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## Frontiers are Frontlines: Ethnobiological Science Against Ongoing Colonialism

Chelsey Geralda Armstrong<sup>1\*</sup> and Christie Brown<sup>2</sup>

**Abstract.** Ethnobiologists are capable of making transformative scientific contributions when they participate in localized direct actions and acts of colonial dissent. Direct action tactics like blockades, protests, and re-occupations of territories are often used as (alternative) approaches for marginalized and disenfranchised communities who face expensive and oppressive justice systems. As natural resource extraction and development in settler nations continues to have uneven impacts on Indigenous Peoples and communities, this research reviews the long history of resistance to colonial expansion on the “frontier” of northwestern British Columbia, Canada. Currently, an emergent trend for legalizing and legitimizing resource extraction in rural and frontier communities is through consultation and impact assessment processes. These processes can undermine scientific rigor and hierarchies of knowledge that undercut Indigenous Peoples’ knowledge, and rights to use and be on their territories. Using ethnobiological research methods to fuse cultural and natural scientific prescriptions of land use, we consider how cultural resistance camps—primarily Lelu Island, but also Madii Lii—are troves of Tsm’syen and Gitxsan experiential knowledge and cultural exchange, while resisting powerful and well-funded liquid natural gas (LNG) development in traditional territories. Ethnobiologists working in these contexts are challenged to support and stand behind their Indigenous colleagues to transform the frontier into a frontline and foster rigorous scientific research alongside Indigenous resistance.

**Keywords:** colonialism, direct action, British Columbia, resource extraction, traditional land-use

### Introduction

Ethnobiology is well situated to provide research support to communities facing social and environmental injustices. Such research, termed here *action ethnobiology*, cross-cuts issues of ethics, partnerships and collaboration, and relational power dynamics in applied scientific research. Few ethnobiologists would deny that we live in a world of diminishing natural and cultural diversity (Nabhan 2016). While ethnobiology has a long and troubling colonial history (Bannister and Solomon 2009; Clément 1998; Ford 2011; Wyndham et al. 2011), in recent decades, many ethnobiologists have stood behind their community collaborators and have warned

that the loss of land and its accompanying cultural knowledge has profound effects on global human health, biodiversity, food security/sovereignty, and climate change (Brush 1986; Crate and Nuttall 2009; Gadgil 1987; Garnett et al. 2018; Nabhan 1985, 2010, 2014; Soleri and Cleveland 1993; Wolverton et al. 2014). While most researchers have the privilege of keeping a safe distance from the trauma of land loss (e.g., leaving their fieldwork sites for the school year, returning to their food-secure homes, etc.), the same people often feel a deep desire to help protect, promote, and defend our collaborators’—mostly Indigenous Peoples’—access to lands and the biota within them.

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For centuries, Indigenous Peoples in settler colonial nations (e.g., nations where original populations have become dominated by Western/European encroachment and settlement) have been, and continue to be, displaced from their lands and livelihoods. In Canada, it began with the signing of treaties in some regions, continued with the consolidation of territory to open lands for European settlement, and relentlessly continues today with natural resource extraction and development (Alfred 2001; Ormsby 1958; Robertson 2012; Simpson 2017). Since colonial contact, Indigenous Peoples in Canada (i.e., First Nation, Inuit, and Métis Peoples) have had to fight to retain their lands and the struggle endures today. This struggle manifests in various ways and includes ongoing treaty negotiations with the Crown (federal and provincial governments), legal title cases and disputes, and direct actions (Hill 2010; Simpson 2017). While we consider all of these tactics in some detail, the focus of this paper is on action. Specifically, we examine the function of action, organizing, direct actions, culture camps, and traditional living as a mechanism for defending and asserting Indigenous Peoples' access to and use of their land in the province of British Columbia (BC), Canada. Within this context, we then consider the function of ethnobiological research as a scientific framework for co-creating knowledge and disrupting further colonial encroachment on and the removal of resources from Indigenous lands.

Areas of intensive resource extraction and development are regarded as both frontiers and frontlines. Frontiers are conceptual spaces that have been created by colonial governments, resource extraction proponents, laborers, and scholars, and they are abstracted as empty and usable spaces ready for exploitation (Morris 1992; Orta-Martínez and Finer 2010; Tsing 2011). Conversely, frontlines have been conceptualized (and contradicted) as

dangerous or idyllic places where dissonance has been agitated by the oppression and disenfranchisement of local inhabitants (Belanger and Lackenbauer 2014). Here, we consider the ethnobiology of Lelu Island and, to a lesser extent, Madii Lii, home to Tsm'syen and Gitxsan Peoples, on the never-ending frontline of intensive liquefied natural gas (LNG) development. The BC provincial government, oil and gas developers, and investors imagine the same frontline as a frontier of productive resource and capital exploitation (see also Orta-Martínez and Finer 2010). While this contribution focuses on a case study in British Columbia, ethnobiologists worldwide are, perhaps unknowingly, caught in the middle of these apprehended spaces. We argue that ethnobiological research on the frontlines is challenging, but more productive, scientifically rigorous, and just than an ethnobiology on the frontier (see Hale 2006).

### Ethnobiology in Action

Ethnobiologists in British Columbia have a legacy of working with Indigenous communities to provide legal research and expert witness accounts in important land claims cases. Longstanding Society of Ethnobiology (SoE) member, Leslie Main Johnson, undertook paleoenvironmental research on the Seeley Lake mudslide, an ecological event tied to Gitxsan Peoples' oral histories (called *Adaawk*). This research was used as legal evidence to show that Gitxsan oral traditions are authentic accounts of history with physical historic referents. As such, oral accounts of Gitxsan territory ownership and title were held up by the Supreme Court of Canada as a valid form of evidence in one of the most prolific Aboriginal title cases in Canadian history, *Delgamuukw v. the Queen* (Gottesfeld et al. 1991).

Another longstanding SoE member, Nancy J. Turner, was a key expert witness in the landmark ruling *Tsilhqot'in v. British*

*Columbia*. Using Tsilhqot'in oral accounts, vegetation surveys, Tsilhqot'in plant names, and documented traditional management practices, Turner showed that the Tsilhqot'in landscape was an important source of food, material, and medicine and the plaintiff's legal team successfully argued that the Tsilhqot'in had longstanding rights and title to their lands. As such, the provincial government of British Columbia had breached its duty to consult the Tsilhqot'in community concerning resource extraction and development on their territory (Smith 2008). In his reasons for judgement, Justice Vickers stated:

Dr. Turner expressed the opinion that when people first move to an area they are unfamiliar with the local resources. It takes time and observation at a particular location to gather practical knowledge about how to harvest the resources and how to conserve and maintain the resource for future use. Dr. Turner testified that it takes "a lot of time, generations of teaching and observation, to build up a really complex system of knowledge that leads to sustainable use of people's environment." Tsilhqot'in people have names and uses for numerous plants found in the Claim Area. They have managed and harvested those plants for generations. In Dr. Turner's opinion, it would not have been possible for Tsilhqot'in people to have acquired this knowledge and developed this connection to the plant resources in their territory within the last 150 years. Based on the names of plants and the knowledge of their uses, she concluded Tsilhqot'in people had been resident in the Claim Area for at least 250 to 300 years. (Tsilhqot'in Nation v. British Columbia:676)

Ethnobiologists have also pursued direct action roles for over a century. Anthropologist and ethnobotanist James

Teit was an outspoken ally of the Native Brotherhood and other Indigenous political movements in the early twentieth century, operating as translator, scribe, and lobbyist (Wickwire 1998). Current SoE student member Spencer Greening (Gitga'at, Tsm'syen) uses ethnobiology to supplement his community-based activism, showing how the landscape is a living archive of his Peoples' history and is essential to their health and well-being, especially in relation to relentless oil and gas expansion in his Gitga'at territories (Lepofsky et al. 2017).

Protests, occupations, and blockades are often perceived as reactionary, radical, disorganized, and less-than-legal pursuits. As a result, there are a number of perceived concerns when researchers are involved in direct actions. First, the scientific method is threatened with accusations of bias and subjectivity. Second, researchers are charged with over-politicizing positions of research privilege. These views not only undermine expressions of anticolonial dissent, but also fail to recognize the attendant historical and social circumstances that lead to direct actions in the first place (Belanger and Lackenbauer 2014). The adoption of direct action tactics is often used to overcome structural barriers like oppressive and wildly expensive colonial justice systems and has never been shown to undermine scientific inquiry (Napoleon and Friedland 2014). In this context, we argue that ethnobiologists can play their part in protests, occupations, and blockades, and to lend support, when called, to actions of dissent.

In the following section we provide an overview of historical and ongoing struggle for land rights in British Columbia and how direct action has served as an important tactic throughout history. As noted in allyship work and literature, the historical context of dissent and action in a community is a fundamental substrate upon which all action research should be undertaken

(Denis and Bailey 2016; Smith et al. 2016). We then provide a case study of an LNG development project that was proposed in Tsm'syen and Gitxsan territories and explore how ethnobiology was used on the frontlines in an attempt to help assert Indigenous ownership and access to the land<sup>1</sup>.

### Twentieth-Century Action in British Columbia

Given the province of British Columbia's longstanding dependence on a resource extraction-based economy, conflicts between the Crown (provincial and federal governments) and Indigenous communities over resources and resource management are scarcely new (Low and Shaw 2011). There was relatively late colonial interest in the territories of the Pacific Northwest, specifically northwestern British Columbia (e.g., where Tsm'syen communities kept reasonable control over the early fur trade). However, by the mid-1800s, access to and use of resources were already significantly reduced by colonial interests. In 1862, the Hudson Bay Company had delineated hundreds of acres of Tsm'syen land for their fort at Fort Simpson (Tolmie 1963). In Arthur Wellington Clah's compendium of diaries spanning 50 years (1859–1909), the earliest Tsm'syen-written documents, Clah highlights the everlasting struggle of his Chiefs and Elders to maintain control over their lands. As Peggy Brock (2011) notes in her analyses of the diaries:

Clah's diaries give a glimpse...of the petitions, delegations, and meetings generated by the Tsimshian and the Nisga'a in their fight for control over and a fair distribution of their land. More importantly, the diary illustrates the bemusement Aboriginal people experienced when they contemplated the conundrum that the ownership of their land had, through some sleight of hand, passed to Queen Victoria and her government, who then allotted them small parcels in the form of

reserves, which they no longer owned. (Brock 2011:106)

In the early 1900s, conflicts over Indigenous rights and title in the northwestern frontier were aggravated by the BC provincial government's interests in resources like timber and minerals, and the construction of railways. Under the Indian Act (1876) and its accompanying amendments, Indigenous communities were not allowed to purchase or receive land grants like settler populations (European, non-Indigenous), traditional fishing strategies (weirs, dip nets) were prohibited, and reserve land was ceaselessly expropriated. Due to the social disorganization and disenfranchisement as a result of colonialism, many Tsm'syen left their homelands and sought wage labor picking hops in the USA and in coastal canneries and on fishing boats (McDonald 1994). One of the first recorded direct actions, and perhaps foreshadowing the unease and dissension to come, was in 1891 when Tsm'syen women working in a coastal cannery, paid significantly lower wages than men for more work, refused to work until their compensation increased, which it eventually did (Brock 2011; Higginbottom 1988).

Actions of dissent escalated in 1905 when the BC Game Amendment Act introduced fines and imprisonment for violations concerning fishing, hunting, and trapping. Furthermore, in 1908, the construction of the Grand Trunk Pacific Railway opened access to the northern frontier of British Columbia, which marked even more of an upswing in the provincial government's zeal for natural resources and its vision of becoming a leader in the Canadian Dominion (McDonald 1990). During this period, Premier Richard McBride (Premier from 1903–1915) rejected Indigenous Peoples' petitions over title disputes, and new reserves were no longer allocated. At the same time, on existing reserves people were ordered to "minimally use" timber, minerals, gravel, and even water (Drucker 1958; Harris 2008).

Throughout this period of intensified colonial settlement, encroachment, and resource extraction, Tsm'syen people were not relying on settler intermediaries (e.g., missionaries, traders) to help endorse their interests. In 1885, three Tsm'syen chiefs were the first ever Indigenous delegation received in Ottawa to relay the concerns over their peoples' rights and title to land that was quickly diminishing (McDonald 1990). In 1913, the Nisga'a Petition was officially adopted to demand legal settlements over territory disputes between fishers, loggers, and farmers in BC's northwest, specifically in the Skeena and Nass Valleys (Drucker 1958; Ware 1974). The 1930s were pivotal in Canada's civil rights history and saw the beginning of the Native Brotherhood of British Columbia and Indigenous nationalism. These movements were sparked by the disenfranchisement of Indigenous Peoples and their dispossession from land, kin, and resources. Tsm'syen anthropologist William Beynon was a known supporter and voice for the Native Brotherhood in British Columbia, and the history of the Brotherhood's actions have been extensively studied (Drucker 1958; Duff 1997; LaViolette 1973; O'Donnell 1985).

Smaller scale direct actions and acts of dissent that ignited the larger causes for access to land and resources are less well known. In 1909, Gitksan and Wet'suwet'en representatives from northwestern British Columbia presented a list of 29 specific grievances to Prime Minister Wilfred Laurier's failed commission on Indigenous-settler relations. The grievances were over expanding colonial settlement and concerns over hunting grounds and access to resources. These grievances were ignored (Gitksan Development Corp 2013). BC colonial officials refused to discuss title and instead sent police to protect colonial-settlers' newly established properties in the northern frontier. That same year, Kispiox (Gitksan) chiefs transformed the frontier into a frontline. They blocked a road construc-

tion crew and seven men were arrested by 40 police officers. From 1927–1951, it was illegal for Indigenous communities in Canada to organize in order to advance land claims and illegal for lawyers to work on Indigenous land claims cases (Feltes 2015).

In the latter part of the twentieth century, blockades became a common tactic used by Indigenous communities to halt or slow resource development and assert rights in their territories and over resources. From 1984–2006, over 124 discrete blockades and occupations have been recorded in British Columbia (Hill 2010). Band Councils (Indian Act Governments) have supported some actions and condemned others. There have been successful blockades, such as the Nlaka'pamux blockade against logging in 1995 that resulted in the Stein Valley Nlaka'pamux Heritage Park, or the Haida actions in 1985, which were not successful in establishing Haida sovereignty over their territories, but led to the creation of the Gwaii Haanas National Park Reserve (Rossiter 2014). From 1980–1996, a third of blockades were actions against logging on unceded territories, and less than a quarter were actions to establish land claims resulting from resource-use grievances (e.g., provincial fishing policies) (Blomley 1996).

### Frontiers are Still Frontlines

To our knowledge (at the writing of this article), there are currently eight ongoing re-occupation checkpoints (functioning as blockades) led exclusively by Indigenous communities in British Columbia. They include: Lelu Island, Kwekwecnewtwx, Sutikalh, Sinixt, Unist'ot'en, Gidimt'en, Madii Lii, and the Secwepemc Tiny House Warriors. Six of these actions are to assert title to oppose oil and gas and LNG development on unceded territories. Indigenous communities in the twenty-first century have effectively traded in logging grievances for oil and gas ones. Despite Supreme Court rulings, direct actions appear to be

the most effective and important means of halting unwanted developments and asserting rights and title for Indigenous Peoples in British Columbia. The communities on these frontlines claim rights to inhabit their territories under Section 35(1) of the Canadian Constitution Act, and Unist'ot'en, Madii Li, and Gidim'en leaders cite rights to manage their territory affirmed by the Supreme Court ruling of *Delgamuukw v. the Queen*.

Like many other communities in remote parts of North America, there is a constant struggle with the trade-offs between extractive industries and supposed job creation (Petras and Veltmeyer 2014). However, many employment opportunities in the resource extraction sector tend to rely on short-term contracts with little employment-security or long-term investment in communities. Resource extraction economies are based on vast quantities of unprocessed raw materials that are often exported to international markets and the profits are funnelled to urban centers (Booth and Skelton 2011; Caron-Beaudoin and Armstrong, this volume). In fact, over the last ten years, rural and remote British Columbia accounted for 78% of British Columbian exports, but has only seen a small fraction of the profits (Northern Development Initiative Trust 2018).

Over the last 150 years, northern British Columbia has been fashioned as one of Canada's ultimate "frontiers" (Peyton 2017). The legend of an idealized wilderness and a vanishing way of life reifies the emptiness of the region. The frontier landscape is treated as an inert place, ready to be used, packaged, and exported. But the frontline challenges us to see the landscape as a lively actor—a home to communities of Indigenous and non-Indigenous Peoples, to plants and animals, rare birds and fungi, vast migrations of salmon, all enduring and some fighting to protect their place, regardless of the commercial value of oil and gas commodities tunneling below the surface.

### Lax U'u'la (Lelu Island)

In 2015, one of the authors (Brown) began co-organizing the occupation of a small island on the northwestern coast of British Columbia that was proposed for the development of a liquefied natural gas (LNG) export terminal and liquefaction plant for the Prince Rupert Gas Transmission Line (PRGT) (Figure 1). The island lies at the mouth of the Skeena River, the second-largest salmon-bearing watershed in Canada (Carr-Harris et al. 2015; Moore et al. 2016). Specifically, Lelu Island is at the mouth the Skeena River estuary, where the majority of juvenile salmon use the rare habitat as a stopover (for up to 30 days) to adapt and grow before migrating to the ocean (Moore et al. 2016). The proposed development would dramatically increase tanker traffic in the immediate area and devastate Skeena River salmon and local Indigenous communities' most food-secure resource (Carr-Harris et al. 2015). The construction of the LNG terminal alone would include an immense amount of dredging, increased toxic emissions pumped into the waterway, and loss of important wetland habitat (McLaren 2016).

In 2015, the Lax Kw'alaams (Tsm'syen) band (i.e., tribal government) made front-page news across Canada when over 300 community-member voted unanimously to turn down \$1.15 billion offered by LNG developers for access to Lelu Island<sup>2</sup>. Despite the unanimous decision, the British Columbia provincial government continued negotiations with Petronas, the Malaysian energy giant leading the PRGT project. Roughly two months after Lax Kw'alaams voted down the project, the government of British Columbia passed legislation to guarantee that Petronas would not have to pay provincial taxes for 25 years (in order to secure an investment)—effectively showing disregard for the Lax Kw'alaams decision. The Lax Kw'alaams government had adopted and adhered to standard Indian Act practice—an Act struck by the Canadian government outlin-



**Figure 1.** Lelu Island, in the Skeena River estuary (foreground), a critical habitat for juvenile salmon in the second largest salmon-bearing river in Canada. Photograph: Storm Carroll.

ing how Indigenous Peoples are to govern themselves and their territories. According to Canadian law, the Lax Kw'alaams vote should have been the end of the development question. But it was not.

Shortly after the Lax Kw'alaams vote was repudiated by the provincial government and following standard Tsm'syen protocol, Brown and fellow defenders requested permission from the hereditary land title holder, Sm'oyget Yahaan (Don Wesley) of the Gitwilgyoots Tribe, to occupy Lelu Island. Sm'oygyet Yahaan, along with the tribe's official spokesperson, Algmxaa (Murray Smith), Laxgibou house leader Lik'getgyet Gwis Hawaal (Ken Lawson), and their families and friends (including Brown), began occupying Lelu Island. The occupation began small and consisted of a few tents but grew within a few months to include a main cabin, satellite cabins, outhouses, a tipi structure, and trails. The House leader and spokesperson, Gwis Hawaal, and his wife, Patty Dudoward,

continue to oversee how the camp is run, who is permitted to be there, and other security issues.

### **Lelu Teaches and Provides**

Ethnobiological research was undertaken at Lelu Island to investigate how the Waap (House) and Gitwilgyoots tribe members connected to and "used" their claimed territory. The author (Armstrong) conducted interviews and, through participant observation with Waap representatives (2 women, 2 men) and camp organizers (2 women), undertook archaeological, ethnobiological, and botanical surveys. Interviews were semi-structured, focusing on plant, fish, and animal use, and occurred in situ on the island. The Waap leader and his wife requested that government permits not be sought and that the permission for research be granted by the hereditary Chiefs and land-owners. Standard ethical protocol (free, prior, and informed consent) was adhered to and approved by



Armstrong's home institution, Simon Fraser University. Armstrong identified plants, uncertain identifications (two plants) were photographed, and vouchers were collected. A colleague from the University of Victoria confirmed identifications. All data was verified and member checked by the interview participants and the camp organizer. Brown's prolonged engagement with the camp provided the background for assessing the reliability, and understanding and interpreting the context of the interview participants' views. The original purpose of the research was to survey the island for archaeological sites and to identify all the seasonally available edible foods (plant, animals, and fish). It quickly became apparent that community members living on Lelu Island had been intensively and effectively procuring wild resources—a gold standard of “use” in land claims cases in Canada. The following sections review and inventory food harvesting and land-use strategies utilized at Lelu Island, as observed throughout its occupation by the authors (year-round by Brown and occasional visits, roughly a month total, by Armstrong).

It was clearly demonstrated by camp defenders and hereditary owners that the importance of Lelu Island—in addition to longstanding socio-political connections—was in its geographical proximity to countless food, material, and medicinal resources. Table 1 summarizes resources that were harvested and used by camp defenders on the island in 2015–2016. The table does not include all available species on and around Lelu Island, such as Pacific crabapple (*Malus fusca*), Pacific silverweed (*Potentilla anserina*), seal (Pinnipeds), northern abalone (*Haliotis kamtschatkana*), lingcod (*Ophiodon elongates*), and various species of rockfish (*Sebastes* spp.). Though these species are edible and are still commonly harvested, camp inhabitants did not specifically harvest them during the year of our collective research. The table also does not include salient biota that were

admired and respected by camp defenders and associated with important spiritual or phenological knowledge (e.g., Lantz and Turner 2003), including, Bald Eagle (*Haliaeetus leucocephalus*), grey wolf (*Canis lupus columbianus*), black bear (*Ursus americanus*), harbour porpoise (*Phocoena phocoena*), sea otter (*Lontra canadensis*), and whale species immediately surrounding the island at various times of the year, such as humpback (*Megaptera novaeangliae*), grey (*Eschrichtius robustus*), mink (*Balaenoptera acutorostrata*), and orca (*Orcinus orca*). These species were not harvested but were admired and cherished—for example, when discovered, they ignited stories and discussions around language (e.g., “what is grey whale in Sm’algayax?”).

Despite the relatively small size of the island (~5 km<sup>2</sup>), the abundance and diversity of culturally important species were central to the land defender's daily actions (harvest for materials, for food) and long-term subsistence needs (storing foods, especially fish). Various berries were harvested for food and were jarred for preserving. Land defenders felled alders (*Alnus* sp.) and standing dead cedars (*Thuja plicata*) for fuel and to clear land for gardens. Young cedars were felled to make beams for the cabins, shed, smokehouse, and outhouse. At high tides, when driftwood floated around the island, Brown and others would tow the giant logs back to camp for firewood. Scavenged driftwood was also used to make tables and bunk beds in the various cabins and outbuildings around the island. Cedar tips were fabricated into small smudge sticks and fresh cedar and juniper (*Juniperus communis*) branches were offered to fires to ask for protection, especially during the more challenging times at camp. Prayers were offered up when cutting branches for brushing, and one camp protector sang traditional prayers when cedars were felled for totem poles and stairs. In the 1980s, before a Gitwilgyoots tribal member was forcibly removed by the Prince Rupert Port Authority, he had

**Table 1.** List of species harvested and used at Lelu Island 2015–2016.

Kingdom	Food	Medicine	Materials
<b>Fish</b>	<b>gayniis, üüx, misoo, yee, sti'moon</b> (all five species of salmon, <i>Oncorhynchus</i> spp.)  <b>meliit</b> (steelhead, <i>Oncorhynchus mykiss</i> )	<b>'wah</b> (oolichan, <i>Thaleichthys pacificus</i> )	
<b>Animals</b>	<b>wan</b> (white-tailed deer, <i>Odocoileus virginianus</i> )		<b>wan</b> (white-tailed deer, <i>Odocoileus virginianus</i> )
<b>Plants</b>	<b>dza'west<sup>a</sup></b> (salal, <i>Gaultheria shallon</i> )  <b>k'apk'oop</b> (bunchberry, <i>Cornus canadensis</i> )  <b>wüteexs</b> (red huckleberry, <i>Vaccinium parvifolium</i> )  <b>dahdee</b> (bog cranberry, <i>Vaccinium oxycoccos</i> )  <b>laaya</b> (highbush cranberry, <i>Viburnum edule</i> )  <b>maay' im kaw kaw<sup>b</sup></b> (crowberry, <i>Empetrum nigrum</i> )	<b>k'wila'maxs</b> (Labrador tea, <i>Rhododendron groenlandicum</i> )  <b>w'nax</b> (skunk cabbage, <i>Lysichiton americanus</i> )  <b>smgan</b> (western redcedar, <i>Thuja plicata</i> )  <b>läsa?nax?nox</b> (common juniper, <i>Juniperus communis</i> )	<b>gyiik</b> (western hemlock, <i>Tsuga heterophylla</i> )  <b>smgan</b> (western redcedar, <i>Thuja plicata</i> )  <b>luwi</b> (red alder, <i>Alnus rubra</i> )  <b>so'oks</b> (miscellaneous driftwood for construction materials)
<b>Other</b>	<b>ts'ak, 'yaans</b> (chitons, <i>Polyplacophora</i> spp.)  <b>k'almoos</b> (Dungeness crab, <i>Cancer magister</i> )	<b>moox</b> (bull kelp, <i>Nereocystis luetkeana</i> )	

<sup>a</sup> Sm'algyax names for berry plants refer only to berries and not the entire shrub. For example, salal berries are called *dza'west* but the entire plant is called *dzawas* (Anderson 2018).

<sup>b</sup> No Sm'algyax word recorded for crowberry; however the closely related Nisga'a term is provided (Turner 2014:Appendix 2B).

built a structure with small plastic pipes for collecting rainwater for hand-washing, dishwashing, laundry, and even bathing. This structure was revived for camp needs and expanded on for camp defenders' year round occupancy.

Youth were encouraged to take part in camp actions and organizing. High school students from the nearby city of Terrace were invited to Lelu Island to learn about the re-occupation and how the camp promoted the cultural revitalization, health, and well-being of Tsm'syen communities on their land. Students were given a tour of the island by both authors and were shown food and medicinal plant patches, as well as archaeological sites. Defenders educated

youth on the importance of re-occupying Tsm'syen territories like Lelu for future generations.

The island functions not only as a direct action blockade, but it is also a cultural camp aimed at "being on the land" and in the way of LNG developers and their consultants and contractors (for more on Indigenous culture as activism, see Harrison 2002). Lelu provides a forum and space for people to come together and learn traditional teachings and build skills—like how to operate boats, run a generator, set crab traps, fish, hunt, wild harvest, and build structures. Camp defenders constantly work to maintain the camp (funding, infrastructure), but they also use it as a place

to maintain hope and express ideas for a better world, to practice culture, take part in games, and enliven the land in respectful and fun ways. Leanne Simpson has noted that Indigenous Education is not Indigenous or Education unless it is on the land (Simpson 2017)—at Lelu, Indigenous Education flowed seamlessly between theory, practice, and governance. The use of ethnobiology was a means of co-creating knowledge, and despite our best intentions to do so, it should be noted that such (Western) research only captures a glimpse of the resurgence, regeneration, and reestablishment of Tsm'syen lifeways on the island.

Currently, there are efforts to turn Lelu Island into a much-needed healing center—the nearby city of Prince Rupert is a major center for many Indigenous communities and is currently without a long-term residential care and addictions center.

### **Land is Always “Occupied”**

In British Columbia, Indigenous Peoples' land is legally developed for resource extraction without proper consultation, through assessment and permitting processes. Before the development of new resource extraction projects, teams of engineering, environmental, and heritage consultants are employed to scientifically assess the effects of a proposed development project. Assessments are overseen and legislated by the BC province, under the Environmental Assessment Act and the Heritage Conservation Act (with extended agreements, policies, guidelines, and bulletins). Two issues with the assessment process are reviewed here. First is the scientific integrity of some proponent-paid consultants and researchers, and second is how cultural resources (heritage/archaeological assessments) and natural resources (environmental assessments) are evaluated as separate entities (see also Hunsberger and Awâsis [2019] for a critical review of the National Energy Board consultation process). To the first point, King (1998) has noted how the protection of cultural

resources is defined only by authorized heritage experts (mostly non-Indigenous people) and not by communities or the public. To the second point, natural resources (salmon habitat, rare plants, etc.) are appraised separately from heritage resources (old village sites, culturally modified trees, etc.), and anything cumulative or “in between” (e.g., an important berry patch used by community members) is not assessed at all (Lepofsky et al. In press).

This issue with the consultation process at Lelu Island was exemplified by the environmental and archaeological assessments, which argued that no cultural heritage or important ecological habitat on the island were worth protecting. Mostly non-local and non-Indigenous consultants evaluated the island without considering the role of important medicine, food, and materials for local inhabitants (as listed in Table 1).

Brown's own observations of consultant assessment work at Lelu Island exposes problems with the assessment process as supposedly scientifically driven research. Brown noted reports from fellow defenders (who previously worked with consultants) of consultants destroying evidence (perhaps by accident)—specifically a rare aquatic species within the proposed area for development (Figure 2). Brown also reported fellow defenders who were initially hired to conduct environmental assessments at Lelu Island but who reported feeling “used,” acting only as tokenized Indigenous monitors without any real research input. These same people also quit after they found that most consultants were not taking the work seriously and that their supposed mandate “to do good science” was second to productivity (e.g., quotas for finishing assessments quickly). The Indigenous monitors felt that the traditional knowledge they shared with consultants would be exploited to benefit industries. Sharing their knowledge of the land would put Indigenous Peoples' resources at risk and go against Indigenous communities' long-term interests. Furthermore, Hereditary Chiefs were not able to

comment on research permits or referrals for Lelu Island, and a new bulletin (Bulletin 25, updated in 2015) meant to append the Heritage Conservation Act (1996) stated that notice of work for oil and gas projects in the province could be expedited and, “does [sic] not need to address potential aboriginal rights’ infringements.” While there are many consultants doing ethical and sound research to the best of their ability with limited legislation, some proponent-paid consultants are often rewarded when they complete projects ahead of schedule or reach quotas designed to expedite assessments (see Baker and Westman [2018] for similar view of environmental consultation practices in the Alberta Tar Sands).

The second issue with the consultation and impact assessment process is the separation of environmental and cultural values. Armstrong reviewed a number of environmental and archaeological/heritage assessment reports for Lelu Island and a loosely affiliated re-occupation in Madii Lii territory, owned by House Luutkudziwus (Gitxsan), roughly 200 kms east of Lelu. At Lelu Island, the Gitwilgyoots Chief was not consulted or allowed to comment on the

Site Alteration Permit (SAP), which sought to remove most Culturally Modified Trees (CMTs) from the island, despite the fact that the CMTs were still being harvested and used as educational tools. Indigenous heritage, in this context, was strictly defined as artifacts worth protection only if they pre-dated 1846, and continued use of ecofacts was inconsequential for protection. This exemplifies a major oversight in the British Columbian provincial government’s division of environmental and heritage protection.

In the case of Madii Lii, Armstrong (in conjunction with fisheries biologist Ken Rabnett) reviewed and rejected the recommendations of archaeological consultants who used faulty<sup>3</sup> methodologies for identifying archaeological sites and decided, based on the dearth of sites, that there was no heritage value in Madii Lii territory (~100 km<sup>2</sup>) worth protecting. This view of “heritage value” was obviously not the view of the House Chief and representatives whose ancestors had lived on the territory for at least the last 4000 years (Cove 1982; Daly 2013). In addition to standard archaeological surveys,



**Figure 2.** Author Christie Brown, doing patrol around Lelu Island.

Armstrong, Rabnett, and Madii Lii organizers compiled their own assessments using ethnobiological and archaeological methods: interviews with Elders to document important places on the territory, Gitxsan place name inventories, botanical inventories, and engaging community members on the land to help document old trails, fish camps, and harvest patches. Together, we located two large archaeological sites that consultants missed, and promoted previous land-use studies that were ignored by consultants, including the Babine Trail Management Plan drafted in 1998 (Suskwa Community Association 1998), aimed at recognizing a large prehistoric trail network in the Suskwa Pass and other areas of cultural heritage (e.g., berry camps, CMTs).

Fusing cultural and ecological methods for valuing the landscape, we were able to demonstrate what Gitxsan community members have always known: that the land base is part of Gitxsan identity and that that identity emerges from the nature-culture nexus that connects specific communities to a specific place (see Wildcat 2010). This kind of land-based identity is diluted and erased during the government-mandated assessment process, but not during ethnobiological research undertaken with participatory observation and a commitment to co-creating knowledge informed by community members. To our knowledge, the claim that researchers who take part in political actions are compromising their scientific method has no validity, but the same cannot be said for some proponent-paid consultants. In this scenario, partaking in the frontline (and not the frontier), and supporting camp defenders made for better scientific assessment of ecocultural heritage.

### Discussion

As ethnobiologists working on frontlines, we are tasked with the same ethical codes of conduct and standards adhered to in regular fieldwork scenarios. However, we are often entering tense

and difficult situations that should not be over-romanticized or over-simplified. For example, non-Canadian researchers studying in Canada are higher risk targets during direct actions (they face losing scholarships, deportation, etc.). Moving forward, the neo-liberalization of universities will almost certainly make it more challenging for scholars to freely participate in some actions (Giroux 2002). Furthermore, direct actions and organizing often draw from limited resources (Armstrong relied on personal funds for research costs), there can also be conflicts over decision-making power, and there are limitations to the time and energy individuals are willing to give. The Lelu Island camp was not a utopian paradise whose participants worked without conflict or sought a simplistic re-integration into nature. Although it was a time of learning and relationship building, there was hard and stressful work behind the scenes. Brown was constantly evaluating the “security culture” of the camp: the customs and practices that evaluate risk when being targeted by government or police. When Lelu Island occupants were under surveillance by Canada’s national police (RCMP) and the local Prince Rupert Port Authority, alternative communication tactics were employed, and “look outs” were constructed across the island.

As a discipline, ethnobiology began as a largely utilitarian endeavor whose researchers worked in faraway communities in order to discover useful plant and animal products for mainstream society. Although not all early ethnobiologists are associated with blatant charges of biopiracy (Hunn 2007), even intellectual ethnobiology has been associated with colonial acts that help to profit a researcher while disregarding the well-being of the people being studied (Wolverton et al. 2016). Nevertheless, ethnobiology (and anthropology) has, unlike many other Western scientific disciplines, developed an intellectual tradition of working *with* communities, not as their subjects, but as collaborators (Blair, this

volume; Caron-Beaudoin and Armstrong, this volume; Posey 1990).

Worldwide, collaboration with Indigenous communities will sometimes mean joining the frontlines. This is especially true in frontier regions where aggressive development from extractive industries strain communities' access to and use of their territories and resources. As Armstrong and McAlvay (this issue) note in the introduction to this special section, doing nothing in these scenarios is not necessarily more ethical than doing something. Aligning ourselves with a struggle can be done ethically (see Fowler, this issue). Hale (2006) considers such activist research important if it is done properly; our alignment with a community must allow for a dialogue in which we co-construct each stage of research, from conception to data collection and dissemination. We do not do action ethnobiology by simply aligning ourselves with a community or a cause, but by doing "research and writing in which political alignment is manifested through the content of knowledge produced, not through the relationship established with a group [alone]" (Hale 2006:98).

It is possible to bracket the so-called subjectivity of our political views, to evaluate or situate the social circumstances in which we work, and then proceed as professional scientists. Action ethnobiology on the frontlines reported here attempts to recognize the importance of: 1) understanding the deeply rooted social contexts of our research, 2) aligning our research with the struggle of communities and then, 3) conducting ethnobiological research that is both scientifically rigorous, epistemologically transformative (i.e., co-created with Indigenous collaborators), and socially just. To the third point, ethnobiological research undertaken with frontline communities made for a more exact and effective portrayal of environmental and cultural heritage than was undertaken by consultants. In an age of alternative facts

and fact-making, we recognize the need to be scientifically rigorous and meticulous (Hunn 2002). Certainly, Armstrong spent her time at blockades making dinners, cleaning camp, and helping build structures, but the success of a blockade or occupation relies on the organization and skillsets of the group—and, as ethnobiologists, our skillsets are clear.

In a recent study, it was estimated that at least 28.1% of the world's land surface is managed by Indigenous Peoples, including some of the most ecologically intact places on earth (Garrett et al. 2018). The cultural and ecological impacts of Indigenous land-loss worldwide are infinite. They include language loss (Wilder et al. 2016), cultural fragmentation (Reyes-García et al. 2009), suppression of Indigenous spirituality (Anderson 1996, 2016), the concerted erasure of ecological knowledge (Turner and Turner 2008; Wilder et al. 2016), and separation from land-based economies and traditional foods (Godoy et al. 2002; Turner 2001; Uberhuaga et al. 2011). As ethnobiologists, our stake in this conflict is obvious. We witness, first hand, these losses amongst our friends, colleagues, and within our own communities.

Since colonial imposition, Indigenous communities in British Columbia have been beleaguered by the endless encroachment of government, extractive industry, and colonial-settler interests on their lands. The disenfranchisement and removal of communities from lands and livelihoods have profound and lasting effects. The primary motivations for direct actions are, therefore, not one-time bursts of anger, but acts of dissent stirred by long standing and compounding waves of colonialism. Ethnobiologists working with Indigenous communities and/or Indigenous lands are therefore challenged to go beyond their immediate research niche and try to understand the attendant social and environmental conditions that lead to community distress and ongoing oppression.

### Conclusion

The role of history in shaping peoples' relationship to land and resources has always been an important aspect of both ethnobiological and closely related historical-ecological research (Balée 2013; Nagaoka and Wolverton 2016; Widgren 2012). However, most historical aspects of ethnobiology focus mostly on expanding historical datasets, like aerial photographs, written records, or iconography, to better understand past relationships between humans and the environment (Hildebrand 2009; Silva et al. 2014). For action ethnobiology, we argue that, to be critical, applied, and just, an understanding of local political-ecological development and struggle through time is paramount (Armstrong and Veteto 2015). This is especially true in settler nations like Canada, and British Columbia more specifically, where Indigenous Peoples' use and access to resources has been eroding since the establishment of early colonial governance structures. The erosion of these rights, to hunt, fish, and harvest, or to be consulted on how territory is used and appropriated, continues today with the intense development of oil and gas resources in the BC province's frontier territories. In the frontier, communities are treated as obstacles to development, but when the frontier is presented as a frontline, those same communities are recognized as stewards and inhabitants that practice harvest rights and take part in land-based activities. These activities are acts of dissent in and of themselves; where simply being Indigenous is a form of resistance (Coulthard 2014; Simpson 2017). Such acts of resistance are deeply rooted and longstanding aspects of the relationship between Indigenous Peoples and the land, and deserve attention from ethnobiologists. This research presented two case studies outlining how ethnobiological research was conducted in the context of Indigenous resistance/culture camps in northwestern British Columbia. The success of these

studies—in co-creating knowledge that firmly contradicted provincially mandated assessments and consultation processes—shows how sound ethnobiological research can be done in solidarity and on the frontlines in ethically and scientifically rigorous ways.

The tension between Indigenous Peoples' land and resource rights and commercial/industrial resource development is not a black and white issue. Globally, there are tensions between Indigenous communities and energy industries, but some band/tribal governments support industrial resource development in their territories. In either scenario, all cases deserve rigorous considerations of the ecological and cultural heritage at risk from development, both on the frontline—as presented here—in addition to the frontier assessments conducted by hired researchers and consultants. It is in this context we show that taking part in action does not only lead to decolonizing strategies for improved research ethics and improved scientific outcomes, but also lends support and solidarity to the communities from within which researchers work and from whom researchers profit.

### Notes

<sup>1</sup> The principle investor, Petronas, has since cancelled the Pacific Northwest LNG project but the fate of the pipeline is still under review at the time of publication of this article. Companies are able to purchase the permits/licenses and other "project approval" documents from Petronas. A national announcement by the Canadian Prime Minister, Justin Trudeau, in October 2018 opening LNG Canada in the neighboring town of Kitimat will undoubtedly increase interest in the PRGT. Brown has noted that workers from the Port of Prince Rupert continue to patrol around the island.

<sup>2</sup> See Bloomberg News (2015) for news coverage of the story.

<sup>3</sup> In archaeological overview assessments, consultants use predictive models to assess the potential for archaeological sites in a given territory. The report reviewed by Armstrong and Rabnett alleges faulty models since they were prescribed for "BC interior" sites, and not the unique geographic area inhabited by Gitksan people.

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