods, many Indigenous people are now eating mostly imported, refined marketed foods that are generally less healthy, and many are at risk of diet-related diseases such as type 2 diabetes. Nevertheless, Indigenous people have always valued their ancestral foods, and over the last few decades there have been many initiatives throughout the region to restore and revitalize these original foods, and to re-learn Indigenous methods of processing and harvesting them. In this paper we describe the original Indigenous food systems in the study region, and the methods used to sustain and promote the ancestral food species and habitats. We then discuss the impacts of colonization, and describe recent and ongoing Resilience and Resurgence in relation to ancestral foods and food practices, including firsthand experiences with renewing food traditions. These initiatives are often connected with language revitalization and cultural resurgence programs. Led by Indigenous communities, they are undertaken with support of academic, government, and other partners. In all, they have resulted in stronger, more vibrant cultures and generally healthier communities.

Keywords: indigenous peoples' health, nutrition, indigenous peoples, health, ethnoecology, cultural resurgence

INTRODUCTION

The diets of Indigenous Peoples of northwestern North America—the region on which this paper focuses—have traditionally been diverse and nutritious, including a range of plant and animal foods. Most of these can be, and have been, obtained locally, with some accessed through trade from other locales. The concept of Indigenous Internationalism introduced by Anishinaabe scholar Simpson (2017) speaks to the ancestral economic and trade relationships between Indigenous communities. We will revisit this concept later in the paper. Since far fewer foods are available in the winter months people originally had to rely on foods as they became available over the course of the year or find ways to store them for later use. Methods for processing the foods—cooking, dehydrating, and otherwise preparing them for storage—have been a key component of overall food knowledge. In general, women have been responsible for harvesting most of the plant foods and shellfish, and men have been the hunters and fishers, although there are no strict rules guiding division of labor based on gender. Anyone—men, women, two spirit and gender diverse

people—could, and can, undertake these food-based activities, including food processing. Children were, and still are to some extent, trained in food harvesting and processing from an early age, and often obtained their own food over the course of the day.

Significant research has been undertaken on Indigenous food systems of the region, including nutrient analyses of both raw and processed foods (cf. Kuhnlein and Turner, 1991; Turner, 2006, 2010, 2014; Kuhnlein et al., 2009; Turner et al., 2009; Kuhnlein and Humphries, 2017). These food systems have been in place over countless generations, in some cases for millennia, and have supported relatively dense populations, especially along the Northwest Coast of North America (Suttles, 1990). Complex social and ceremonial systems were developed over time, helping to assure equitable distribution of food, as well as sustaining and enhancing the food species and their habitats (Ksan, People of, 1980; Atleo, 2004; Deur and Turner, 2005; Turner et al., 2013b; Joseph, 2020). Potlatches are an example of a ceremonial complex in which the serving and distribution of nutritious, culturally valued food has always been a central element (Brown and Brown, 2009). Ownership or proprietorship of key food resource species and harvesting places by individuals, families, and clans is another way in which food species have been monitored and harvesting overseen (Turner et al., 2005, 2013b).

The arrival of Europeans in the region, beginning in the late 1700s, initiated significant changes in the lifeways of First Nations, including the introduction of new foods. The newcomers benefitted widely from the Indigenous Peoples' foods, at first for sustenance and then, in some cases such as the fisheries, for commercial production (Maclachlan, 1998; Lutz, 2008; Turner and von Aderkas, 2012; Turner, 2020a). For Indigenous Peoples, some of the new foods were quickly adopted and enfolded into their existing food systems and lifeways, enhancing their food security (Nabhan, 2006; Turner et al., 2011b). Other foods, such as refined sugar, were more problematic in terms of people's health. In any case, soon colonial forces instigated a systematic dismantling of Indigenous Peoples' food systems through banning access to important cultivation and harvesting landscapes, imposing restrictions on fishing practices and on landscape burning to maintain particular habitats, privatizing land, and, ultimately, through food-related abuses carried out through residential schools and Indian hospitals (Turner and Turner, 2008). These actions were similar to those experienced by Indigenous Peoples worldwide as their homelands were taken over by colonial forces. The new wage economy impacted Indigenous seasonal harvesting rounds and resulted in loss of learning opportunities for children and youth (Thomas et al., 2016). The decline in harvesting and use of Indigenous foods, both regionally and worldwide (Kuhnlein et al., 2009), has been generally detrimental to people's health and has also resulted in significant cultural losses (Turner et al., 2008a). The targeting and appropriation of Indigenous foods created what Simpson (2017) calls an "imposed poverty" where culturally important foods exist but they are either not accessible to Indigenous Peoples, or they are being commercially exploited, raising their monetary value to the point where Indigenous people are unable to afford their own ancestral foods.

In this paper we describe the cultural and nutritional importance of Indigenous Peoples' ancestral foods in northwestern North America, and the ways in which people have maintained and enhanced their foods—their traditional land and resource management systems. We describe some of the impacts on these traditional foods, their uses over the past century and a half, and how the loss of the foods has adversely affected people's health and well-being. We then focus the remainder of our paper on ways in which these ancestral Indigenous foods are being renewed and restored as part of an overall movement in cultural and political revitalization and resurgence.

RESEARCH AREA, SOURCES, AND METHODS

The general region covered in this paper extends from central Alaska to the Columbia River along the coast, and inland to the Rocky Mountain region. The First Peoples of the region speak ~50 different languages or major dialects, and each group has its own distinctive cultural attributes including Indigenous food systems. Three general cultural regions are recognized within the overall area: Northwest Coast, Interior Plateau, and Subarctic (Helm and Sturtevant, 1982; Suttles, 1990; Walker, 1998; Turner, 2014).

Most of Northwestern North America is forested, mainly with conifers. Along the coast on the windward side is temperate rainforest, dominated by western hemlock¹, Sitka spruce and western redcedar, whereas the leeward side, such as on southeastern Vancouver Island, Puget Sound, and the associated islands, is dominated by coastal Douglas-fir, with Garry oak and arbutus in the drier sites, in some places interspersed with fire-maintained prairies. At higher elevations are subalpine forests with mountain hemlock, yellow cedar and subalpine fir, and above the treeline are alpine ecosystems. In the southern Interior, the driest valley bottoms are grasslands, with ponderosa pine forests surrounding and above these are forests dominated by Interior Douglas-fir. With increased elevation are subalpine forests with Engelmann spruce, subalpine fir, and lodgepole pine. Eastwards toward the Rockies is another area of higher rainfall—the interior wet belt—with western hemlock and western redcedar as dominant trees at lower and middle elevations and Engelmann spruce and subalpine fir higher up. The northern Interior is largely forested with sub-boreal and boreal pine and spruce forests, interspersed with willow, birch, and aspen. Throughout the Interior, at higher elevations above the treeline is alpine tundra vegetation (British Columbia Ministry of Forests, 1999; Turner, 2014). All of these vegetation zones produce diverse food species that have been accessed by Indigenous Peoples of the region over centuries and millennia.

The information included here is drawn from interviews with Indigenous knowledge holders, from personal and participatory observation of both authors, and from literature sources, including our own publications (especially Turner's, dating back over decades; e.g., Kuhnlein and Turner, 1991; Deur

¹Appendix 1 lists the scientific names of plant and animal species mentioned in this paper.

and Turner, 2005; Turner and Turner, 2007, 2008; Turner, 2010, 2014, 2020a; Turner et al., 2011a,b, 2012, 2013a,b; also Joseph, 2012, 2020). The methods we have used in our research are standard for ethnobiology and ethnobotany (cf. Nolan and Turner, 2011): interdisciplinary approaches, both qualitative (e.g., ethnological interviews, participant observation) and quantitative (e.g., nutrient analysis, experimental replication of traditional management), following ethical standards and with respect for our collaborators' intellectual property. The first author, Styawat (Leigh Joseph) is Indigenous, a member of the *Skwxwú7mesh* (Squamish) First Nation, and in parts of this paper, the wording reflects her voice, in the singular, as an Indigenous woman.

INDIGENOUS FOOD SYSTEMS OF NORTHWESTERN NORTH AMERICA

Across our research area, about 300 different animal food species (terrestrial and marine mammals, birds, eggs, fish, and shellfish) and 150 different plant food species [root vegetables, greens (including teas and flavorings), fruits, seeds and nuts, inner bark of trees, some seaweeds and mushrooms, and one lichen], have been identified as having been consumed in some form by Indigenous Peoples (Kuhnlein and Turner, 1991; Kuhnlein and Humphries, 2017). Many of these species are little used today, but all have been documented ethnographically, and virtually all were recalled by Indigenous Elders within the past half century or so as having been harvested and consumed by them or their family members in their younger years. Notably, in recent decades there has been a renewed interest and resurgence in the harvesting, preparation and use of many of these foods—a trend that is occurring among Indigenous Peoples worldwide (Kuhnlein et al., 2009, 2013). The phrase in the title, "*The old foods are the new foods!*" is quoted from Nuxalk Elder Dr. Margaret Siwallace, participant in the Nuxalk Food and Nutrition Program (Nuxalk Nation, 1984; Turner et al., 2009, 2013), exclaiming, with some pleasure at the resurgence of community interest in bringing back some of the original Nuxalk foods that had been largely forgotten.

Seasonal Availability

Most of these Indigenous foods are only available or at their prime at certain times of the year, and are restricted to particular locales, being accessed originally during seasonal travels, or "seasonal rounds." Families and communities in the past moved with the seasons from one harvesting place to another, staying for periods of time to harvest and process their food, and generally returning to their permanent villages in the winter months to live in large measure on processed and stored food. Although permanent villages are generally located at lower elevations, along the coast or on the shorelines of rivers and lakes, people also travel to and spend time in upland areas, including high-elevation sites at and above the treeline, for hunting, berry picking, and spiritual purposes (Reimer, 2003; Turner et al., 2011a). People have also accessed certain foods through trade from neighboring or even more distant groups. For example, the Gitga'ata Ts'msyen of Hartley Bay have traded their dried red laver seaweed for

oulachens (a small, oily species of smelt) and oulachen grease from both the Haisla at Kitamaat and the Nisga'a of the Nass Valley (Turner and Clifton, 2006). Many other foods, from smoked clams, to dried salmon, to soapberries and Saskatoon berries, to camas bulbs have been widely exchanged between, for example, the coast and the Interior regions. To some extent, these practices of the past continue to the present day, and gifts of food from one nation to another are standard when people from different regions meet.

Knowledge and Skills Connected to Cultural Foods

Both in the study region and more broadly, the diversity of Indigenous foods has both cultural and nutritional significance. The harvesting, preparation, serving, and consuming of these foods has in many ways shaped, and been shaped by, First People's social institutions, worldviews, languages, customs, and ceremonies. In terms of nutrition, people's original diets were generally well-balanced, with healthy amounts of protein, carbohydrates, fats, essential vitamins, and minerals and dietary fiber (Kuhnlein and Turner, 1991; Kuhnlein and Humphries, 2017). Fish, shellfish and game, including marine and land mammals and waterfowl, contribute fats and protein, while plants are significant sources of calories and dietary fiber in Indigenous diets. Hunn (1981) estimated that plant foods comprised as much as 70 per cent of the calories consumed by peoples of the southern Interior Plateau. This would have probably been somewhat less on the coast, where oulachen grease and other fats have contributed significant amounts of calories, and even less on the northern coast and Interior, where fewer root vegetables were available, and where fish oil and animal fats would have comprised the majority of caloric intake. Both plant and animal foods contribute key vitamin and mineral nutrients. Knowledge of what foods to seek in times of shortage or emergency has also been an important aspect of Indigenous food systems (Minnis, 2021).

Cultural Protocols and Sustainable Harvest Practices

Indigenous Peoples' relationships with culturally important foods include the skills of identifying, cultivating, harvesting, and processing each food item. A central teaching in many Indigenous communities in the region—and elsewhere across North America—is to only take what you need and ensure that you utilize the foods you gather so as not to disrespect that plant or animal relatives that give their lives for our sustenance (Atleo, 2004; Turner, 2005; Turner and Berkes, 2006; Kimmerer, 2013; Geniusz, 2015; Turner and Mathews, 2020). Many of the tools and technologies developed to harvest plant and animal foods had, and have, respect, responsibility and reciprocity built into them. For example, digging sticks, usually carved from Pacific yew, were designed to be narrow and accurate so that when digging nutritious root foods, the individual roots could be selected and pried out without disturbing other plants in the vicinity (**Figure 1**). These could be left for subsequent years of harvesting. Generally speaking, baskets were designed with the



FIGURE 1 | Yew wood digging stick at site of estuarine root gardens, Kingcome Inlet, British Columbia.



FIGURE 2 | Bog cranberries (top), with Pacific crabapples and a few wild rose hips.

food they would hold in mind. Baskets for harvesting root foods have a looser weave, with stouter weaving elements of split roots and branches, so that water can be washed over the harvested roots to clean them of dirt and debris. Berry baskets are more tightly woven, on the coast often of cedarbark or, in the Interior, birchbark or tightly coiled and stitched cedar roots, so as to contain the berries, whatever their size or juiciness. Many baskets are beautifully decorated through variations in weave, or overlay with different colored materials, showing high regard for the foods they are designed to hold.

Processing the foods by dehydrating and/or cooking, as well as storing them and serving them, were, and are, all undertaken with deep respect and appreciation for the foods themselves. Along with the digging sticks and baskets, other implements and containers associated with food harvesting, processing and storage are equally well-designed, with utility, durability, and artistry combined: bows of yew, fishing nets and line of durable stinging nettle or hemp-dogbane fiber, dipnets and hoops of Douglas-fir poles, eelgrass twisting implements of dense western hemlock poles, and bentwood boxes of kerfed and steamed boards of western red-cedar. These last were used both for steaming food (using red-hot rocks dropped into water in the box with clams, root vegetables, or other food) and for food storage (Turner, 2006, 2010, 2014).

Processing and Storing Foods

There are, and continue to be, many ways to process culturally important foods, often involving dehydration, before or after cooking. Juicy, sweet berries such as salal, blueberries and huckleberries, currants, strawberries, thimbleberries and blackberries, amongst many others, can be mashed and dried into cakes, either in the sun, or smoked and dried over a smoldering fire on berry drying racks. Tarter fruits such as Pacific crabapples, bog cranberries and highbush cranberries (**Figure 2**) can be cooked lightly then preserved in water in airtight bentwood

boxes, becoming softer and sweeter over time, to be consumed as needed throughout the winter. Root foods such as bulbs of camas, tigerlily, yellow glacier lily, chocolate lily, and northern riceroot, after cooking, in the past were generally dried, pounded, and made into cakes or preserved loosely in bentwood boxes. Edible seaweed is also dried and, originally, would be stored in bentwood boxes for winter use, although more recently dried seaweed has been stored in jars or ziplock bags (Turner and Clifton, 2006; Turner, 2010, 2014).

Pit-cooking has been, and still is, an important method of preparing large quantities of foods, especially the "root" vegetables such as camas, nodding onions, balsamroots, yellow glacier lily bulbs, silverweed roots, and springbank clover rhizomes. Black tree lichen, as well as the inner bark of some trees, as well as clams and other seafood, and game have also been traditionally pit-cooked (Kuhnlein and Turner, 1991). The fuels used in smoking, cooking and drying the various foods, the skunk-cabbage leaves used as a surface for drying berries, and the salal, sword fern, fireweed, timbergrass, wild strawberry, and other plants used to flavor and protect the food in cooking pits, have all been part of the overall food system.

Indigenous Knowledge and Expertise in Managing Cultural Food Systems

Understanding the level of knowledge and labor that went into cultivating, harvesting, processing, and storing culturally important foods in the past can help develop a current day awareness for how food was equated to wealth historically, not only in the study region, but worldwide. To be rich in healthy, culturally-important foods and to have enough of these nutritious riches to share within your community and neighboring communities was a true representation of what it meant to be wealthy. Gitga'at matriarch Helen Clifton has always said, "We're rich! We're rich in our food!" (pers. comm. to NT 2002; Ommer et al., 2006; Turner and Turner, 2007).

People's activities around harvesting and processing their food have been major occasions for cultural learning as well as healthy land-based exercise (Beckwith et al., 2017; Joseph, 2020). The ceremonies and narratives that surround the harvesting and serving of Indigenous foods, and the care and respect that are key in all aspects of their use, are major elements of peoples' cultures and relationships. Language is also a critically important component of food systems, with names and vocabulary not only for the species themselves and the foods they provide but also for the implements and processes required in harvesting, preparing and serving them. The stories and ceremonies of each nation are other examples of how language is intertwined with food; it is no coincidence that language revitalization and interest in renewal of food systems go hand in hand (Turner et al., 2008b; Kimmerer, 2013; Mills et al., 2017; Simpson, 2017).

INDIGENOUS MANAGEMENT OF FOOD PRODUCTION SYSTEMS

The Healing Power of Cultural Food Practices

Culturally-rooted plant practices have the power to heal relationships with the land. The depth of connection to place, to ancestors and to mindful presence is amplified when we, as Indigenous Peoples (SLJ) across North America and beyond, partake in millennia-old practices of plant cultivation and stewardship (Kimmerer, 2013; Geniusz, 2015; Simpson, 2017). When we practice our ancestral relationships with our plant relatives we heal and strengthen ourselves. We are in a time of Indigenous cultural-political resurgence in Canada (Coulthard, 2014; Manuel, 2017; Talaga, 2018). Increasingly, Indigenous people are finding renewed strength, pride, and grounding through cultural practice and re-establishing our connections to the land. Included in this resurgence are the relationships between people and plants.

When we take plant foods and medicines into our bodies they strengthen us, prevent illness and connect us to place in a meaningful way. The act of harvesting plant foods and medicines involves in-depth knowledge: identifying the plants, understanding their lifecycles, knowing when and where to harvest particular species, recognizing phenological indicators, developing sustainable management and harvesting practices guided by cultural worldview and practical lived knowledge accumulated over generations (Kimmerer, 2013; Turner, 2014; Geniusz, 2015; Simpson, 2017).

Early Misconceptions of Indigenous Food Systems

Until recently, there has been a common misconception that there was little or no active cultivation of plants by First Peoples in Canada prior to European contact (Deur and Turner, 2005; Deur et al., 2013; Turner et al., 2013b). This misunderstanding was one factor at the heart of the European justification of taking land from the First Peoples and distributing it to European settlers who would make "proper use" of the land by turning to more familiar agricultural practices (Theodoratus, 1989; Suttles, 1990; Lutz, 2020). What European settlers did not see was that

complex interactions and systems of knowledge between First Peoples and the land not only existed but were fundamental to the people's identity.

Early anthropologists assumed that the matter of food procurement for First Peoples in Northwestern North America was one of ease and abundance. The perception was that the coastal First Peoples sustained themselves primarily on an endless supply of seafood and that there was no efficient use of land resources taking place (Deur and Turner, 2005). For Interior Peoples, hunting and use of anadromous salmon and other fish were assumed to be the predominant foods. Armed with the tools for clearing land, and introducing European agricultural practices, the early settlers overlooked the numerous food systems and technologies already in place to manage Indigenous plant and animal foods. The examples of management by First Peoples are many and include but are not limited to: camas meadows, estuarine root gardens, Pacific crabapple orchards, berry gardens, montane root meadows and productive berry patches, clam gardens, and fishing technologies, including fish weirs and reefnet fishing, which allowed careful selection of fish to be caught and those to continue to their spawning grounds (Turner, 1999; Peacock and Turner, 2000; Deur and Turner, 2005; Turner et al., 2013b; Claxton, 2015; Deur et al., 2015; Mathews and Turner, 2017). Each of these examples has its own complex set of protocols, technologies, and management practices.

Managing Culturally Important Ecosystems

Among the key habitats for Indigenous root vegetable production were the highly productive tidal estuarine ecosystems, historically used by coastal First Nations to cultivate a number of key food species in managed garden sites (Turner and Kuhnlein, 1983; Deur and Turner, 2005; Lloyd, 2010). There are special names for these tidal root gardens in many coastal languages and complex systems of ownership of the garden plots (Deur et al., 2013; Turner et al., 2013b). The most common Indigenous root vegetables grown in these gardens, including *lhásem* (the Squamish name for northern riceroot) (Figure 3), Pacific silverweed and springbank clover, among others, provided important carbohydrates and other essential nutrients and were a valued component of an Indigenous diet high in protein (Kuhnlein et al., 1982; Kuhnlein and Turner, 1991; Turner and Peacock, 2005; Turner, 2010).

Indigenous cultivation practices for edible roots include such localized treatments as tilling, weeding, fertilizing, selective harvesting, and re-planting propagules, but they also include larger-scale alterations of the natural environment to increase the productivity of certain preferred species (Deur, 2002, 2005; Deur and Turner, 2005; Turner and Peacock, 2005; Deur et al., 2013; Turner et al., 2013b). These include building up areas of the estuary to increase surface area for the estuarine root gardens, removing rocks, and fertilizing the soil to enhance the soil quality for maximum production and ease of harvesting. The areas selected for these estuarine root gardens were situated within a specialized zone of the estuary, above the high marsh and into the transitional salt-tolerant meadow—areas that are high enough that they are not frequently inundated with salt water, but low enough to receive water from occasional flooding. The fall flood



FIGURE 3 | Styawat with *Ihásem* (northern riceroot).

season also tends to coincide with the dieback of much of the vegetation, which means that when the flooding takes place there is a higher concentration of organic material deposited into these higher regions of the estuary. The detritus supplies nutrients and leads to a nutrient rich environment over time (Deur, 2005).

The roots grown in these estuarine gardens are a good example of foods that were once highly appreciated; they were harvested in large quantities, overseen by individual chiefs and owners, stored for winter, served at feasts, transplanted to new sites, and traded (Turner et al., 1983, 2013b; Deur et al., 2013). For example, *Ihásem* (riceroot) bulbs were eaten and valued by almost all Northwest Coast peoples. Prime patches of *Ihásem* were carefully monitored. The bulbs, rich in sugar and starch (Turner and Kuhnlein, 1983), were harvested, usually when the plants are dormant, in fall or early spring. Typically dug by women, they generally grow quite shallowly in the soil, as illustrated by the Massett Haida name, *stla q'üst'aa*, that translates roughly to "round thing you dig out with your finger" (Turner and Kuhnlein, 1983; Turner, 2021). In Squamish, *Ihásem* was a highly regarded food plant and was harvested along the Squamish River, just north of Vancouver (Joseph, 2012). Every coastal language had a name for this plant (Turner, 2014). The bulbs were often steamed and served with oulachen (ooligan) "grease" (Bouchard and Turner, 1976; Kuhnlein and Turner, 1991). In some areas, elders recall hearing about these bulbs from their parents and grandparents, but have never themselves tasted them. Others, like Eagle Chief Ernie Hill Jr. of the Gitga'at Nation at Hartley Bay, harvested and enjoyed them over their whole life (Turner and Thompson, 2006). But Chief Hill was the exception. For most coastal First Nations, the recent generations have lost touch with this food, among many other ancestral foods.

IMPACTS ON INDIGENOUS FOOD SYSTEMS

As noted in the previous section, Indigenous landscapes in the study area and across the continent reflect long-standing,

deeply respectful, and reciprocal relationships involving intensive plant care and ecosystem management (Anderson, 2005; Trosper, 2009; Kimmerer, 2013; Turner et al., 2013b; Turner, 2014; Simpson, 2017). We need look no further than tended camas meadows, productive estuarine root gardens, managed crabapple orchards, ancestral seaweed harvesting and drying places, wapato gardens, and more, in order to understand just how intensively plant foods and medicines were cultivated (Turner, 1999, 2014; Peacock and Turner, 2000; Turner et al., 2000, 2013b; Garibaldi and Turner, 2004; Deur et al., 2013). Animal foods were equally carefully managed and enhanced. "Clam gardens," now widely recognized along the Northwest Coast (Recalma-Clutesi, 2005; Groesbeck et al., 2014; Deur et al., 2015; Lepofsky et al., 2015), are just one example of ancient management systems for animal foods. Fish weirs and reefnets were technologies that allowed constant monitoring and careful selection of salmon (Claxton and Elliott, 1994; Xanius White, 2006; Claxton, 2015; Thornton et al., 2015; Mathews and Turner, 2017). Harvesting herring spawn on kelp or hemlock boughs (Thornton, 2015), capturing oulachen (Moody, 2008), as well as hunting of seal, deer, elk, and mountain goat—all were undertaken with great care and attention to sustaining the populations of these valued species. Yet, Indigenous People throughout their homelands were not only not recognized for their careful stewardship of their food and other resources, but instead, their reliance on these resources was actively targeted as a strategy of colonialism and significantly downplayed in colonial narratives. People were in many ways blocked from accessing and using these very resources that their ancestors had cared for over generations (Thomas, 2015).

Systemic Racism

Systemic racism is the framework and foundation from which the myriad traumatic experiences and events that have impacted and continue to affect negatively the lives of Indigenous Peoples in Canada, including within the study area. The impacts of systemic racism span across access to healthcare, education, lack of access to basic human needs, higher risk of being a victim of violence, higher probability of incarceration, high levels of poverty and more. Failing to recognize the importance of Indigenous food for people's health and wellbeing, or the role of Indigenous Peoples in caring for and enhancing their food resources, is just one component of the racist attitudes that have predominated (Corntassel and Bryce, 2012; Coulthard and Simpson, 2016; Simpson, 2017).

Dispossession of Land

The very foundation of colonialism was to separate Indigenous People, often forcibly and violently, from the land and its resources in order to gain uninhibited access for use by settler populations. The intentional separation of Indigenous bodies from the land served the purpose of disenfranchising people and removing them from their source of power, strength, health, and wellbeing (Harris, 2001; Turner et al., 2013a; Coulthard, 2014; Simpson, 2017; Estes, 2019). The concept of *terra nullius* and the doctrine of discovery contributed directly to the relentless and frequently violent dispossession of land from Indigenous peoples. These factors, amongst others, continue to lead to

the misappropriation of land and resources and pose ongoing barriers to the process of Indigenous Peoples' reconnection to their lands and waters.

The reserve system imposed on Indigenous Peoples by the Colonial government alienated them from many of their foods and food harvesting areas and Indian agents were put in place to monitor when and if people were allowed to leave to harvest (Fisher, 1992; Duff, 1997; Harris, 2001; Deur and Turner, 2005; Deur et al., 2013; Turner et al., 2013a; Joseph, 2020; Turner, 2020a). Furthermore, the pressures for people to follow the "civilized" practices of agriculture and ranching were unrelenting (British Columbia Government of, 1875). Similarly, Indigenous Peoples' access to forested areas under provincially-controlled Tree Farm License management, and to many areas of their Indigenous territories that have been designated as parks, has been curtailed or banned.

Arthur Manuel, a community leader and activist from the Neskonalith (Secwepemc) First Nation, describes the impacts of loss of access to land in his family's experience:

It began with dispossession: our lands were stolen out from underneath us. The next step was to ensure that we are made entirely dependent on the interlopers so they can control every aspect of our lives and ensure we are not able to rise up to seize back our lands. To do this, they strip us of our ability to provide for ourselves. This was done by trying to cut us off from access to our land. My father [George Manuel, OC, chief of the National Indian Brotherhood], in his book *The Fourth World*, wrote how this was achieved in the BC Interior by literally fencing us off from our lands. Suddenly, our hunting grounds, our fishing spots, our berry patches and other gathering places were cut off by fences and then enforced by a maze of regulations, while our timber was carted away and our lands stripped of our minerals. This had never even been envisioned by our people. Even when we allowed the newcomers to set up settlements on our land, it was unthinkable that suddenly our lands would be closed to us" (cited from McFarlane and Schabus, 2017, p. 19).

Michi Saagiig Nishnaabeg writer and activist Simpson (2017, p. 5) has written about similar experiences of her people in Ontario, whose fisheries, forests, wild-rice beds, sugar maples, managed prairies, and burial grounds have all been "stolen, clear-cut, subdivided and sold to settlers from Europe and later cottagers from Toronto." Across the country and around the world, Indigenous Peoples have suffered similar encroachments on their homelands.

Residential Schools

One of the greatest drivers of changing diets for Indigenous Peoples in the colonial era and up into the latter part of the twentieth century was the imposition of residential schools, in which children were taken from their families and forced to attend institutions where their Indigenous food was generally not only unavailable but was disparaged by school officials as primitive and uncivilized. At the same time as they were discouraged from eating their Indigenous food and often forced to eat sub-standard meals, the children's opportunities to learn about Indigenous food harvesting and preparation were also curtailed (Thomas, 2001; Atleo, 2011; Paradies, 2016; Geddes,

2017; Maracle, 2017; Simpson, 2017; Talaga, 2018; Elliott, 2019). These institutions were built on a foundation of the dehumanization and devaluation of Indigenous lives. The impact of generations of children being stolen from their families and communities, and facing atrocities that no child should ever face, resonated through generations. Starvation, malnutrition and terrible food quality as part of the residential school experience led to dysfunctional relationships with food among other impacts (Paradies, 2016; Joseph, 2020).

Predominance of the Wage Economy

With the coming of the European newcomers and the new opportunities presented by the wage economy, there was a general pronounced shift away from use of traditional food by Indigenous Peoples. As people transitioned into paying jobs, there was less time or opportunity for harvesting food out on the lands and waters, and in any case, as already noted, large tracts of people's territories were taken over by the newcomers, and Indigenous People were often forcibly excluded (Fisher, 1992; Lutz, 2008; Turner and Turner, 2008; Turner, 2020a). By the time today's Elders were growing up, many of their ancestral foods were only memories. For the children of recent decades, a number of these foods were completely unknown to them, at least until recently.

Banning of Cultural Food Ceremonies and Practices

In 1885, Potlatches were officially banned by the Canadian government for many decades, not to be reinstated legally until 1951 (Turner, 2014, 2020a). As noted previously, Potlatches, complex institutions of ceremonial, economic, and political importance, have always been associated with feasting and gifting of Indigenous food to guests, who are witnesses to important events, and to those being honored (Bracken, 1997; Brown and Brown, 2009; Trosper, 2009).

Outlawing Indigenous Stewardship and Tending Practices for Food Species and Habitats

Like the foods themselves, Indigenous management systems for food species and habitats—and, as noted above, the accompanying ceremonies and narratives that provide the foundation for these systems—were suppressed and in many cases eliminated by the imposed Colonial and Provincial and Federal government laws and practices. Fires to maintain prairie and subalpine meadow landscapes were banned outright, as was the harvesting of inner bark of trees, and the use of fish traps and weirs, including the reefnets of the Straits Salish peoples, that had been management tools for centuries, in some cases for thousands of years (Claxton and Elliott, 1994; Turner, 1999; Xanius White, 2006; Dilbone et al., 2013; Claxton, 2015; Mathews and Turner, 2017). Ironically, many of the foods, like salmon, oulachen, herring, rockfish and abalone, that had been sustainably used and managed by generations of Indigenous stewards, were, under the newcomers' watch and policies, drastically reduced, sometimes to the point where conservation

measures imposed meant that Indigenous people were no longer allowed to harvest these foods at all (cf. Fisheries and Oceans Canada, 2011, on northern abalone), and children have had no opportunity to even taste them.

Integration of New Foods and Impacts on Ancestral Foods

Some of the new foods that were brought in by Europeans, including potatoes (originally from South America), carrots, turnips, rhubarb, apples, pears, currants, and other fruits, not to mention molasses, sugar, coffee, tea, rice, beans were, indeed, tasty and were easily adopted into Indigenous diets and lifeways. Nevertheless, these foods have tended to replace many of the original root vegetables, greens, and berries that were the mainstay of the original diets (Kuhnlein et al., 2009, 2013; Turner, 2014, 2020b).

Contamination and Industry

Industrial development and urbanization have rendered many former harvesting sites too contaminated for safe use of the food. Logged over areas, including potential berry-picking places, and areas near agricultural production have often been sprayed with herbicides and pesticides, rendering any harvested food unsafe (Thomas et al., 2016). Runoff from mines and potential contamination from pipelines, highways and railways are all major concerns for Indigenous food harvesters. In other cases, as with the seafood around the major urban areas and industrial sites such as pulp mills, contamination from sewage and other water has made harvesting and use both unsafe and inaccessible. For example, "the best (butter) clam beach on Vancouver Island," according to Chief Charlie Jones of Pacheedaht (pers. comm. to NT 1980), was at the Inner Harbor in Victoria where the Empress Hotel now sits. Today, all around the city, where raw sewage has been discharged into the ocean, harvesting seafood is impossible.

RESILIENCE, RESURGENCE, AND ANCESTRAL FOODS

In so many ways, the actions of governments, industry, and laws and policies imposed by the European newcomers, for their own benefit, have impeded Indigenous Peoples' in accessing and using their foods and practicing their cultures. These actions have been compounded by unintended and unplanned impacts resulting from a plethora of other shocks arising from the newcomers' arrival: invasive species, epidemic diseases, insect pests, impacts on pollinators, deforestation, biodiversity loss, wetland destruction and contamination, and, most recently climate change.

The loss of food and loss of access to food harvesting has led to immense grief and anxiety for those experiencing the loss. A Gitka'a'ata grandmother wrote a book called "*What Do Clams Taste Like?*," about her granddaughter who had never tasted abalone because it had been placed under protection from harvesting, and about the fears that children have regarding the future, and about never being able to taste their Indigenous foods,

but only to hear stories about them (Satterfield et al., 2012). Ancestral foods carry memories and often are deeply connected to identity. Certain flavors, smells and textures can connect directly to memories of time spent on the land with loved ones. Ancestral foods guide connection to places, people, culture, and spirituality (Turner et al., 2005, 2008b; Kimmerer, 2013; Turner, 2014; Geniusz, 2015).

Still, in the face of all of these negative and harmful developments and impacts, Indigenous communities continue to demonstrate resilience and strength. The resurgence of cultural knowledge and practices connected to ancestral foods that is taking place in many Indigenous communities is a testament to this resilience. Reinstating stewardship and management practices in connection to ancestral foods is both a political act and an everyday act of Indigenous resurgence (Corntassel and Bryce, 2012; Turner, 2020a). Current day Indigenous cultural-political resurgence is a testament to the generations who fought to hold on to pieces of culture, language, identity and integrity in order to offer future generations the opportunity to move toward renewed health, connection to the land and cultural identity, both in the study region and more broadly (Simpson, 2017; Talaga, 2018; Estes, 2019; Browne et al., 2020).

These next sections have particular meaning and importance to Styawat, as an Indigenous woman, and here she presents her personal thoughts and experiences relating to Indigenous resilience and resurgence, providing an example of how these are reflected in an ancestral food: *spánanex*, edible camas.

Reconnecting to Indigenous Food Systems Is a Political Act: Styawat's Firsthand Experiences of Resilience and Resurgence

Renewing the knowledge and pride to be able to harvest culturally important foods is an act of resilience and resistance to a dominant system that has historically devalued the health and wellbeing of Indigenous Peoples.

Simpson (2017, p. 48) writes, from an Indigenous Canadian perspective, that radical resurgence "requires a deeply critical reading of settler colonialism and Indigenous response to the current relationship between Indigenous Peoples and the state." The very act of harvesting a plant food or medicine is in opposition to the dominant colonial system that set out to eradicate Indigenous knowledge and related practices (Regan, 2010; Manuel, 2017; Simpson, 2017; Talaga, 2018; Armstrong and McAlvay, 2019).

Harvesting is a political act. Ceremony is intertwined with harvesting and ceremony draws on Indigenous law, spirituality, cultural understanding, language, relationality and reciprocity (Wilson, 2008; Battiste, 2013; Geniusz, 2015; Thomas and Qwul'sih'yahmaht, 2015; Reo, 2019). Cultural protocols, like speaking to our plant relatives, leaving an offering of thanks when harvesting and listening to teachings in the form of dreams and visions, are embedded within Indigenous ways of knowing (Kimmerer, 2013; Geniusz, 2015). Practicing relational accountability, along with what I term ancestral reciprocity, by introducing oneself, asking permission, giving thanks and practicing sustainable plant stewardship, harvesting

and replanting are all ways to respect our plant relatives. These practices, along with the understanding that we are in relationship with plant relatives, lead to the responsibility we have to uphold respectful and reciprocal relationships with plants, this ethical framework constitutes what can be termed *consent-based harvesting* (Elliot, 2019; Joseph, 2020).

The beauty of Indigenous connection to the land through ancestral foods, worldwide, is that it is rooted in cultural context, story, specific locality and time spent with loved ones (Turner and Turner, 2008; Kimmerer, 2013; Geniusz, 2015; Mills et al., 2017; Simpson, 2017). The process of reconnecting to ancestral foods is one of reconnecting with self and with kin. This creates a powerful opportunity for healing and strengthening. Cultivating and harvesting ancestral foods brings a presence of mind, body and spirit and a direct connection to place. The act of harvesting connects the individual to the plant or animal they are harvesting; it connects them to the land on which they stand and to the ancestors who harvested in that same place for millennia. Harvesting offers a path to mindfulness and healing. Each Indigenous community has their own language and cultural practices but there are commonalities across practices of being in relationship with plant and animal relatives that often include: being in a good state of mind and heart before harvesting foods, basketry materials or working with medicines; introducing yourself to the land on which you travel and to the plants or animals you are harvesting; and considering the ancestors who are ever-present on the land. In Squamish tradition, for example, it is respectful to explain in your introduction where your family line comes from, who your parents and grandparents were/are, and that you are presenting yourself in a good way so as to show respect for those who have walked these lands before you.

I believe a deep layer of Indigenous Plant Knowledge and Practice is the innate memory living within the spirit and body that recalls the act of going out on the land to cultivate, harvest, transplant, burn, gather as family and nourish oneself. I term this *ancestral memory*. I've felt this as I've harvested and as I've developed my own relationships with Indigenous plants. Developing a feeling of ease on the land takes time and experience. The belief in the presence of ancestors on the land can help facilitate the feeling of ease, belonging and of being at home in natural spaces.

As previously mentioned, the resurgence of Indigenous food systems is not a stand-alone effort or event. Reconnecting to our ancestral foods is directly linked to language, ceremony, identity, health, and more. Intertwined in the process of reconnecting with these foods there is healing, relearning, and unlearning involved.

- **Healing:** The vast majority of Indigenous people in Canada are, in some way, navigating intergenerational trauma and the ongoing impacts on their identity, health and well-being (Joseph, (forthcoming), 2020; Woolford et al., 2014; Armstrong and McAlvay, 2019). The experience will vary from person to person but the process of healing is a shared one throughout Indigenous communities in Canada and other colonized countries globally (Griffiths et al., 2016; Browne et al., 2020).

- **Relearning:** Many Indigenous peoples in Canada and beyond are relearning ancestral knowledge and land-based practices. The process of relearning and reconnecting is necessary due to the impacts of colonization listed in previous sections. As Haudenosaunee scholar Susan Hill (2008, p. 25) writes in the anthology of Indigenous thinkers, *Lighting the Eighth Fire: The Liberation, Resurgence and Protection of Indigenous Nations*, "A people dependant on their land understand the need to treat the land with great respect and conservation." This statement outlines the necessity of connecting to the land in order to build relationships with plant and animal relatives, or what many would call "resources" in a western paradigm. Therefore, relearning ancestral knowledge is intimately tied to reconnecting to the land.

- **Unlearning:** Many Indigenous Peoples in the study region and beyond experience and live with internalized shame and trauma that affects their quality of life. The impacts of this internalized shame are compounded by the ongoing discrimination and marginalization of Indigenous Peoples in health, education, legal, and justice systems. These factors, combined, influence Indigenous Peoples' life-expectancy, frequency and severity of addictions, suicide, child apprehension, police brutality, incarceration, and more. As Indigenous People heal themselves at an individual and community level there is a significant unlearning process taking place, meaning that people are unlearning internalized shame. The process of unlearning is part of decolonizing oneself and developing a critical awareness for the ongoing external impacts of colonization in order to assert an Indigenous path toward healing.

- **Sharing Indigenous Perspectives and Context in Research:** As Indigenous Peoples worldwide continue to heal and foster and define their own resilience and strength there is an increased presence of Indigenous professionals and experts stepping into leadership roles across many aspects of society from research, teaching, business, law, medicine, and more [see IPAC (Indigenous Professional Association of Canada), 2020]. Given the impacts of the colonial origins of Canada on Indigenous Peoples and knowledge systems, in the context of research, it is critical for Indigenous scholars to present their own research and work in their words and from their perspectives in order to broaden the frameworks and context for research that contributes to cultural knowledge renewal. It is even more critical given the long history of misrepresentation, misuse of information and appropriation of knowledge that exists within the history of Western research with Indigenous peoples.

Grounded Normativity

"Grounded normativity," a concept introduced by Dene scholar and activist Glen Coulthard (2014, p. 13), is defined as "the modalities of Indigenous land-connected practices and longstanding experiential knowledge that inform and structure our ethical engagements with the world and our relationships with human and non-human others over time." Leanne Simpson describes this same concept as "the ethical frameworks generated

by place-based practices and associated knowledges as it applies to Indigenous Worldview" (Simpson, 2017, p. 22). This concept is central in the context of the resurgence of Indigenous food systems, as it establishes a basis for understanding the interconnected nature of restoring ancestral foods knowledge, systems, and practices with Indigenous conceptualizations of health. It is also important as it offers an indigenized framework for understanding the interconnections between cultural food systems, land access, Indigenous law and knowledge renewal. We will revisit this concept later in the paper.

Spánanex/Camas/Teaching Resilience

Plants teach us about adaptability, resilience, and reciprocal interrelationships. We can learn from the physical characteristics, adaptations, and responses to Indigenous management that plants exhibit and subsequently draw parallel teachings for how to approach health from within Indigenous worldviews (Geniusz, 2015). In this section I illustrate the teachings related to Indigenous conceptualizations of health along with guidance for healing in the face of adversity, through the example of one key food plant (**Figure 4**): edible blue camas (*Camassia* spp.), *spánanex* ("span-an-oo"), in my own S?wxwú7mesh language, whose bulbs have been a highly valued root food for Indigenous Peoples in regions of western North America. Camas was intensively cultivated and managed for thousands of years before European contact.

Spánanexw is classified in the Asparagaceae family (formerly in Liliaceae). The two common species with edible bulbs in the genus *Camassia* in western North America are *C. quamash* (common blue camas) and *C. leichtlinii* (great blue camas). *Spánanexw* bulbs were, and are, an important source of carbohydrates that filled a specific dietary niche for Indigenous peoples in a diet otherwise very rich in protein, fiber, fat, and oils (Beckwith, 2004; Corntassel and Bryce, 2012). The bulb itself is very adaptable. It changes its shape in the first years of its life, morphing from an ovoid shaped or teardrop shaped bulb into a thin pencil-shape, as the bulb grows downwards and pushes itself deeper into the soil profile, so that the oldest bulbs, at their edible stage, can be 10 cm or more deep (Proctor, 2013; Cheryl Bryce, pers. comm. to Joseph, 2020). The Indigenous management of *spánanexw* involved developing a reciprocal relationship with the plant based on an understanding of what encourages it to thrive and what its thresholds for shade, fire, harvesting, and competition with other plant species are (Beckwith, 2004; Proctor, 2013). Ancestral management included clearing and periodically burning over the *spánanexw* meadows, which were actually maintained through this practice. Without regular burning, the surrounding conifer forests will encroach and eventually shade out the camas and other prairie species. Burning not only maintains open meadows by removing tree seedlings, brush, and dense grasses, but it also promotes productivity through providing ready nutrients to the camas (Proctor, 2013; Cheryl Bryce, pers. comm. to Joseph, 2020). Other related practices included weeding, tilling, selectively harvesting, separating and transplanting the bulbs. The timing of harvesting is important as well; the bulbs are usually dug in early summer after the seed capsules have ripened, so that the seeds are

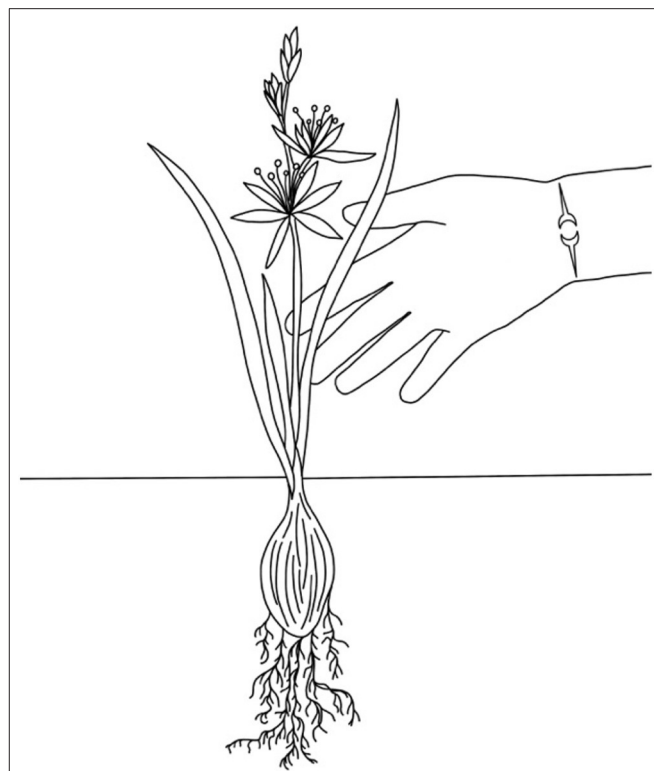


FIGURE 4 | *Spánanexw* (*Camassia* sp.), depicting the below ground bulb that was and is a culturally important food, intensively cultivated in open meadow ecosystems. The bloom above ground is purple-blue in color. (Artist Ocean Hyland from Tseil waututh and Squamish Nations).

distributed in the dug-up soil as the bulbs are selected (Turner and Kuhnlein, 1983; Beckwith, 2004; Anderson, 2005; Deur, 2005; Beckwith et al., 2017).

Through tending our plant relatives such as camas, people developed the lived experiences, year after year, of working with these plants, and over time, a cultural relationship based on respect and reciprocity developed. Season after season, generation after generation, women and other community members, children and elders, would have sat with these plants, talked with them, cared for them, prepared them for harvest. The selective harvesting of bulbs, in combination with reseeding and replanting the smaller ones, and burning when the season turned cooler and wetter, made *spánanexw*'s path to growth easier and the ground where it grows more fertile. One can imagine the work and care taken to burn the grounds and till the soil, and the joy that must have been felt at the return of the deep purple-blue blooms that covered vast areas of garden, grocery store, ancestral grounds—some describe the original camas meadows as resembling a deep blue lake: a landscape based on longstanding reciprocal relationships between *spánanexw* and her family, her kin, her caretakers.

Spánanexw teaches us about adaptability, resourcing oneself to meet adversity and uncertainty, in order to facilitate growth, fostering the ability to mobilize and move toward what it is

you need for your own survival. *Spánanexw* teaches us about resilience, and how to build a relationship with fire. In some situations fire might be considered destructive, yet one only need bear witness to the regenerative powers of fire in the spring after the late summer, fall or winter burning had taken place to see the beauty of such a relationship. *Spánanexw* teaches us about reciprocity. It flourishes in relationship with ancestral management practices. Burning, tilling, weeding, and replanting led to thriving meadows that provided significant nutrition and enjoyment to the people who relied on this food historically. Current-day restoration efforts focusing on *spánanexw* offer a connection to Indigenous People's health and a contribution to cultural political resurgence through reinstating Indigenous plant management and harvesting practices on the land (Corntassel and Bryce, 2012).

A key element of the story of camas is how the knowledge of its use, and the actual bulbs themselves, were spread from nation to nation, along with the names for the bulbs and the processes for tending and preparing the bulbs. The Sʷwxwú7mesh name *spánanexw* is related to names in other Salishan languages (e.g., Shíshálh/Sechelt, Noxws'á?aq/Nooksack, Hul'q'umi'num/Halkomelem) and is related to the word for "bury or buried"). There is evidence that the bulbs were brought from one locale to another to be replanted (Turner and Efrat, 1982), and that the pit-cooking process used to cook camas bulbs spread from south to north and from central Oregon and Washington to the Northwest Coast (Turner, 2014). The processed bulbs themselves were important as trade goods; for example, Gunther (1945) noted that, except for choice varieties of dried salmon, there was no food item more widely traded by Washington peoples than camas.

Given the long-standing exchange and sharing of camas and its associated knowledge, it is not surprising that one particular act of resurgence and revitalization of Indigenous food was when Lekwungen plant expert Cheryl Bryce visited Squamish recently. She brought with her dozens of camas bulbs that she had dug in her own territory in the Victoria region, along with bulbs donated by friends at Saanich Native Plants and Habitat Trust, and we held the first camas pitcook in lived memory in our territory. It was a powerful example of what Leanne Simpson calls "Indigenous Internationalism."

Indigenous Internationalism

Styawat's account of *spánanexw*, its associated names and traditional knowledge, how knowledge about it has been shared across generations, Indigenous nations, and geographic space, and how it has once more become recognized as a culturally and nutritionally important food for Coast Salish and other Indigenous Peoples, is just one of many instances of knowledge sharing. Styawat learned a great deal about root garden restoration, applicable to her homeland in Squamish, from visiting another community, a Kwakwaka'wakw village at Kingcome Inlet to the north. With other students and youth from the Tsawataineuk community there, she learned firsthand from Kwaxsistalla Clan Chief Adam Dick and other elders of the community about their childhood experiences of cultivating their tidal marsh root gardens, called *t'killakw*, at the Kingcome



FIGURE 5 | Styawat learning about Indigenous plants with girls from Gwayi Village, Kingcome Inlet.

River estuary, and how the roots were pitcooked and served at communal feasts. These included springbank clover rhizomes (*t'xsús*), silverweed roots (*dlexsém*), and northern riceroot bulbs (*xukw?m*), all edible roots known to and used by past generations of Sʷwxwú7mesh people, but which had not been harvested in recent decades, so were little known except to the eldest members of the community. Through Indigenous Internationalism, Leigh, with her own research, was able to bring them back into people's experience, so that, once again, the Sʷwxwú7mesh people were able to taste their ancestral root vegetables and reconnect to their own history of estuarine root gardens (Lloyd, 2010; Joseph, 2012; Deur et al., 2013) (**Figure 5**).

Indigenous Internationalism asserts a new path forward for Indigenous Peoples that is grounded in ancestral economies, trade and connections between communities. The path this offers is not dictated by outside colonial structures or rules. The act of Indigenous researchers, knowledge holders and community advocates turning to other Indigenous communities for support, trade, and knowledge exchange is a form of activism and a declaration of nationhood and sovereignty. Indigenous Internationalism aligns Indigenous People from various communities who share goals of knowledge recovery, access to land and cultural resurgence. Styawat has experienced this directly in connection to her research and academic teaching. Each time she plans to teach a course or carry out a research related activity on other Indigenous territories she is careful to make connections with community leaders and knowledge holders to support her proposed teaching and work.

For example, for the past 4 years Styawat has been teaching a course on Indigenous Land-Based Knowledge through the University of Victoria on Lekwungen territory. Each time she plans this course she contacts other Indigenous people working within both WSÁNEC and Lekwungen communities to participate in the teaching and knowledge sharing. Beangka Elliot, Ashlee Cooper and Tiffany Joseph from WSÁNEC territory and Cheryl Bryce and Joan Morris (Sellemah) from Lekwungen territory all come together to inform how the course will run. One of the main priorities of the course is to contribute to hands-on and on-the-land knowledge resurgence in the local Indigenous communities. This has looked different each year depending on what the community priorities have been. Each year the course opening has been held by Joan Morris to set the tone and intentions of the coursework and ground them in Indigenous ways of knowing. In addition, there is an introductory lecture on the colonial impacts on Indigenous land-based and plant-based knowledge with local context, examples and stories shared. During the first year of the course the group of University students planted front yard gardens in the Lekwungen community. Another year the class supported a camas pitcook in the WSÁNEC village site of SNIDCEL.

Each year the class partakes in ethnoecological restoration activities, including planting out native plants, removing invasive species, planting in community gardens and redistributing culturally important plants within local Indigenous communities. These activities not only follow teachings of respect and reciprocity but they offer the students and the community members an opportunity to meet in a shared place of learning about culturally important species and landscapes, and foster a deep experiential opportunity for cross-cultural understanding. These experiences would not be possible without the enactment of Indigenous Internationalism between Styawat, Beangka, Ashlee, Tiffany, Joan, and Cheryl. It is from these respectful and evolving relationships that the opportunity for meaningful collaboration between an academic class and local Indigenous communities is made possible.

In every community there are individuals who have retained key knowledge, experiences and memories relating to their original foods and other culturally valuable species. These people have been invaluable to all Indigenous nations because today, in a time of resurgence of Indigenous food systems and intensified interest in grounded normativity, they have become the teachers and mentors for so many. The role of Kwaxsistalla, Clan Chief Adam Dick, for example, in bringing his experiences, teachings and wisdom back to his own community as well as sharing them with so many others (Deur and Turner, 2005), was an immense stimulus for cultural resurgence, and his legacy has continued on after his passing (see <https://www.kwaxsistalla.org/>). Today, despite the colonial pre-emption of Indigenous homelands, the displacement of people and erosion of their ancestral languages and food systems, Indigenous Internationalism has allowed cultural revitalization and a resumption of intergenerational knowledge transmission, carrying this precious knowledge and practice forward for future generations.

DISCUSSION

Table 1 summarizes some of the key attributes of Indigenous Peoples' Food Systems presented in this paper, along with negative factors that have impacted, and continue to impact people's access to and use of Indigenous foods, as well as positive factors contributing to the revitalization of Indigenous Food Systems. We have focused on human-caused impacts and factors influencing Indigenous food use, rather than on geographical or physical factors. We did include climate change, since this is an anthropogenic threat that needs to be addressed.

The resurgence and revitalization of Indigenous Peoples' food systems is ongoing. Here we have provided just a few examples of foods and management systems that had almost been lost due to the unrelenting pressures of colonization, land takeovers, habitat destruction, commercial over harvesting, suppression of traditional management, loss of opportunities for passing on associated knowledge, and numerous other stressors imposed by the dominant newcomers. Today, at a time when governments and the population at large are searching for means of reconciliation (Truth Reconciliation Commission of Canada, 2015), one of the most obvious pathways to reconcile the losses that have been endured by Indigenous Peoples is to support their own initiatives for reinstating their ancestral foodways (Turner et al., 2008a; Kuhnlein et al., 2009, 2013). There are many issues to be addressed. For example, perhaps, given the contemporary context of wild harvesting, and the potential for placing undue pressures on wild food populations in environments that are diminishing and losing biodiversity, culturally important native species might be grown in gardens. Ethnobotanical gardens, featuring living plants of cultural importance that can be easily identified by people of all ages are another type of initiative that have had successful and effective outcomes (Turner and Wilson, 2006).

Governance of harvesting areas has always been carefully undertaken by individual Indigenous nations, and they should be invited to play a key role in decision-making around commercial food harvesting within their ancestral territories. Indigenous Peoples should be supported in efforts to restore our plant and animal relatives back into our communities and landscapes; this would be a powerful step toward cultural resurgence and healing. Supporting language revitalization—including the specialized vocabulary of food species and food harvesting and preparation, is a way of rebuilding place-based relationships, much important information is embedded in the names of plants, animals, places, and food use (Turner, 2014).

Culturally Managed Ecosystems

Ancestral food harvesting places and cultural landscapes, such as clam gardens, fish weirs, tidal marsh root gardens, wapato patches, berry gardens, and orchard gardens (Garibaldi, 2003; Turner et al., 2013b; Claxton, 2015; Armstrong, 2017), are currently being studied and restored, in ways that allow people to relearn about them as they go (Augustine and Dearden, 2014). Although they are based on ancient technologies, these initiatives also embrace contemporary methods and techniques from western science, archaeology,

TABLE 1 | Indigenous peoples' food systems in Northwestern North America: attributes, threats and enhancements (United Nations, 1992, 2007; Anderson, 2005; Menzies, 2006; Nabhan, 2006; Watts and Watts, 2007; Brown et al., 2009; Kuhnlein et al., 2009, 2013; Krohn and Segrest, 2010; Comtassel and Bryce, 2012; Joseph, 2012, 2020; Deur et al., 2013; Proctor, 2013; Turner et al., 2013b; Augustine and Dearden, 2014; Mackenzie, 2014; Turner, 2014, 2020a; Claxton, 2015; Beckwith et al., 2017; Lutz, 2020; Minnis, 2021).

Indigenous food system attributes and values	Some negative factors impacting indigenous food systems	Some factors contributing to revitalization of indigenous food systems
Need for productive terrestrial, aquatic and marine ecosystems and habitats, with natural processes intact Healthy, nutritious Indigenous food and dietary diversity; access to food harvesting areas	Dispossession of Indigenous Peoples' homelands; commercial overharvesting; pollution; habitat loss; invasive species impacts; ongoing climate change Loss of access to Indigenous food because of land dispossession, residential schools, urbanization, industrial encroachment and pollution; lifestyle changes and wage economy	Reconnecting to ancestral lands and waters; controls on commercial harvesting; ethnoecological restoration; wetlands protection; reducing/reversing climate change Indigenous Internationalism; trading for nutritious culturally valuable food; renewed access to land; banning pesticides; recipe books; planting Indigenous food species in communities; reclaiming and recentering Indigenous wellness practices
Medicinal values of Indigenous foods: nutraceuticals Cultural values of Indigenous Food: Respect and Reciprocity	Health impacts of unhealthy processed, marketed food: lifestyle and diet related illness such as type-2 diabetes Banning of cultural food ceremonies and practices (e.g., potlatch); systemic racism; loss of cultural landscapes and food systems	Working with Indigenous herbalists and healthcare workers; education on health values of Indigenous food Promoting Indigenous Foods celebrations (e.g., First Foods ceremonies) and other community initiatives; education on respect, kincentricity and the importance of all species; applying Indigenous values in land use; reinstating ceremony, stories, songs, respect
Traditional Management Practices: tending, caring for species, and habitats	Outlawing Indigenous stewardship, cultivation, and tending practices for food species and habitats (e.g., banning landscape burning, fish traps, harvesting bark); excluding people from their lands	Ethnoecological land and knowledge restoration projects (e.g., rebuilding clam gardens, fish weirs, reinstating experimental burning); increased access and ability to work on lands; supporting Indigenous Conserved and Protected Areas
Impacts of environmental change	Urbanization, pollution, deforestation, invasive species, loss of food species, pollinators; climate change and associated impacts; loss of resilience	Ecocultural restoration practices; planting culturally valued trees and food species; reducing fossil fuel use; maintaining wetlands and peatlands; education; adaptation to some new species
Food-related learning and education	Residential Schools (removing children from opportunities to enjoy their Indigenous food and to learn about looking after the land—also experiencing terrible nutrition, developing dysfunctional relationships with food); participation in wage economy; removal of people from land base	Re-introducing experiential and intergenerational learning about Indigenous food and experiencing Indigenous food, harvesting, processing, and associated equipment; calendars, recipe books, food festivals, harvesting camps, participation in food harvesting and tending by people of all ages; reconnecting youth and elders; reclaiming access to Indigenous lands
Trade and Exchange; sharing knowledge, goods and practices	Suppression of Indigenous trade in food; Challenges accessing healthy market foods (privatization, development, cost)	Incorporating new foods such as orchard fruits; adaptation, resilience over years and over generations; restoring Indigenous plants and renewing knowledge
Food in Indigenous languages, stories, discourse	Pervasive Indigenous language suppression in residential schools and in general	Widespread language revitalization programs, including dictionaries, websites, with food- and species-related vocabulary
Governance and policy relating to Indigenous Foods	Widespread suppression of access to and use of Indigenous food through the Reserve system, Indian Act, and systemic racism	Reconnecting to Indigenous food systems is a political act; reinstating Rights for Indigenous Peoples (through UN <i>Declaration on the Rights of Indigenous Peoples</i> , <i>Convention on Biological Diversity</i> and other International laws to which Canada is signatory)
Monitoring, oversight, control over harvesting	Reduced ability of leaders and knowledge holders to control harvesting and ensure conservation of food species over time	Recognizing the importance of knowledgeable leadership; instating community-based conservation strategies
Sharing with wildlife as relatives: kincentricity	Increasing pressures on wildlife; loss of biodiversity due to habitat loss and industrial encroachment	Ecocultural restoration; enhancing wildlife habitat and opportunities to access food
Insect pollinators	Loss of biodiversity and use of harsh pesticides and chemicals	Indigenous communities collaborating with native plant nurseries to replant pollinator species back onto the land and in gardens

engineering and genetics. For example, wildlife cameras can assist in the understanding of migration patterns of ungulates and other animals, and drones can help determine

the extent of particular habitats by providing aerial views. Educational and research programs embrace videos, data recorders, identification apps, and other recent technologies,

which in turn can inform habitat and species restoration in culturally appropriate ways. As Secwepemc elder Dr. Mary Thomas used to say, "There is strength in the Old and the New together!"

Community-Based Conservation Strategies

Community-based conservation strategies go hand-in-hand with food use. Broad scale Initiatives such as the Coastal Guardian Watchmen, and Indigenous Guardians Program reflect the Indigenous worldview that connects the well-being of other species with human well-being, and the responsibility to care for the habitats of these species in a spirit of reciprocity and gratitude. This perspective—and the requirements of planning, governance and monitoring that it reflects—is a critically important element of Indigenous food systems (Brown and Brown, 2009). There are opportunities for the reinstatement of Indigenous economies and trade networks as well. Indigenous Peoples are renewing cultural knowledge and expertise and, in addition to the sacred work of knowledge renewal and healing, this can lead to empowering local communities toward sustainable development of their local resources, exploring new strategies for local production based on the actualization of Indigenous Knowledge and strengthening Indigenous economic resilience, offering opportunities for economic reconciliation. Whether it's tending the seaweed and eelgrass beds, caring for berry patches or crabapple stands, or looking after the herring spawning places, the production of food is grounded in these conservation activities. There are also collaborative co-management projects based in parks and conserved areas across the region. Indigenous Conserved Areas are also becoming more common and more widely recognized as helping to alleviate biodiversity loss and support Indigenous livelihoods and food security worldwide; a number of these are in the study region (Turner, 2020a).

Commercial harvesting of Indigenous food can have disastrous impacts on its sustainability and availability to Indigenous People; this is what happened when industrial scale harvesting of northern abalone was instated on the Pacific coast, and this has happened worldwide with other locally important foods (Berkes et al., 2006; Turner et al., 2013b). Commercial logging and commercial fishing have also severely impacted Indigenous peoples' abilities to access and use their local resources sustainably. However, occasionally new developments have actually helped to reinstate and reinforce ancestral knowledge and ways, as in the relatively recent establishment of a market for pine mushrooms, or American matsutake in some places. In the Nass Valley, the Nisga'a, with their newly instated modern treaty, were able to oversee and participate in the pine mushroom harvest, and this had the effect of encouraging younger people to get out on their lands, to seek advice from the elders about different areas of the valley, and to become familiar with their ancestral landmarks, plants, animals, and land-based foods, and to learn the time-honored protocols for living out on the land (Menzies, 2006).

Ethnoecological Land and Knowledge Restoration Projects

Many different projects have been developed by Indigenous Peoples and their allies to assist in resurgence of Indigenous knowledge and practices and in the recognition of Indigenous land rights (Turner, 2020a,b). Work in reclaiming, restoring and revitalizing habitats and species of cultural importance has been termed "ecocultural restoration," or "ethnoecological restoration" (Gomes, 2012; Thomas, 2015), and such projects are taking place in numerous locales, not only across Canada but in many parts of the world, from Australia to Scotland. Indigenous knowledge keepers confirm that, in these endeavors of resurgence, gratitude, and reciprocity, as expressed in ceremony, is key to their success (Kimmerer, 2013; Courchene, 2019).

Community projects aimed at bringing Indigenous foodways back into the forefront are underway in many different places. Among the first of these was the Nuxalk Food and Nutrition Program, which began in Bella Coola in the early 1980s. Initiated as a joint project between the Nuxalk Nation and ethn nutritionist Harriet Kuhnlein, the project had many facets, including documenting ancestral food systems and dietary change across several generations, determining the availability of traditional foods, assessing changes in health in community members, nutrient analysis of some of the key Nuxalk foods, and promoting healthy Indigenous foods as well as healthy diets in general (Lepofsky et al., 1985; Turner et al., 2009, 2013b). The Tsawout Seafood festival, which occurred every year for a number of years running in the Tsawout community of East Saanich, with pitcooking demonstrations, a reinstatement of the First Salmon ceremony, and general celebration of Indigenous food (Devereaux and Kittredge, 2008; Krohn and Segrest, 2010; Mackenzie, 2014), to the famous huckleberry feasts celebrated by the Confederated Tribes of Warm Springs, Oregon, in which traditional teachings and remembrances are shared (Warm Springs Museum at, 2019).

The Potlatch and related ceremonies have also been critically important in this time of resurgence of Indigenous food systems. Not only do Potlatches serve as incentives and opportunities for preparing and consuming the highly valued foods, but they provide the ceremonial foundation for the recognition, appreciation, tending, harvesting, and sharing of this food, both during the events themselves and as gifts, such as jarred salmon, berry preserves, and dried seaweed to be taken home for later enjoyment (Wilson and Turner, 2004; Brown and Brown, 2009; Turner et al., 2013b).

Squamish Indigenous Foods Celebration and Other Community Initiatives

In recent years Styawat and some of her relatives from the Squamish Nation have started an annual Indigenous Foods Celebration with a central focus on plant foods and medicines. This is a one-day, hands-on, experiential event to learn about culturally important plants through harvesting, processing and creating a food or medicine with them. There is an Indigenous foods lunch that has included pit-cooked camas bulbs, seafood



FIGURE 6 | Indigenous Harvester, drawn by Styawat (Leigh Joseph).

soup featuring *lhásem* (northern riceroot) bulblets, dandelion fritters, stinging nettle pesto and spanakopita, salmon, elk, moose, deer, and more. This celebration captures a community-based interest and drive to reconnect to plants and other Indigenous foods in the context of health and wellbeing (Figure 6). The celebratory air of the day is empowering and exciting for community members and it is an enjoyable way to gather together and co-create Squamish approaches and definitions of wellness.

Other initiatives to promote and support Indigenous foods include the creation of recipe books and field guides to edible plants and animals (e.g., Hebda et al., 1996; Turner and Thompson, 2006; Watts and Watts, 2007; Krohn and Segrest, 2010; Haida Nation Council of, 2020), as well as developing websites, workshops and courses, both online and in person, that support Indigenous communities in renewing their knowledge and practices connected to plants. As Styawat notes, "These events bring together the renewal of relationships with plants and place. They also renew our relationships with our health as Indigenous Peoples."

Economic Reconciliation

Another aspect of reclaiming and celebrating food traditions is economic reconciliation (<https://reconciliationcanada.ca/programs-initiatives/economic-reconciliation/>). As people reconnect with their plant and animal relatives, there are parallel processes of reconnection to language, health, land-based knowledge, Indigenous law and culturally rooted economies.

The concept of economic reconciliation is one that speaks to the process of a community defining their own holistic model and approach to economic development within the cultural context of the community. For example, Styawat has an Indigenous plant-based skincare business, Skwálwen Botanicals (<https://skwalwen.com/>), that is grounded in her cultural relationships with plants. "Skwálwen" is a Squamish word and concept. The term doesn't translate directly to English but it connotes connecting the mind, body and spirit and situates these interlinkages through a Squamish lens. The business is grounded within what Styawat identifies as cultural pillars, including respect, responsibility and reciprocity, or "giving back." In integrating cultural relationships with plants into a business setting it is imperative to be deeply respectful of the embodied cultural knowledge and to carefully choose what is shared with a wider audience within the cultural context.

Increasingly there are more Indigenous-owned businesses that span the areas of sustainable tourism, outdoor guiding, and recreation. There are also gastronomy-based businesses that focus on fostering collaborative inclusive platforms that include Indigenous producers, chefs, food activists, local institutions, consumers, and communities (c.f. Sherman and Thompson, 2018). These are paths toward creating positive change within Indigenous communities and leading to increased representation of Indigenous People across different areas of society.

CONCLUSION

For the health and well-being of Indigenous Peoples in the study area and throughout the world, the ability to access healthy Indigenous food is not only a recognized right, it is essential to their lives. As Kwakwaka'wakw cultural expert Kim Recalma-Clutesi (pers. comm. to NT, 2002) stated, "It's very hard to practice the culture accurately and properly without proper food... we are not going to survive as a People if we do not have access [to traditional foods]. Our bodies have not adapted yet to this new food... the culture and the food are linked hand in hand."

We are living through a time of Indigenous knowledge renewal, cultural and political resurgence and the reassertion of Indigenous laws and land rights (cf. Turner, 2020a,b). It is the belief of the authors that the motivations for these processes, in the context of culturally important foods and medicines, are grounded in ancestral ties to the land and are deeply connected to cultural and spiritual practices that serve to strengthen ongoing relationships with place and, in turn, with identity. In addition to this, it is a priority for Indigenous communities to consider how their actions today will impact the future of their families and communities. In other words, there is an ancestral continuity across generations, an understanding that the actions and decisions we make in the present are informed by the actions and experiences of our ancestors, and will, in turn, impact our the actions and experiences of those who come after us.

Indigenous Peoples are resilient and have always been adaptive and innovative. During this time of climate change, resource extraction and, most recently, the global Covid-19 virus

pandemic, Indigenous Peoples are being challenged to turn to their ancestral knowledge and practices in response to changing and difficult times. Indigenous Peoples are not inexperienced with adapting in the face of grave struggles. Still today much of non-Indigenous society would uphold a trauma narrative when considering Indigenous issues in Canada. Trauma is certainly part of the story and shared experiences of Indigenous Peoples in Canada and beyond, but it is not the whole story. It is essential that we challenge this narrative and shift it from one of trauma and deficit to one of resilience and adaptability.

As Indigenous communities work to heal from past impacts of colonization, at the same time as facing current social and environmental challenges, the mobilization of ancestral knowledge takes many forms including activism, innovation, advocacy, research, and more. The stories and examples shared here show the work happening at an Indigenous community-based and grassroots level to bring better health to people and the natural environments they live in and to find new paths forward that are informed by the land-based knowledge and practices that are rooted in ancestral knowledge and food systems.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

Both authors contributed to the development and writing of the paper, with NT taking a lead on the initial outline and framing based on decades of working with Indigenous knowledge holders,

and LJ contributing research, firsthand experiences and accounts and perspectives from her own background as an Indigenous scholar, practitioner, and community member.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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APPENDIX OF SCIENTIFIC NAMES

Appendix 1. Scientific names of plant and animal species mentioned in this paper (listed alphabetically by common name as presented in the paper)

Plants and fungi

Arbutus (*Arbutus menziesii*)
 Aspen (*Populus tremuloides*)
 Balsamroot (*Balsamorhiza sagittata*)
 Birch (*Betula papyrifera*)
 Blackberry, trailing wild (*Rubus ursinus*)
 blueberry varieties (*Vaccinium* spp.)
 Camas, edible blue (*Camassia* spp.: *C. leichtlinii* and *C. quamash*)
 Cedar, western red- (*Thuja plicata*)
 Cedar, yellow (*Cupressus nootkatensis*)
 Chocolate lily (*Fritillaria affinis*)
 Clover, springbank (*Trifolium wormskioldii*)
 Crabapple, Pacific (*Malus fusca*)
 Cranberries, highbush (see highbush cranberries)
 Douglas-fir (*Pseudotsuga menziesii*)
 Fir, subalpine (*Abies lasiocarpa*)
 Eelgrass (*Zostera marina*)
 Fireweed (*Epilobium angustifolium*)
 Glacier lily, yellow (*Erythronium grandiflorum*)
 Hemlock, mountain (*Tsuga mertensiana*)
 Hemlock, western (*Tsuga heterophylla*)
 Hemp-dogbane (*Apocynum cannabinum*)
 Highbush cranberry (*Viburnum edule*)
 Huckleberries (*Vaccinium* spp., especially *V. membranaceum*)
 Red laver seaweed (*Pyropia abbotiae*, *Pyropia* spp.)
 Lichen, black tree (*Bryoria fremontii*)
 Matsutake, American (*Tricholoma magnivelare*)
 Mushroom, pine (*Tricholoma magnivelare*)
 Nettle, stinging (*Urtica dioica*)
 Oak, Garry (*Quercus garryana*)
 Oceanspray (*Holodiscus discolor*)

Onion, nodding (*Allium cernuum*)
 Pine (*Pinus* sp.)
 Pine, ponderosa (*Pinus ponderosa*)
 Redcedar, western (*Thuja plicata*)
 Riceroot, northern (*Fritillaria camschatcensis*)
 Salal (*Gaultheria shallon*)
 Saskatoon berries (*Amelanchier alnifolia*)
 Seaweed (see laver, red)
 Silverweed, Pacific (*Potentilla egedii*)
 Skunk-cabbage (*Lysichiton americanus*)
 Soapberries (*Shepherdia canadensis*)
 Spruce (*Picea* sp.)
 Spruce, Engelmann (*Picea engelmannii*)
 Spruce, Sitka (*Picea sitchensis*)
 Stinging nettle (*Urtica dioica*)
 Strawberry, wild (*Fragaria vesca*, *F. virginiana*)
 Sword fern (*Polystichum munitum*)
 Thimbleberry (*Rubus parviflorus*)
 Tigerlily (*Lilium columbianum*)
 Timbergrass (*Calamagrostis rubescens*)
 Wapato (*Sagittaria latifolia*)
 Willow (*Salix* sp.)
 Yew, Pacific (*Taxus brevifolia*)

Animals

Abalone, northern (*Haliotis kamtschatkana*)
 Clams (*Mercenaria* spp., *Saxidomus* sp., *Tresus* spp., *Clinocardium nuttallii* and other species)
 Clam, butter (*Saxidomus gigantea*)
 Deer (*Odocoileus hemionus*)
 Elk (*Cervus canadensis*)
 Herring, Pacific (*Clupea pallasii*)
 Mountain goat (*Oreamnos americanus*)
 Oulachen (ooligan) (*Thaleichthys pacificus*)
 Rockfish (*Sebastes* spp.)
 Salmon, Pacific (*Oncorhynchus* spp.)
 Salmon, sockeye (*Oncorhynchus nerka*)
 Seals (*Phoca vitulina*)