
Food Security Concerns and Challenges of First Nations Communities in the Interior of BC



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1 Executive Summary

1.1 Overview

The vulnerability of rural communities is an issue that has been persisting on a global scale for decades. As development pressures increase and climate change affects intensify, some of these communities have been forced to shift their reliance on local resources to imported goods. Due to the low population density of rural areas relative to urban centres, they hold less political power and their needs are often not prioritized by government. As a result, even communities in a resource abundant province such as British Columbia (BC) are experiencing food and water security issues. Rural First Nation communities have been particularly vulnerable as they have a history of being marginalized which has affected their livelihood and decreased their ability to be resilient to change.

1.2 Methods

This is an exploratory report intended to examine the main challenges and concerns regarding food security in rural communities in BC from a First Nations' perspective. Two groups in BC's interior were selected and visited: Lytton First Nations and Esh-kn-am Cultural Resources Management Services, an organization which represents three different First Nations bands. There was greater focus placed on Esh-kn-am as they expressed more concern than the Lytton community regarding their local food security.

1.3 Discussion and Summary

The major concerns expressed by both Lytton and Esh-kn-am are the negative effects of resource development, recreation, and climate change on local food security. More specifically, that resource development is contributing to habitat loss and reducing the quality of habitat for ungulates as well as increasing their exposure and vulnerability to both human and natural influences. This is occurring on traditional First Nations territory, which these communities suggest they are losing influence and involvement over, as well as equitable input regarding the development of resources. To address these concerns regarding local food security, industry, government, and First Nations communities should work toward achieving an equitable partnership and develop common goals. Collaboration between First Nations, non-government organizations, and academic institutions could also help provide financial and technical support to help communities establish local governance programs. Ultimately, an improvement in communication and local governance, as well as development of an effective mechanism to achieve co-management of resources would improve the overall long-term resilience of rural communities facing similar issues.

2 Introduction

2.1 Background

Canada is known globally for its rich supply of natural resources, abundance of fresh water, and prime agricultural lands. It is therefore both surprising and concerning that 1 in 8 Canadian households is food insecure (Tarasuk et al 2014). In the province of British Columbia (BC), more than one in ten households exhibit a form of food insecurity (Li et al. 2016). Food insecurity is when people do not have safe and sufficient physical and financial access to healthy and nutritious food. A report produced by the Provincial Health Services Authority concluded that financial constraints were the primary cause of household food insecurity in BC and that most of these households are in rural areas (Li et al. 2016).

In BC, there are a higher number of rural communities relative to other provinces, and there is increasing concern regarding their future resiliency. Due to low fertility rates, out-migration of younger generations, and longer life expectancies, populations in rural communities are declining and aging (Moassami 2015). This trend is expected to continue into the future, as fertility rates are expected to decline by approximately 12% by 2025 (Moassami 2015). Although BC's fertility rates are low in both urban and rural areas, there has been high level of immigration to urban centres which has contributed to rising urban populations as well as BC's rising population since the late 1800's (Moassami 2015). BC's fertility rates are expected to decline further as the population ages; however, a positive trend is expected for the provinces overall population growth due to immigration. The demographic trends occurring in BC are contributing to the province's urban-rural divide and ultimately the unequitable political representation of small communities compared to dense urban centres (Moazzami 2015). As populations decline and demographics shift, other issues emerge and are exacerbated by the pressures of resource development and climate change.

There is interest in improving and investing in local food security because people living in remote rural communities are more likely to have poorer health outcomes compared to those in urban centres, and they often rely on surrounding food and water resources for their livelihoods (Tam 2017). In BC's interior, the cumulative pressures of resource development, recreation, and climate change have forced rural communities to increase their dependence on outside resources, which has negatively affected their health and their local food security by changing the types of food and quality of food they consume. More specifically, communities are relying more heavily on store-bought and processed foods due to a decrease in abundance of culturally significant meat-based protein sources in the local area. They are struggling to maintain these local food resources as they lack political support and the modern technical expertise required to prioritize and establish long term food security. This has arguably made them more vulnerable and less resilient to economic and environmental change.

2.2 First Nations in BC

BC has the most culturally diverse population of Indigenous peoples relative to other provinces and is home to 198 First Nations with varying dialects and diverse cultural histories (Province of BC, 2018a). Most of the First Nations living on reserve land in BC reside in remote or rural areas (Moazzami, 2015). Reserves are defined by the Indian Act as tracts of land that have been set aside by the Crown for the exclusive use of Indian Bands under treaties and other agreements (Indian Act, RSC 1985). Reserve land is generally small, fragmented pieces of First Nation Traditional Territory which is defined as an area that has been historically occupied and utilized by First Nations people, but of which the Bands have less influence over. It is on the territorial lands where the majority of hunting and gathering occurs and where varying land uses are leading to increased concern regarding security of the local resources.

First Nations have a long and complex history of struggling to protect and control the land and water resources that they have relied on as part of their livelihoods for hundreds of years. In the past, First Nations have been marginalized by the government, and many communities are still struggling to deal with the resulting socio-economic impacts. Although relationships between First Nations communities and the BC government have vastly improved, and treaty negotiations have been underway for the past three decades, there are still many concerns regarding the future of their local resources and traditional harvesting grounds (INAC, 2010).

Food insecurity within First Nations communities is an issue that has been persisting in Canada for more than a decade. In a 2011 study funded by Health Canada, 41% of First Nations living on reserve in BC reported being moderately or severely food insecure (Chan et al.). They mainly expressed concern regarding the declining quality and accessibility of traditional foods. Several factors contributing to this decline involved lack of skilled and knowledgeable hunters and gatherers; lack of time to harvest; and the presence of industry affecting their access to harvesting areas (Chan et al. 2011). This is reflected in the rural First Nation communities in the Interior who express these concerns, as well as additional challenges such as lack of able bodies to harvest and lack of financial resources to pay for necessary equipment and transportation to harvesting sites (Esh-kn-am pers. Comm., Merritt, BC, 2018). The communities are depending more heavily on processed and store-bought foods, as opposed to traditional foods, which in turn negatively affecting their personal health and wellbeing (Chan et al., 2011). Research has continually shown that health conditions are disproportionately prevalent in First Nations compared to the general population due to a range of socio-economic factors and their history of political inequities (Adelson 2005). For example, the prevalence of diabetes is approximately 17% in First Nations living on reserve in Canada, which is roughly three times higher than the 5% prevalence in the non-Aboriginal population (Public Health Agency of Canada, 2011). Ultimately, First Nations communities in the Interior of BC feel they are losing influence over their local resources which is decreasing their local food security and contributing to a decline in their health and wellbeing.

3 Methods

3.1 Overview

This is an exploratory report that is intended to identify the core issues regarding cultural and general food security in rural First Nations communities in BC. The Central Interior of the province was chosen as the region of interest as this area has been the most affected by climate change, such as increased frequency and intensity of forest fires, flooding, and drought, and the forests have been devastated by the Mountain Pine Beetle (Natural Resources Canada, 2018). This area also consists mainly of sparsely populated rural areas (Rural Coordination Centre of BC, 2018). Two communities in BC's interior were selected and visited. The first community was the Lytton First Nations. The second organization visited was Esh-kn-am Cultural Resources Management Services located within Merritt. Esh-kn-am represents three different Nlaka'pamux First Nations bands: Cook's Ferry Indian Band; Siska Indian Band; and Coldwater Indian Band. The three communities associated with Esh-kn-am range in size, with Coldwater being the largest and Siska the smallest. In total, there are roughly 1000 people among the three bands living on reserve.

The main goal of this analysis was to obtain information on First Nations perspectives regarding food security issues and concerns. More in depth discussion occurred with Esh-kn-am as they expressed greater concerns compared to the Lytton community. Information collected from these discussions was then compared to general concerns of rural communities expressed in the available literature. A representative from the Province of BC was also contacted for information on Mule Deer harvest allocation procedures, as mule deer was identified as a species of local concern, and the major factors impacting the habitat and population decline of this species in the area surrounding Merritt, BC.

3.2 Region of Interest

The region of interest is located within the Central Interior of British Columbia and can be further defined as the Southern half of the Thompson-Nicola Regional District (TNRD, <https://www.tnrd.ca> accessed August 2018, Figure 1). This region is part of the traditional territory of the Nlaka'pamux First Nation. The traditional lands of the Nlaka'pamux First Nation extend over a large portion of Southern British Columbia and into the United States, covering approximately 2.1 million hectares in total (Esh-kn-am, Merritt, BC, pers. Comm., 2018). For this paper, the region of interest was narrowed down to the local harvesting areas within the Thompson-Nicola Region that are significant to the four Nlaka'pamux First Nation Bands mentioned previously.

The climate in the Thompson-Nicola Region is semi-arid, exhibiting dry summers and cold winters. The average daily maximum temperature in Merritt for July and August is 27°C and the average daily minimum temperature in December and January is -7°C

(<http://climate.weather.gc.ca>, accessed August 2018). The average annual precipitation is approximately 240 mm, the majority falling in the months of June, November, and December. The vegetation varies greatly across the diverse landscape, from dense forests in the highlands consisting of a variety of tree species such as pine, fir, and spruce, to barren rolling grass lands consisting of sagebrush and bunch grasses. Soil types differ across the varying topographic landscape, but they are generally well drained and retain little moisture in the summer months (Province of BC 2018b).

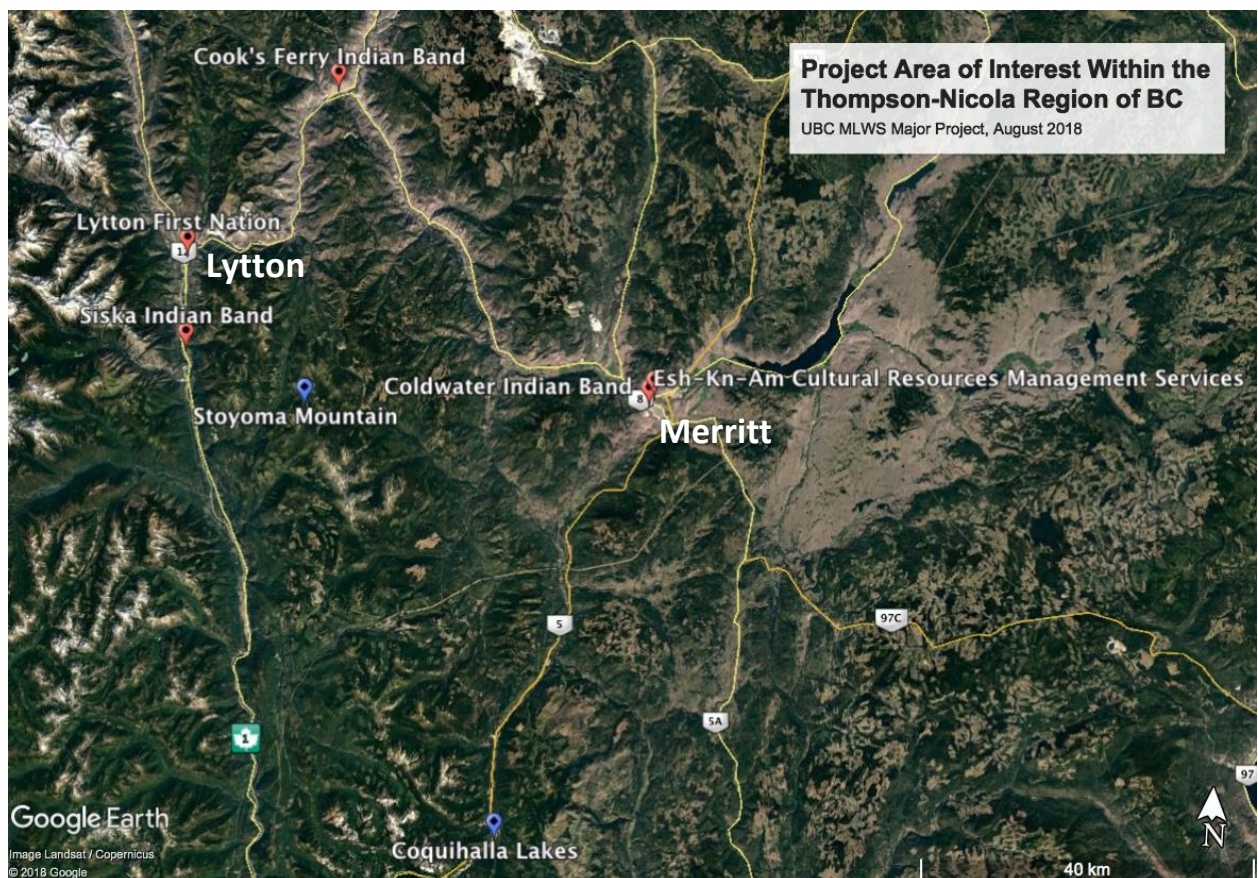


Figure 1. Project area of interest within the Thompson-Nicola Region, indicating the locations of the three Nlaka'pamux First Nation Bands (Cook's Ferry, Siska, and Coldwater) that own and operate Esh-kn-am, as well as Lytton First Nation. The locations of important traditional harvesting areas, Stoyoma Mountain and the Coquihalla Lakes, are also identified.

4 Key Issues

4.1 Overview

The BC Interior and its natural resources have been affected by multiple industries and land uses (Rural Coordination Centre of BC, 2018). The main land uses of concern to the local communities surrounding Merritt are forestry and recreation. Although both sectors contribute to the local economy, they have been subject to changes over the years that are affecting local resources. Mining is also a prevalent industry in this region but it was not considered a major concern for these communities. This area has also been, and will continue to be in the future, one of the most heavily impacted by changes in climate in BC (Ministry of Environment, 2016). Forest fires and the Mountain Pine Beetle have devastated the dense forests throughout the area, while extreme climate events such as flooding have led to evacuation of hundreds of residents and threatened local water sources. The communities are concerned with how these impacts on local resources are consequently affecting their traditional and familiar harvesting areas, and ultimately their short and long-term livelihoods.

4.2 Land Use

4.2.1 Forestry

One of the main land use activities in the Thompson-Nicola region is forestry (MFLNRO, 2015). The logging industry is the largest contributor to the region's economy and has long been a source of employment for communities' members in the area (Horne, 2009). The town of Merritt, where Esh-kn-am is based, has historically had several active mills with hundreds of employees. However, many of these mills have shut down in recent years due to a decrease in annual allowable cut numbers (MFLNRO, 2015); Aspen Planers is the last remaining mill that is locally processing and selling timber (Figure 2). This has caused concern because though local mills have closed, timber is still being cut, but processed outside of the region and essentially taking away from the local economy (Potestio, 2017). A similar situation is occurring within the agricultural industry, where local farmers are leasing their land to larger corporations (Esh-kn-am Merritt, BC, pers. comm. 2018). There is concern that a decline of local influence and involvement in resource development is contributing to a lack of incentive to protect and conserve the environment and negatively affecting the livelihood of residents (Esh-kn-am, Merritt, BC, pers. comm. 2018). The main concern regarding logging activity and its affect on local food security is how it impacts ungulate species distribution, and how that in turn affects the livelihood of the local people. There is specific concern for the reduction in size of ungulate winter ranges and the decreased coverage on migratory pathways. In addition, there is concern for how logging has negatively affected the hydrology within the watershed, canopy cover, and species diversity. More specifically, that it is contributing to a decline in the amount of water

retained within the watershed, as well as decreasing the diversity and abundance of local traditional foods, and that these effects have been exacerbated by the Mountain Pine Beetle and changes in climate (Esh-kn-am, Merritt, BC, pers. comm. 2018). There are also concerns with the removal of timber increasing recreational access to previously secluded areas (Lytton First Nations, Lytton, BC, pers. comm. 2018, Esh-kn-am, Merritt, BC, pers. comm. 2018). For example, salvage logging due to the pine beetle infestation has resulted in increased road density and increased access in the area for humans and predators, both of which are known to negatively affect ungulate populations.

The practice of clearcutting and its effects on terrestrial ecosystems is a controversial topic and outside the scope of this paper, but it is important to note some of the documented ecological effects that relate to the concerns of the local communities. Logging has been known to improve forage for deer; however, it is also known to disrupt ungulate populations through sensory disturbances, habitat alterations, and can impact the usability of the forage produced (Stelfox et al. 1976, Scotter 1980). Clearcutting practices are known to increase surface runoff, therefore decreasing the amount of water stored within the watershed (Harris, 1997). Clearcutting is also known to change the composition of vegetation, such as increasing the abundance of shade intolerant species and decreasing the abundance of shade tolerant species, but other forest management practices such as fire suppression can also effect species composition (Elliot et al., 1997). Logging reduces canopy cover and drastically changes habitat for species in a short time frame; however, proper management and application of these logging practices can reduce the severity of these effects and may benefit local wildlife (Fuller et al., 2004).



Figure 2. Aspen Planers lumber mill located in the town of Merritt, BC. Photo credit Chloe Jung, University of British Columbia, June 2018.

4.2.2 Recreation

Recreation and tourism have steadily increased in the Thompson-Nicola region over the past 10 years (Destination BC 2017, Horne 2009). Popular activities generally include biking, hunting, and camping. Although the increase in this sector is likely beneficial for the local economy through increased tourism, there is concern from rural communities in the area regarding how the growth of the industries will affect the environment. Common environmental effects of these activities include soil compaction and erosion; water and land pollution; and disturbance of wildlife and vegetation (Buckley 1991). Increased recreational activity also coincides with increased occurrence of fires and illegal activity (Buckley 1991). The Coquihalla Highway, completed in 1986, has substantially increased the accessibility of areas that were previously difficult for recreationalists to access; however, it has also improved access for people living in the area. The region is vast with relatively low population density, and without adequate resources, staff, and technology, monitoring the activity on the land is challenging for authorities and local community members. All these factors, in combination with the increased accessibility, are concerning for rural communities that rely on the local resources for their livelihoods.

4.3 Climate Change

Countries all over the world, including Canada, are witnessing both negative and positive effects resulting from changes in climate. In BC, several changes expected within this century are increased annual rainfall, increased temperatures, and drier summer months (Ministry of Environment 2016). The interior of BC is expected to warm faster than the coastal regions, and thus will be subject to a higher frequency of extreme climate events (Ministry of Environment 2016). These changes are already being felt in the Interior, where they have exhibited an increase in the frequency and intensity of flooding, drought, and forest fires (Ministry of Environment 2016). This raises concern for local food security as warmer temperatures will lead to increase in pests, prolonged draughts will intensify water restrictions, and wildfires will threaten local wildlife and their habitat (Ministry of Environment 2016). These changing conditions have already caused substantial stress for small rural communities, as they tend to lack the infrastructure and support to be resilient to climate variability. Both flooding and forest fires have impacted the livelihood of communities in the Thompson-Nicola region by threatening local food and water sources and displacing community members.

Climate change is a threat to local food security in rural communities as it leads to changes in the types of food people can harvest. For example, increases in temperature causes changes in the distribution of ungulate species which is concerning for those in the Thompson-Nicola region because they rely on species such as Mule Deer as a meat protein source (Dawe and Boutin 2016). The habitat of important ungulate species has been negatively affected by increased frequency and intensity of wildfires, although it is important to note some ungulates,

such as deer, are adapted to and respond favourably to post-fire conditions (Kruse 1972). The forests in this region have also been devastated by the Mountain Pine Beetle, which has added to forest fire concern. Loss of dense tree coverage increases exposure of these animals, making them more vulnerable to multiple threats, such as predators, humans, and climate. Mule deer, for example, are a common prey type for wolves in the Interior and increasing the deer's exposure threatens their populations; however, policies in BC do not support controlling wolf populations for enhancing ungulate populations (Escobar et al. 2015, MFLNRO 2014).

Increased frequency of droughts has negatively affected the water security of communities in the region, which in turn has a negative impact on their local agricultural abilities. For example, the Siska First Nations (one of the communities represented by Esh-kn-am) are not allowed to have gardens due to the severe shortage of water in the community (Paul Mitchell-Banks, pers. Comm., Central Coast Consulting, Vancouver, BC, 2018). Agricultural practices in the semi-arid climate of the region require extensive irrigation, but for rural communities in this area, seasonal water shortages and restrictions are common. It is more logical for these communities to shift toward purchasing food from shopping centres and prioritize their water use for other purposes such as drinking and washing.

The effects of climate change have not only been felt on an environmental and health level, but also an economic level. For example, increased risk of flooding has hampered development opportunities, which in turn affects their economic development (Esh-kn-am, Merritt, BC, pers. Comm. 2018). Damages as a result from flooding and fires are expensive, and these negative expenses will increase over time, which puts more pressure on rural communities that lack financial resources.

5 Results and Discussion

5.1 Overview

To explore and investigate the local food security concerns of rural communities in the Thompson-Nicola region, multiple discussions were held with Esh-kn-am Cultural Resources Management Services (representing three First Nations communities) and Lytton First Nations. More time was spent with Esh-kn-am as they expressed greater concern regarding their local food security. Through observations and discussion, it is apparent that there is an overarching theme of governance issues regarding local land and water resources. This common theme regarding local food security appears to stem from poor consultation and a breakdown of communication between stakeholders and First Nations communities. In addition to this the overharvesting of timber; the timber extraction focus of resource-management teams; and the lack of legislative pressure to fully address First Nation concerns is hampering the ability of these communities to invest in long-term food security (Paul Mitchell-Banks, pers. Comm.,

Central Coast Consulting, Vancouver, BC, 2018). Each community is facing issues that are unique to their situation and their level of concern varies; however, there were many parallels and similarities regarding local food security concerns.

5.2 Merritt, BC Case Study: Esh-kn-am Cultural Resources Management Services

For the communities that own and operate Esh-kn-am Cultural Resources Management Services, food security has always been a concern; however, the issue has intensified over the years due to the compounding impacts of resource development and climate events (Esh-kn-am, Merritt, BC, pers. comm. 2018). In the past, local First Nation communities have depended largely on salmon as a substantial source of dietary protein. However, salmon populations have noticeably declined over the years and catch numbers have substantially declined (Esh-kn-am, Merritt, BC, pers. comm. 2018). More recently, community members have been forced to import salmon from other communities and rely more heavily on other culturally significant protein sources, such as Mule Deer and White Tail Deer (Esh-kn-am, Merritt, BC, pers. comm. 2018). This has now led to increasing concern over the state of populations of ungulates in the area. More specifically, the First Nations groups associated with Esh-kn-am are primarily concerned with the factors causing a decline in important habitat and quality of habitat for these species. They expressed concern with the effect of logging on access to their traditional hunting grounds and how increased frequency of climate events has only exacerbated their concerns for local food security.

In an attempt to counteract the negative effects of resource development and climate change, communities have put forth efforts to protect ungulate habitat, but Esh-kn-am argues that laws are too lenient, they are often not enforced, and there are loop-holes found by industry. For example, there have been instances where Esh-kn-am has requested no machine harvesting in ecosystems which are sensitive or culturally significant, or requested less timber be harvested to protect ungulate migratory pathways, and although these types of requests are considered, they are generally not put into practice. Part of the issue is that logging companies and management teams generally consider forest ecosystems at a regional level, but do not consider the local traditional and familiar harvesting areas that small communities rely on. They operate on a larger scale with primarily an economic and timber extraction focus, and although ungulate populations and forest ecosystems may appear healthy on a regional level, local populations or harvesting areas frequented by these communities may be suffering. Figure 3 below shows a cut block near the Coquihalla Lakes, an area that has been historically significant for hunting and frequented by the local First Nations but has also been extensively logged. In contrast, Figure 4 displays an untouched area of the Stoyoma Mountain, one of the last remaining watersheds that has not been subject to development in this region. The Stoyoma Mountain is important traditional territory for hunting and gathering purposes but has been recently approved for logging access (Esh-kn-am, Merritt, BC, pers. comm. 2018). Although

these communities feel as though logging has decreased the quantity and quality of ungulate habitat, it is important to note that it has improved gathering for some plant-based foods such as huckleberries (Esh-kn-am, Merritt, BC, pers. comm. 2018).



Figure 3. A cut block near the Coquihalla Lakes, an area that has been extensively logged and was previously important traditional hunting territory for surrounding First Nation Communities. Photo credit Chloe Jung, University of British Columbia.



Figure 4. Stoyoma Mountain, a previously protected and culturally significant area within the traditional territory of the Nlaka'pamux First Nation that has recently been approved for logging activity (Esh-kn-am, Merritt, BC, pers. comm. 2018). Photo credit Chloe Jung, University of British Columbia.

According to Esh-kn-am, logging activity has been closely linked with increased recreational activity, as it has enabled access to their traditional lands through increasing road density. They are concerned that this can create increased harvesting pressure on ungulates because tree removal also improves a hunters' visibility across the landscape. Over the years, local hunters have noticed lower populations of Mule Deer, and are concerned that increased recreational access and sport hunting in traditional harvesting areas has contributed to the problem. It is not uncommon for recreational hunters and campers to leave behind harmful pollution such as garbage and dump septic tanks into local water ways (Esh-kn-am, Merritt, BC, pers. comm. 2018). There is also concern regarding the environmental impact of the transportation methods used by recreationalists, such as quads and other small motor vehicles. For example, local community members have witnessed quads driving across shallow streams and rivers during low flow periods and damaging salmon spawning grounds. The noise, smells of exhaust, erosion, and dust caused by these types of vehicles adds to this concern.

These types of activities occurring on traditional territory has caused concern for the lack of monitoring in the area. Because the region is so vast and sparsely populated and communities lack the time and necessary resources, it is a challenge for local authorities and community members to effectively control and monitor illegal or harmful activities. A guardianship program was established by Citxw Nlaka'pamux Assembly to aid communities in the Thompson-Nicola Region in the protection and preservation of territorial land and to discourage and reduce the occurrence of these types of activities (<http://cna-trust.ca/citxw-nlakapamux-assembly.htm>, accessed August 14, 2018). However, Esh-kn-am still expressed concern for the activities occurring on their local territorial land and that they are not equitably included in decision making processes regarding their local resources, even though they are eager and willing to participate.

These communities are facing multiple additional challenges unrelated to the decline in their local food security. Esh-kn-am expressed concerns regarding issues such as lack of housing, financial challenges, and pipeline negotiations. Attempting to combat these larger issues whilst struggling to manage boil water advisories and provide healthy nutritious food to their families emphasises the level of complexity of the challenges faced by these groups. The Bands do not have the proper time or finances to fully invest in local food security and nutrition when they have other concerns that do not have readily available alternate solutions. It was suggested that there are circumstances where they deprioritize local food security as their time and resources are needed to address other more pressing issues commonly faced by rural communities. This is also the case with potable water, in the sense that communities continue to boil their local water sources and implement seasonal household water restrictions while financial resources are allocated elsewhere. Essentially, the issues within the communities outweigh the available resources and investing in long term local food security is not feasible. The shift in dependence on imported food is concerning for Esh-kn-am, as community members

are eating diets higher in fat, sugar, and processed foods. As previously mentioned, diabetes and associated health risks are higher in First Nations communities compared to non-First Nations communities. This dietary shift has not only affected the community's health but also threatened the perseverance of their culture, as it has contributed to a lack of interest in the younger generations to continue traditional hunting and harvesting practices. Younger generations are also moving to urban areas because the small rural communities lack academic and career opportunities. They leave the area to pursue higher education and attend post-secondary institutions, but that knowledge is not integrated back into their community due to the lack of jobs available (Esh-kn-am, Merritt, BC, pers. comm. 2018, Lytton First Nation, pers. Comm. 2018). This has intensified the need for technical expertise required for these communities to effectively communicate with industry and government regarding their local resources and develop effective local governance systems.

5.3 Lytton, BC: Lytton First Nations

The Lytton First Nations expressed similar concerns to that of Esh-kn-am regarding their local food security issues. Their main concerns were the negative effects of logging and recreation on both plant and animal-based food sources in their traditional territory (Lytton First Nation, pers. Comm. 2018). Dirt biking, camping, and hunting were the main concerns for recreational activity on their traditional hunting and gathering grounds. The community's hunting grounds have also been destroyed by forest fires, and they express concern that hunters now must travel further to find game species. They also expressed concern with the decline in local agricultural production due to the lack of interest from younger generations to take over. Like Esh-kn-am, their youth are leaving the area to pursue opportunities that are not available in Lytton, and not returning to integrate knowledge back into the community.

Although Lytton First Nations had several concerns regarding food security, it was to less of an extent compared to Esh-kn-am. Lytton has also recently implemented a water treatment facility that has been beneficial for the community by improving the water security of residents and alleviating potable water concerns.

5.4 Emergent Issues

These communities expressed several concerns for the future of the local ungulate populations; however, there are alternate views regarding the effects resource development, wildfires, and climate change have on specific species in the Interior. There is a common belief in local communities that these factors negatively affect ungulate habitat and make areas more accessible to recreation and hunting, which in turn impacts their populations. Chris Procter, a wildlife biologist for the provincial government (pers. Comm., Kamloops, BC, 2018), suggested that the situation is more complicated. There is evidence that the greatest impact on Mule deer specifically is a decline in the quality of habitat and loss of habitat, but in contrast to common

belief, sport hunting and illegal hunting are of low concern for populations and forest fires improve habitat for this species. Fires produce forage that is beneficial for the species in the long term as they are adapted to these conditions. It is actually the increase in fire management and fire suppression since the late 1960's that has negatively impacted their habitat and abundance. Logging activity also produces areas with forage for deer; however, there is a tipping point where increased timber harvest and logging road density begins to have a negative effect on their populations (Stelfox et al. 1976). For example, the increased road construction for salvage logging due to the Pine Beetle infestation creates challenges in managing deer harvests and may negatively affect deer populations through avoidance of key habitat and increased vulnerability to predation, both humans and wild predators. The misconception on this topic in local communities can perhaps be attributed to the challenges faced by government when attempting to communicate with different stakeholders and First Nations to effectively manage ungulate populations. Although the communication process has been difficult, Chris indicates that it is slowly evolving and improving as stakeholders acknowledge their common goals and work toward managing these species together.

6 Summary

Initially, it was believed that rural First Nations communities in the Thompson-Nicola region were concerned with the vulnerability of their local gathering and harvesting areas for plant-based food. However, through multiple discussions with Esh-kn-am and local community members, it is evident that their major concern is primarily the increasing vulnerability of culturally significant meat protein sources, mainly certain ungulate species. Various land uses have caused concern for the habitat of these species, such as resource development, agriculture, and recreation, and recent climate events have only exacerbated concerns regarding long term food security. The local communities feel that they are losing control over their local resources and food supply on their territorial land, and that this loss of control has contributed to a decline in their personal health and wellbeing, as well as decreased their resilience and ability to respond effectively to change.

Rural First Nation communities in the region have been forced to shift away from culturally significant protein sources such as salmon and rely more heavily on different ungulate species such as Mule deer and Whitetail deer. Currently, their major concern is the negative effect of logging on important habitat to these ungulate species on which they depend for their livelihood. It is inaccurate to conclude that these communities are against resource development, but they wish to be included more equitably in the decision-making process. These decision-making processes focus on large scale ecological function, but they lack the ability to consider the values of the local communities within the ecosystem, which leads to the local people feeling disrespected and overlooked. Through making informal contacts with

different stakeholders in the region, it was apparent that there is poor communication or lack of communication between groups. The First Nations communities believe that the negotiation and consultation process is not meeting their requirements and has contributed to the decline of their influence and involvement in decisions regarding the local resources on their traditional territory. Although there are processes in place to handle these communication issues, they have proven to be highly ineffective. This has hampered the ability of rural communities to shift from focusing solely on their short-term livelihood and work toward long term solutions for improving local food security.

7 Recommendations

Rural First Nation communities in BC are facing complex multi-dimensional issues that need to be addressed more effectively by government and industry, but also through improvement in local governance and consultation between First Nations and stakeholders. To work toward eradicating food and water insecurity throughout these vulnerable communities, they must work toward holistic community resilience. This can only be achieved through increased support and more equitable representation of First Nations and stakeholder groups in decision making processes regarding natural resources. Through discussion with First Nations and First Nation representatives, it is evident that reliance on governmental consultation systems is not sufficient, and it is suggested that these groups move toward an equitable partnership between stakeholders. This will require an improvement in communication as well as increased support and understanding for First Nations communities throughout the consultation process, as their past history of marginalization and the resulting cultural and socio-economic impacts has hampered their ability to effectively engage in meaningful consultation and governance. Essentially, if the resource development process is to be successful in the future, stakeholders and First Nations communities must develop a more effective mechanism to help realize their common goals that they can then work toward achieving in a cooperative manner.

Major issues can be addressed more effectively by taking a cooperative problem-solving approach as opposed to the decision-making process that has failed rural communities in the past. This could be achieved through the development of comprehensive co-management strategies for developing resources in a changing climate. Achieving a co-management state that links different types of organizations, similar to what is described by Carlsson and Berkes (2005), could be ideal for these communities. Due to their minority size, rural communities have less power in a power-sharing relationship, and co-management of these resources that focuses on localized communication could benefit both parties involved by improving cooperation between stakeholders and working toward more equitable control of resources. This should involve the development of a mechanism that helps stakeholders and First Nations

work toward building formal and informal governance systems where each stakeholder's opinion is respected and considered equitably.

A potential solution to increasing community resiliency could also be on a project basis through collaboration between non-governmental organizations (NGOs) and academic institutions. NGOs can help to raise funds and handle long term organization and involvement, while students could become involved on a short-term basis providing technical expertise where it is needed. This would help provide communities with technical knowledge and opinions on the implementation of strategies and solutions for multiple different issues. Citizen's science is also a valid solution for data collection and monitoring, and with proper guidance and support is something that could be greatly beneficial for the community to help establish long-term data sets and implement localized governance programs.

Although these issues are likely prevalent through other rural First Nations communities at some level, it is evident that each small community is a complex system and thus their concerns regarding land and water resources are also complex. It is imperative that management teams throughout BC work toward more localized management of resources and consider the importance of local areas for small communities. Further research on the number of food insecure First Nations Communities in BC, as well as the level at which they are food insecure, will also be important moving forward to increase awareness and effect change regarding resource management decision making processes in BC.

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