

Standing up for sputc: The Nuxalk *Sputc Project*, eulachon management and well-being

by

Rachelle Beveridge
B.Sc.H., Queen's University, 1999
M.Sc., Université de Montreal, 2008

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

in the Social Dimensions of Health Program

© Rachelle Beveridge, 2019
University of Victoria

All rights reserved. This dissertation may not be reproduced in whole or in part, by photocopy or other means, without the permission of the author.

Supervisory committee

Standing up for *sputc*: the Nuxalk *Sputc Project*, eulachon management, and well-being

by

Rachelle Beveridge
B.Sc.H., Queen's University, 1999
M.Sc., Université de Montréal, 2008

Supervisory Committee

Dr. Grant Murray, Co-Supervisor
Department of Geography

Dr. Bernie Pauly, Co-Supervisor
School of Nursing

Dr. Chris Darimont, Departmental Member
Department of Geography

Abstract

The coastal landscape currently known as British Columbia, Canada represents a complex and rapidly evolving site of collaboration, negotiation, and conflict in environmental management, with important implications for Indigenous community well-being. I ground this work in the understanding that settler-colonialism and its remedies, resurgence and self-determination, are the fundamental determinants of Indigenous health and related inequities. Through a case study of eulachon (*Thaleichthys pacificus*) in Nuxalk territory, I take interest in systemic mechanisms of dispossession and resurgent practices of (re)connection and knowledge renewal as mediators of the relationship between environmental management and Indigenous health and well-being.

This work is based in four years of observation, participation, and leadership in the Nuxalk *Sputc (Eulachon) Project*, a community-directed process that aimed to document and articulate Nuxalk knowledges about eulachon. Functionally extirpated from the region since 1999, these valued fish provide an example of contested management jurisdiction and resurgent Indigenous environmental practice. As a resurgent research and management process, the *Sputc Project* re-centered Nuxalk knowledges, voices, priorities, and leadership while advocating Indigenous leadership in environmental management. This case study was conducted within the context of the *Sputc Project*, aiming to share substantive and methodological learnings gleaned from the project, which served as an ideal focal point for the interrogation of relationships between Indigenous well-being, research methodologies, engagement and representation of Indigenous knowledges, and environmental management.

Applying a critical, decolonising, community-engaged approach, this work comprises four papers, each drawing on a particular thread of the knowledge generated through this work. In ***Paper 1***, I seek to establish the connection of eulachon and their management to Nuxalk health and well-being. Detailing three stages of this relationship (abundance, collapse, and renewal), I show how the effects of environmental management, and resulting dispossession or reconnection, are mediated by cultural knowledges, practices, responsibilities, and relationships. Turning to research methodology in ***Paper 2***, I examine how Nuxalk people and knowledges guided the *Sputc Project* process, interrogating the role of critical, decolonising, and Indigenous theories in the elaboration of Indigenous research methods in environmental management and

beyond. In ***Paper 3***, I consider how the *Sputc Project* respectfully articulated and represented Nuxalk knowledges in order to retain relational accountability and strengthen Nuxalk management authority, while promoting values, practices, and relationships essential to Nuxalk well-being. In ***Paper 4***, I demonstrate how the *Sputc Project* strengthened Nuxalk management authority from the ground up, detailing the practical management priorities that arose through the project process, including those related to interjurisdictional engagement of Indigenous leadership. I end with a reflection on this work's implications for decolonising health equity and environmental impact assessment frameworks. Highlighting how Indigenous health and well-being is supported by ancestral knowledges and reconnecting relationships, including those involving people, places, and practices related to environmental management, I emphasize the importance of Indigenous leadership (vs. knowledge integration) in environmental management research and practice. A final section seeks to inform decolonising community-engaged research, sharing limitations and learnings related to appropriate engagement, articulation, and representation of Indigenous knowledges.

Table of Contents

Supervisory committee	ii
Abstract	iii
Table of Contents	v
List of Figures, Images, and Maps	viii
Abbreviations	ix
Nuxalk glossary	x
Acknowledgments	xi
PART A: INTRODUCTION	1
1. <i>Overview</i>	1
Problem statement: the big picture “why” and objectives	1
Dissertation structure and overview	4
A note on terminology	6
2. <i>Conceptual framework: decolonizing health equity</i>	8
Indigenous health, well-being, and health equity	10
A decolonizing health equity framework	17
3. <i>Background</i>	21
Governance and (de)colonization	21
Indigenous knowledges	29
Environmental management	33
Health and environmental management	42
4. <i>Context</i>	50
A brief history of CCFN dispossession	50
Current management context: Unceded territory, unrelinquished authority	53
Nuxalk well-being	58
Nuxalk Eulachon	63

PART B. METHODOLOGY	69
5. <i>Research theory and approach</i>	72
Critical and Indigenous theories	73
Research approach	75
Decolonizing research	81
My theory and approach	84
Guiding principles	84
6. <i>Personal location</i>	90
My physical location - how I got here	90
Personal location and motivation	92
7. <i>Research methods</i>	95
Research initiation: ethics and permissions	95
Knowledge documentation: research materials and knowledge sources	96
Interpretation and representation	100
PART C: PAPERS (RESULTS)	104
8. <i>Papers introduction</i>	104
Authorship and format	106
<i>Paper 1</i>	108
<i>Paper 2</i>	138
<i>Paper 3</i>	173
<i>Paper 4</i>	215
PART D: CONCLUSION	244
9. <i>Contributions and conclusions</i>	244
Revisiting the big picture	244
Conclusions	247
Contributions	248
Intended audience and future work	265

10.	<i>Limitations and learnings</i>	268
	Resistance to and subversion of settler colonialism (decolonization)	268
	Reflexivity and social location	270
	Responsibility/accountability to Indigenous people and places	273
	Epistemic accountability and wholism	276
	Respectful, appropriate methods	279
	Representation and voice	281
	Reciprocity and meaningful outcomes	285
	Reflection	286
	REFERENCES	287
	FIGURES and IMAGES	339
	Figure 1: Four overlapping topics addressed by the Sputc Project (SP)	339
	Figure 2: Decolonizing health equity model	340
	Figure 3: Indigenous research approaches	341
	Figure 4: Dissertation topics in relation to land and sputc.	342
	Map 1: Eulachon spawning rivers on the central coast	343
	APPENDIX	344

List of Figures, Images, and Maps

All figures, images, and maps are located at the end of the dissertation.

Figure 1: Four overlapping topics addressed by the *Sputc Project*

Figure 2: Decolonising health equity model

Figure 3: Indigenous research approaches

Figure 4: Dissertation topics in relation to land and *sputc*.

Map 1: Eulachon spawning rivers on the central coast

Abbreviations

CBPR:	Community-based Participatory Research
CCFN:	Central Coast First Nations (Nuxalk, Heiltsuk, Wuikinuxw, and Kitasoo/XaiXais)
CCIRA:	Central Coast Indigenous Resource Society
CFN:	Coastal First Nations (including CCFN, North Coast Nations, and Haida Nation)
DFO:	Fisheries and Oceans Canada (formerly, Department of Fisheries and Ocean)
FNFC:	First Nations Fisheries Council of British Columbia
IK:	Indigenous knowledge
SARA:	Canadian <i>Species at Risk Act</i> (2002)
TRC:	Truth and Reconciliation Commission

Nuxalk glossary

Alhquh ti Sputc (phrase):	The Eulachon Book
Alhtiixw (n):	Eulachon nets
Iixsa ti mutilh (phrase):	We are medicine for each other.
Kanusyam a snknic (phrase):	Delicious; real good food (a Nuxalk recipe book).
Kalhcmawastsut (v):	To gather one's spirit back.
K'umsiwa (n):	White person, settler.
Masmasalaniuxw (n):	The four carpenters
Nuxalk (adj):	Adjective to describe the quality of being Nuxalk, or Nuxalk derivation e.g. Nuxalk language, songs, etc.
Nuxalkmc (n):	People of Nuxalk ancestry, originating from four separate territories.
Pult'alt:	For those not yet born.
Satl'a (n):	A river canoe traditionally used in eulachon fishing. Long and shallow, satl'a were navigated by poling and were once the main way to get up and down the river.
Smaw ti slq'ilh (phrase):	One heart and one mind.
Smayusta (n):	Ancestral creation or origin story.
Smsma (n):	Everyday story.
Sputc (n):	Eulachon (<i>Thaleichthys pacificus</i>). I have chosen to consider this noun as plural in both English and Nuxalk language (e.g. "they are an important fish" vs. "it is an important fish").
Sputcm (n):	Eulachon season / eulachon time.
Sta(ta)ltmc (n):	<i>Staltmc</i> are Nuxalk ancestral or hereditary leaders. Their roles are complex and include household representation and community decision-making. Singular form is <i>Staltmc</i> .
Stl'cw (n):	Ways of being, including implicit values and guidelines.
Stutwiniitscw:	Thank you.
Sxayaaxw (n):	Explicit rules and laws; practices.
Tl'mstaliwa (n):	The full human experience, self-actualization

Acknowledgments

Thanks to my family: Dave, Maddy, and Bri for your almost endless support and hugs, patience and love; Mom and Dad for getting me started and finished.

Stutwiniitscw to Megan Moody, for changing my life by inviting me to this place, and for leading me on this learning adventure. You are a cherished mentor, colleague, and friend without whom this would never have happened. *Stutwiniitscw* also to Snxakila and Nunanta, valued Ancestral Governance leaders, for your many hours of instruction and insight related to Nuxalk culture, history, and protocol.

Thanks to my supervisory committee: Bernie Pauly for supporting me throughout and since before the beginning; Grant Murray for your invested engagement and supportive feedback; and Chris Darimont for your willingness to jump on board for the ride, for your insights related to the context of this work, and for the presence of your own good work here in the valley. In different ways, each of your trust in me and your critical support has helped me grow as a scholar.

Thanks also to Jennifer Silver, my external defense examiner, for valuable insights on this work.

Thanks to UVic Applied Conservation Science Lab (Heather, Kate, Kyle, Jonaki) and to Ocean Canada partners (Nathan, Natalie) for keeping me connected to an academic community from afar, to Pat Shaw and Jack Siemiatycki for your early and ongoing influence, and to Aleck Ostry for opportunities offered and for helping me secure CIHR funding for the first four years of my learning.

Thanks to my rocks Anna, Khya, Jeremy, and Morgan; to the Montreal crew for maintaining my urban roots; and to Victoria friends for your support in the pre/early PhD years. Thanks also to my support network in Bella Coola, and to yellow house folk for sharing in the day-to-day and keeping me sane, and to Nikki for supporting me here as a colleague and friend.

Stutwiniitscw to *Sputc Project* collaborators, including core members of the project's technical advisory committee (Q'isinaay (Horace Walkus), Sinuxim (Russ Hilland), Numutsta (Louise Hilland), Suulxikuuts (Joanne Schooner)) for your patience, advice, and laughter – and for predicting my pregnancy. *Stutwiniitscw* to *Sputc Project* culture, language, and visual advisors Nuximlaycana (Fiona Edgar), Skw'yac (Karen Anderson), Sixim (Esther Hans), Aycts'mqa (Lori George), Wiaqa7ay (Lyle Mack), Alvin Mack, Melody Schooner, Barb Schooner, Dale

McCreery, and to *Alhqulh ti Sputc* advisors and co-writers Qwaxw (Spencer Siwallace), Stlts'łani (Banchi Hanuse), Asits'aminak (Andrea Hilland). *Stutwiniitscw* to grease-making experts, including Taycwlaaksta (Bruce Siwallace), Q'isinay (Horace Walkus), Q'ay7it (Jimmy Nelson Sr.), Tl'msta (Stanley King), Qwalalha (Arthur Pootlass), and to other *Sputc Project* interviewees and contributing knowledge-holders. *Stutwiniitscw* also to the stewards of Nuxalk territory: Nutayaaxm (Ernie Tallio) and the Nuxalk Coastal Guardian Watchmen, and to Sq'mlhh (Jason Moody) and Nuxalk bear study and fisheries crew for helping me get out on the land and learn about stewardship on the ground. *Stutwiniitscw* to Nuxalk stewardship office staff, including Plcwlaqs (Rhonda Dettling-Morton) and Skw'asmana (Angel Mack), for holding my hand in all things administration and protocol, introducing me to Nuxalk people and culture, and correcting my *kumsiwa* mistakes.

Stutwiniitscw to Llhalyam (Charles Nelson), Ts'icwams (Peter Tallio), and Sinuxim (Russ Hilland) for reviewing manuscripts, and to Celia Bell for making things look good (again).

Stutwiniitscw to *Nuxalkmc* community members, *Stataltmc*, and leadership for allowing me to complete this work in your territory, for your welcoming energy, humour, and patience with my learning, to all of the other *Nuxalkmc* who helped me learn what is written here, your relations, ancestors, and elders; and to *sputc*.

Funders of this doctoral research: University of Victoria (2010-11); CIHR Doctoral Award (2011-14); VIU Institute of Coastal Research fellowship (2015); Ocean Canada Partnership (SSHRC) fellowship (2016-17).

Funders of *Sputc Project*: Tides Canada (2014-18); Nature United (TNC Canada) (2014-18); Vancouver Foundation (2014-15).

PART A: INTRODUCTION

This introduction is made up of the first four chapters of this work. **Chapter 1** provides an overview of the big picture and goals of this dissertation, its structure, and some terminology. **Chapter 2** details my conceptual framework, while **Chapter 3** provides substantive background related to governance and (de)colonization, Indigenous knowledges, environmental management, and health and well-being outcomes. **Chapter 4** details the study context.

1. Overview

Problem statement: the big picture “why” and objectives

Environmental governance and Indigenous health are fundamentally interconnected by the processes and institutions of (de)colonization. And yet, while many emphasize that settler-colonialism is “about the land” and access to territory (G. S. Coulthard, 2014; Manuel & Derrickson, 2017; Pasternak, 2017; Richmond, 2015; Tuck & Yang, 2012), there remains surprisingly little work explicitly exploring the *mechanisms* of dispossession (or endurance) on ancestral lands and waters as they relate to Indigenous health and well-being. Scholarship in the fields of Indigenous health and health equity recognize connection to land or ecosystems as a determinant of health (M. Greenwood & de Leeuw, 2007; Parkes, 2013; Richmond, 2015), but only marginally refer the institutions of environmental management central to colonization and Indigenous dispossession. Meanwhile, scholarship in environmental management takes interest in social justice, distributional equity, and related health outcomes (Biedenweg, 2016; Biedenweg & Gross-Camp, 2018; Breslow et al., 2016; A. Salomon et al., 2018), but seems largely unaware of connections to related scholarship in health equity. In this work, I focus on a case study of eulachon in Nuxalk territory as an example of dispossession and reconnection. I position settler-colonialism and related structural and relational mechanisms of dispossession as

fundamental and self-perpetuating determinants of Indigenous health and related inequities, in Canada and beyond. Applying a community-engaged approach, I build on a foundation of critical theories and decolonising perspectives that emphasize Indigenous resistance and resurgence, putting into relief the processes of dispossession and exclusion as they relate to Indigenous health. Through these lenses, I bring together literatures in the determinants of health and health equity with research on environmental management and research methodology.

For thousands of years, Indigenous peoples around the world, including Canada's coastal First Nations (FN), have been sustainably managing territorial lands and waters based on rights and responsibilities that predate colonization (Berkes, 2012b; Haggan et al., 2006; Lepofsky & Caldwell, 2013; Trosper, 2002, 2003). However, over the past decades, Indigenous knowledges, priorities, and perspectives have been consistently marginalized in environmental decision-making, while ancestral lands and waters (or "resources") have been appropriated, enclosed, privatized, and depleted (Alfred, 2009; G. S. Coulthard, 2014; Pasternak, 2017; Richmond, 2015; N. J. Turner, Gregory, Brooks, Failing, & Satterfield, 2008). Yet, despite ongoing settler-colonial claims to jurisdiction over Indigenous lands and waters, control of Indigenous bodies, and erosion of Indigenous knowledge systems, strong and resilient Indigenous peoples, places, practices, and authorities remain (Alfred, 2009; Asch, Borrows, & Tully, 2018; Corntassel, 2012; G. S. Coulthard, 2014; Pasternak, 2017; Simpson, 2008a, 2017). In complex and increasingly supportive policy and legislative contexts, Indigenous leaders and decision-makers are reclaiming ancestral rights and responsibilities and asserting authority to manage ancestral lands and waters, moving well beyond expectation of inclusion, participation, or consultation in research and decision-making (Bowie, 2013; Eckert, Ban, Tallio, & Turner, 2018; Kotaska, 2013; Manuel & Derrickson, 2017; von der Porten, Corntassel, & Mucina, 2019; Von Der

Porten, De Loë, & McGregor, 2016; von der Porten, de Loë, & Plummer, 2015). Yet, *how* local management authority is enacted, *how* related knowledges are articulated, and *how* these are connected to community health and well-being is only peripherally articulated in the literature.

In this work, I engage the case of eulachon (*Thaleichthys pacificus*) in Nuxalk territory as an example of contested authority and resurgent Indigenous environmental management. In this case, marine management has failed to prevent functional extirpation of Nuxalk eulachon, while *de facto* management authority has been uninterrupted in areas where *Nuxalkmc* (Nuxalk people) claim continued jurisdiction (Hilland, 2013; Moody, 2008). The loss of eulachon has had important consequences for Nuxalk well-being, well beyond recognized impacts on physical health (Haggan, 2010a; Moody, 2008). This work is based in over four years of observation, participation, and leadership within the Nuxalk-led *Sputc Project*, which aimed to document and articulate Nuxalk knowledges about eulachon values and stewardship for *Nuxalkmc* (Nuxalk people). Engaging primarily in a kind of research-on (or within)-research, I share insights and learnings from the project from my position as a non-Nuxalk researcher and *Sputc Project* coordinator, in partnership with Nuxalk stewardship director (Megan Moody). As illustrated in **Figure 1**, the *Sputc Project* serves as a focal point for this work, which interrogates the relationships between Indigenous health and well-being, Indigenous research methodologies, Indigenous knowledges, and environmental management. Highlighting Indigenous peoples' enduring knowledges and unceded authorities in environmental management as a foundation of well-being, the specific objectives of my dissertation research are as follows:

1. to characterise Nuxalk understandings of how eulachon support past and present well-being;
2. to describe the *Sputc Project* process, including goals, engagement, challenges, and successes;
3. to explore challenges of documenting Indigenous knowledge systems;

4. to describe Nuxalk *sputc* stewardship institutions and their relationship to well-being;
5. to situate the *Sputc Project* in the larger social-ecological and governance context.

I take particular interest in *how* the practices, processes, and institutions of dispossession have created and maintained the conditions of health inequity in this context (H. Brown, McPherson, Peterson, Newman, & Cranmer, 2012), and *how* Indigenous resurgence, expressed through the assertion of research and management authority, might act to counter these inequities. In so doing, I am informed by decolonising and Indigenous resurgence theorists (Alfred, 2005; Asch et al., 2018; Corntassel et al., 2018; G. S. Coulthard, 2014; Simpson, 2008a, 2017), Indigenous knowledge researchers (Houde, 2007; Latulippe, 2015b; McGregor, 2004, 2009b; Nadasdy, 1999), Indigenous legal scholars (Borrows, 1999; Friedland & Napoleon, 2015; Napoleon & Friedland, 2016; Napoleon & Overstall, 2007), and Indigenous methodologists (Absolon, 2011; Kovach, 2009c; Smith, 1999; S. Wilson, 2008). I am also informed by rich experiences, relationships, and learning with *Nuxalkmc* friends and colleagues, for which I am deeply thankful.

Dissertation structure and overview

This dissertation brings together four free-standing articles. Each pulls on a different strand of an interconnected web of knowledges generated by this work, positioning them among related theories and literatures. The four papers are brought together by a common substantive framework, theoretical lens, and methodological approach, which informed my perspective, methods, and priorities throughout the research process. **Part A (Introduction)** provides the theoretical, substantive, and methodological background necessary to contextualise and interpret these papers as part of an integrated work. This section (**Chapter 1**) summarises the focus and structure of my research. In **Chapter 2 (Conceptual Framework)**, I set out the theoretical foundation that structures the work, outlining a health equity framework that positions

environmental management authority, resurgence, and self-determination in relation to ongoing (de)colonising forces. Building on this foundation, in **Chapter 3 (Background)** I summarise key substantive concepts and terms related to environmental governance and management, Indigenous knowledges and legal traditions, and associated health and well-being outcomes. In so doing, I begin to paint a picture of how ongoing exclusion of Indigenous knowledges, priorities, and people in environmental decision-making has resulted in Indigenous dispossession and related depletion of the lands and waters, relationships, practices, and knowledges, rights and responsibilities upon which Indigenous well-being is founded. This suggests that self-determined stewardship of lands and waters might support Indigenous resurgence and wellness. **Chapter 4 (Context)** builds on this background to outline the case study explored in this work, as well as the local history of settler-colonialism and fisheries management necessary to understand its relevance.

Section B (Methodology) is made up of three chapters. **Chapter 5 (Research theory and approach)** details how critical and Indigenous theories relate to this work, informing my community-engaged approach, and how these were further informed by decolonising perspectives. It then details three principles that guided this work: relational accountability; respectful representation; and reflexivity. **Chapter 6 (Personal location)** elaborates on my personal and social location, intending to make transparent my motivations and biases in conducting this work. **Chapter 7 (Research methods)** details the concrete methods used to generate the knowledge shared in this work, including research initiation ethics, and permissions, knowledge documentation, interpretation, and representation.

I present each of the four publishable articles in **Part C (Papers)**, beginning with a brief summary of each and a note about formatting and authorship in **Chapter 8**. In this work, these articles are referred to as *Papers 1 - 4*, distinguishing them from other dissertation chapters.

Part D (Conclusion) comprises two chapters. **Chapter 9 (Contributions)** details the substantive interconnections, conclusions, and contributions of the four papers, while **Chapter 10 (Limitations and learnings)** relates my methodological limitations and learnings according to a framework proposed by Elizabeth Carlson (E. Carlson, 2016).

[A note on terminology](#)

In this work, I use the term **Indigenous** to refer to first inhabitants of the world (including North and South America, Australia, Asia, and Europe). Specific rights are accorded to these self-identified groups are protected under the *UN Declaration of the Rights of Indigenous Peoples* (UN General Assembly, 2007). While mindful of issues of generalisation and essentialization associated with the use of this term, I nonetheless find it useful in expanding the breadth of relevance of this work.

In Canada, the term **Aboriginal** is used to refer to Indigenous people in Canada's constitution (Canadian Charter of Rights and Freedoms, 1982), while the outdated term **Indians** still retained today in Canada's *Indian Act* (1876) (Joseph, 2018). I use these terms only in reference to these documents and related legal status or negotiations, preferentially employing the term **First Nations** as one of three recognised legal categories of Canadian Indigenous peoples (alongside Inuit and Metis). When referring to language, knowledge, or territory specific to one particular Indigenous group, community, or Nation, I use the term **ancestral** (versus *traditional* or *local*).

I refer to non-Indigenous people in Canada as **settlers**, whether first-generation immigrants or fifth-generation farmers. While settlers in Canada come from many cultural backgrounds and

knowledge systems, I tend to assume that non-Indigenous people are informed by the western knowledge systems dominant in Canadian culture, with a tendency to entanglement in settler-colonial, extractivist, and neo-liberal mentalities (Klein, 2013; Simpson, 2017). I recognise that this may not always be the case, and that many of us, aspiring to the role of settler-ally, are actively working toward decolonization (Battell Lowman & Berker, 2015; E. Carlson, 2016; Castleden et al., 2017; de Leeuw & Hunt, 2018; Gaudry & Lorenz, 2018; Irlbacher-Fox, 2014).

Other key concepts are **bolded** and defined as they are introduced. Nuxalk words are summarised in the **Nuxalk glossary** above.

2. Conceptual framework: Decolonising health equity

This chapter outlines the conceptual framework and related theory that structures and informs the substantive elements of this work (detailed in **Chapter 3**), providing motivation and background for the case study. Meanwhile, **Part B (Methodology)** details how this conceptual framework relates to my choice of research approach and methods.

With an interest in the role of social structures, processes, and power in configuring Indigenous health and well-being, I originally proposed a health equity lens in the development of this work, a submission to the *Social Dimensions of Health* program. During my prior masters' degree in *Social and Preventive Medicine*, I was exposed to literatures on population health, social epidemiology, and social ecology (Beckfield & Krieger, 2009; Berkman, 2000; Bhopal, 2016; Frohlich & Potvin, 2008; Krieger, 2001, 2011), which emphasized policy, structures, and environment as determinants of health. Other early influences included Amartya Sen (Nussbaum & Sen, 1993; Sen, 2001) and Paul Farmer (Farmer, 2001, 2004), whose articulations of the concepts of capabilities and structural violence (respectively) informed my understanding of health and its determinants. Subsequent work with co-supervisor Bernie Pauly and colleagues on health equity tools and theories of social justice (Faden & Powers, 2008; Pauly et al., 2014; Powers & Faden, 2006) and complexity (McGibbon & McPherson, 2011; Walby, 2007) served to solidify my view of health and well-being as structurally and relationally determined.

This work is also informed by ecohealth (Charron, 2012; Johnston, Jacups, Vickery, & Bowman, 2007; Parkes, 2011, 2013) and social-ecological resilience approaches (Armitage, Béné, Charles, Johnson, & Allison, 2012; Bunch, 2011; Davidson, 2010; Folke, 2006; Gunderson, 2001; Resilience Alliance, 2010). Both recognize complex, upstream factors that impact human health

and environment, and seek systemic, often participatory solutions to human-environment issues, recognising the roles of governance and management (Waltner-Toews & Kay, 2005).

International in scope, the intersection of these literatures with Indigenous health determinants has been detailed by Margot Parkes and others (Johnston et al., 2007; Parkes, 2013; Stephens, Parkes, & Chang, 2007), but with some exceptions (Anticono, Coe, Bergdahl, & San Sebastian, 2013; Cunsolo Willox et al., 2011; Harper, Edge, & Cunsolo Willox, 2012), application of related approaches in Indigenous contexts is not widespread. As such, while this work was certainly informed by the principles of ecohealth, including systems thinking, transdisciplinary research, participation, sustainability, gender and social equality, knowledge-to-action (Charron, 2012), I did not centre it in this work.

My experience of the case study presented here allowed me to deepen and expand on the foundations detailed above, highlighting the particular role of settler-colonialism – and in particular, of environmental research and decision-making - in structuring everyday Indigenous experiences of health. As a result, I came to refine my original health equity lens, applying a focus on decolonization and Indigenous resurgence to my work.

This work integrates a number of perspectives on Indigenous health and well-being, including:

- (1) *Indigenous health* scholarship underlining holistic, inter-dependent perspectives on Indigenous health and well-being;
- (2) *Determinants of health* scholarship highlighting factors “beyond the social” and underlining colonialism as the fundamental determinant of Indigenous health and well-being;

(3) *Health equity* literatures focusing on the systemic and relational factors that structure health determinants.

Below, I provide a brief background on each of these perspectives. I then elaborate on settler-colonialism as a determinant of Indigenous health, expand on what I mean by a decolonising theory, and outline a health equity framework upon which I build the substantive elements of this work.

Indigenous health, well-being, and health equity

It is well-recognised that the meaning of health and well-being varies between communities and cultures (Adelson, 2005; Donatuto, Satterfield, & Gregory, 2011). Many Indigenous notions of health are informed by understandings that individual, community, and environmental wellness are inextricable, and that intangible elements like spirit, relationship, and culture are indistinguishable from material elements like food and resources (Adelson, 2000; Amberson, Biedenweg, James, & Christie, 2016; Donatuto, Campbell, & Gregory, 2016; M. Greenwood & de Leeuw, 2007; Parkes, 2013; Richmond, 2015). Because of the diversity of knowledge systems that inform Indigenous notions of health, it is important not to generalize about what health and well-being mean; rather, these concepts need to be defined locally and specifically (Donatuto et al., 2016). For example, in North America, many Indigenous groups have adopted the symbol of the medicine wheel to represent various geographic, temporal, spiritual, personal, and relational dimensions of health (Isaak & Marchessault, 2008), but this symbol is not grounded in place-based knowledges of coastal First Nations (Snxakila, 2018). Here, I am informed and inspired by specific examples of Indigenous health and well-being, often elaborated by a person within their own knowledge system and tradition, for example: the Whapmagoostui Cree concept of *miyupimaatisiun* (being alive well) (Adelson, 2000); the

Néhiyawak (Plains Cree) *miyo-machihoyān* (physical, emotional, mental, and spiritual well-being) (Holly Graham & Martin, 2016); the Cree concept of *mino-pimatisiwin* (the good life; wholeness, self-actualisation, and healing) (Hart, 2004); the Nuuchah-nulth concept of *tsawalk* (everything is one) (Atleo, 2007); and the Nuxalk concept of *tl'mstaliwa* (the fully realized life) (Snxakila, 2014).

Drawing on scholarship in Indigenous health, I use the broad notions of **health** and **well-being** more or less interchangeably in this work, employing whichever term is used in the particular literature to which I refer, and tending to use the term well-being to refer to a broader, interconnected conception of health. If pressed, I would lean on Breslow's (2016) definition of well-being as being "a state of being *with others and the environment*, which arises when human needs are met, when individuals *and communities* can act meaningfully to pursue their goals, and when individuals *and communities* enjoy a satisfactory quality of life" (emphasis added) (Breslow et al., 2016, p. 250). Aligned with Indigenous notions of health, this conception highlights the interconnection of individual, community, and ecological well-being.

There are many theories regarding how health outcomes are supported, produced and reproduced (Kapilashrami & Hankivsky, 2018; Krieger, 2011; Marmot, 2007). Beyond personal behavior, attributes, and conditions, determinants of health at a variety of scales are now recognised to have a far greater impact on individual health than biomedical factors, and as a result, public health has broadened its scope to include increasingly distal social and environmental determinants of health (Marmot et al., 2008; Raphael, 2009). For example, Charlotte Loppie and Fred Wien (2010) characterise Indigenous determinants of health as proximal (e.g. food insecurity, physical environment, behavior, education, income), intermediate (e.g. health care

systems, education systems, community infrastructure, environmental stewardship, cultural continuity) and distal (e.g. colonialism, racism, social exclusion, self-determination) (Loppie Reading & Wien, 2010).

My perspective is aligned with scholars in Indigenous health and health equity who are moving away from pathologizing lenses that highlight individual and community deficiencies, toward a focus on determinants of health “beyond the social”. As detailed in **Chapter 5 (Research theory and approach)**, these critical perspectives interrogate systems of power and privilege, including institutions, knowledge systems, and processes, to reveal their structural and relational foundations, including systemic discrimination and structural violence (L. Brown & Strega, 2005; de Leeuw & Greenwood, 2011; Loppie Reading, 2015). In this work, I draw on work that defines health **inequities** to be “differences in health which are not only unnecessary and avoidable but, in addition, are considered unfair and unjust” (Marmot et al., 2008; Whitehead, 1991, p. 220). Such inequities are understood to be potentially remediable, systematic differences between groups, produced through social processes and maintained by unjust social systems and relationships (Faden & Powers, 2008; Frohlich, 2010; Hilary Graham, 2004; Starfield, 2007; Young, 2002). From this perspective, health inequities experienced by Indigenous peoples in Canada and around the world are an “embodiment of inequality” (Adelson, 2005) within determinants of health, encompassing broader, interactive socioeconomic, environmental, and political contexts (M. Greenwood, de Leeuw, Lindsay, & Loppie Reading, 2015; Hankivsky, 2011; Kent, Loppie, Carriere, MacDonald, & Pauly, 2017; Loppie Reading & Wien, 2010). Literatures in geography and related fields increasingly consider the role of the natural environment, connection to land (Battiste & Henderson, 2000; M. Greenwood & de Leeuw, 2007; Parkes, 2013; Richmond, 2015), and therapeutic landscapes (K.

Wilson, 2003) as they pertain to Indigenous health. However, related processes (e.g. political ecology (Loring, 2016; Richmond, Elliott, Matthews, & Elliott, 2005), environmental governance (Black & McBean, 2016; Bowen et al., 2011)) are less thoroughly articulated as Indigenous health determinants.

With an interest in understanding the processes that produce health inequities, I am informed by structural and relational approaches at the intersection of environment and health, including those presented by Charlotte Loppie (Kent et al., 2017; Loppie Reading, 2015; Loppie Reading & Wien, 2010), Chantelle Richmond (Richmond, 2015; Richmond & Cook, 2016; Richmond et al., 2005), Margo Greenwood and Sarah DeLeeuw (de Leeuw & Greenwood, 2011; M. Greenwood et al., 2015). **Structural** perspectives focus on “understanding the complex relationship between the organizational structure of a particular society – including the morals and ethics upon which this structure is founded – and its related impact on health and well-being” (Loppie Reading, 2015; Richmond & Cook, 2016). For example, as detailed below, in Canada, ongoing and historical expressions of settler-colonialism are enacted through state structures like the Indian Act (Joseph, 2018; Manuel & Derrickson, 2015) and federal fisheries management policy (Alfred, 2009; D. Harris, 2001; Newell, 1993). **Relational** perspectives, congruent with theories of intersectionality (Hankivsky, 2011; Hankivsky & Cormier, 2011; Walby, 2007) investigate the “diverse social locations, forces, and power structures that shape human life” (Kent et al., 2017, p. 399). Engaging a dynamic concept of social position, such theory describes the intersection of the influences of institutions, relationships, and processes without requiring them being to be structured in a particular way (Walby, 2007; Young, 2002), allowing for the consideration of multiple intersecting social inequalities whose relationships are not necessarily hierarchical or nested. This shifts attention away from particular manifestations

of the power structure toward *how* systems of power and privilege are constituted, produced, governed, and organized (Dhamoon & Hankivsky, 2011). With attention to processes and institutions, intersectional or relational health equity perspectives provide a way to connect scales and categories, allowing for consideration of individual, social-cultural, and institutional factors (and their interaction) (Dhamoon & Hankivsky, 2011; Osborne, Howlett, & Grant-Smith, 2019). Congruent with these perspectives, work in healthy public policy emphasizes the impacts of intersectoral policy and practice on health and health equity (Raphael, 2009; Richmond & Cook, 2016), but rarely explicitly reference environmental management in this regard.

As such, critical perspectives in health equity, including those emerging to address inequities in Indigenous health (H. Brown et al., 2012; M. Greenwood et al., 2015; Richmond & Ross, 2009), have much to contribute to research in the field of environmental management. However, while equity and/or social justice are often highlighted as goals or outcomes in scholarship related to social-ecological change (Britton, 2012; Capistrano & Charles, 2012; Neis, 2005; Plummer et al., 2012) and environmental management (Breslow et al., 2016; Capistrano & Charles, 2012; Klain, Beveridge, & Bennett, 2014; Low, 2018; A. Salomon et al., 2018), their theoretical and philosophical underpinnings are rarely stated. Meanwhile, aside from a marginal position in the literature on ecological determinants of health and a few exceptions (Black & McBean, 2016; Richmond et al., 2005), environmental management has not been widely considered in determinants of health and health equity literatures thus far. Bridging these two seemingly disparate fields of inquiry, I engage a model of Indigenous health equity below, after elaborating on my understanding of the role of settler-colonialism and decolonization as determinants of Indigenous health.

This work is founded on the premise that **settler-colonialism** is the fundamental, over-arching determinant of Indigenous peoples' health and well-being, in Canada and beyond (Alfred, 2009; de Leeuw & Greenwood, 2011; M. Greenwood et al., 2015; Loppie Reading & Wien, 2010; Richmond & Ross, 2009). I understand settler-colonialism to be a particular, pervasive set of unjust structural and relational factors that perpetuate systems of power and privilege, control of knowledge (priorities, sources) and dominant epistemologies that affect every aspect of Indigenous health and well-being (M. Greenwood, de Leeuw, & Lindsay, 2018; Kent et al., 2017; Loppie Reading, 2015). Taiaiake Alfred (2009) suggests that:

“...colonialism is best conceptualized as an irresistible outcome of a multigenerational and multifaceted process of forced dispossession and attempted acculturation – a disconnection from land, culture, and community – that has resulted in political chaos and social discord within First Nations communities and the collective dependency of First Nations upon the state.” (Alfred, 2009, p. 52).

Inherently focused on the occupation of land, settler-colonialism may be contrasted with other forms of colonialism (e.g. in Africa, Asia), which are mostly about control of the means of production and extraction of resources (Alfred, 2009; G. S. Coulthard, 2014; Tuck & Yang, 2012). Leanne Simpson (2017) understands settler-colonialism's structure “as one that is formed and maintained by a series of processes for the purposes of dispossessing, that create a scaffolding within which [Indigenous peoples'] relationship to the state is contained” (Simpson, 2017, p. 45). Mirroring theories of intersectionality (Dhamoon & Hankivsky, 2011; Kapilashrami & Hankivsky, 2018; Osborne et al., 2019), she conceives of settler-colonialism as “a set of complex and overlapping processes” that work together to maintain

“controlled points of interaction” with the state (Simpson, 2017, p. 45). In its current manifestation, settler-colonialism is intricately tied to the political economy (and ecology) of the state, reliant on resource extraction and wed to neo-liberal ideals of production and accumulation that rely on Indigenous dispossession (Bowie, 2013; H. Brown et al., 2012; G. S. Coulthard, 2014; Pasternak, 2017; Tuck & Yang, 2012). The experience of settler-colonialism has therefore been characterized as one of profound **disconnection** of Indigenous peoples from ancestral lands, waters, languages, and practices from each other, and from what it means to be Indigenous (Alfred, 2009; Corntassel et al., 2018; M. Greenwood & de Leeuw, 2007; Richmond, 2015; Simpson, 2008a).

In this work, I focus on mechanisms of dispossession that include marginalization or exclusion from management and related knowledge (re)production, as well as related ecological degradation and contamination, as detailed in the section below. Spearheaded by the *Indian Act* (1876), settler-colonial policies and practices have explicitly subjugated Indigenous peoples and appropriated Indigenous lands in Canada, regenerating disparities in recognised determinants of health (Alfred, 2009; Loppie Reading, 2015; Loppie Reading & Wien, 2010; Richmond & Cook, 2016). Existing inequities are exacerbated by targeted programs and policies that have created a persistent background of intergenerational trauma and separation from land, family, and community (Alfred, 2009; Brody, 1997; Irlbacher-Fox, 2009; Kirmayer & Valaskakis, 2009; Linklater, 2014), undermining ancestral systems of governance and knowledge, and eroding languages, lineages, and cultures. Embodied political and economic disadvantage “are part and parcel of the felt effects of a history of internal colonization, which wear away not only at the individual but at the family, community and nation” (Adelson, 2005, p. 46), affecting Indigenous lives and impacting health and wellbeing over the short and long term (M. Greenwood et al.,

2018; Richmond & Cook, 2016). Given the depth and pervasiveness of colonialism's impacts at every scale, many argue that "adding colonialism" to existing social determinants or well-being assessment frameworks is not sufficient for engaging the realities of Indigenous people's lives (de Leeuw, Lindsay, & Greenwood, 2015). Rather, settler-colonialism – and its antidote, Indigenous resurgence - must be understood as *the* fundamental determinant of Indigenous health (Alfred, 2009; M. Greenwood et al., 2015), intersecting with all others.

A decolonising health equity framework for studying Indigenous management authority

In embarking on this research, my interest lay in learning about how to shift core structural and relational environments, including the systems of governance, power, and privilege that produce health inequities. However, while settler-colonialism is a recognised determinant of Indigenous health and health equity, I have not encountered any frameworks explicitly joining literatures on *decolonization* and health equity. This work therefore adapts existing health equity perspectives by adding a decolonising focus. In this work, I employ the term **decolonization** in the same way that some scholars use the term *anti-colonialism*, in that that I intend to foreground the reality and ongoing presence of the structures and processes of settler-colonialism (E. Carlson, 2016; Simpson, 2004), and the possibility of Indigenous resurgence (Alfred, 2005; Corntassel et al., 2018; G. S. Coulthard, 2014; Simpson, 2008a, 2017) or transformative reconciliation (Borrows & Tully, 2018). As detailed in **Chapter 3**, this may be contrasted with softer interpretations of these concepts, which tend toward inclusion or reconciliation and neglect real implications regarding land (G. S. Coulthard, 2014; Smith, Maxwell, Puke, & Temara, 2016; Tuck & Yang, 2012).

The objectives of decolonization are fundamentally concerned with land and related authorities: "decolonization brings about the repatriation of Indigenous land and life" (Tuck & Yang, 2012,

p. 1). A focus on the process of environmental dispossession is therefore essential to decolonising goals and, I would argue, to the promotion of health equity for Indigenous people (Richmond, 2015). According to Leanne Simpson (2004), decolonization “require[s] the recovery of Indigenous intellectual traditions, Indigenous control over Indigenous national territories, [and] the protection of Indigenous lands from environmental destruction” (Simpson, 2004, p. 381). Indeed, recovery and revival of ancestral knowledge systems in connection to land as a strategy to foster cultural and political resurgence is central to much of the theory around decolonization (Alfred, 2009; Kovach, 2017; Simpson, 2008a, 2014; Wildcat, McDonald, Irlbacher-Fox, & Coulthard, 2014), and is a central thread running through this work.

The model of Indigenous health equity I engage and adapt here is represented by the form of a tree, as proposed by Charlotte Loppie (Loppie Reading, 2015; Loppie Reading & Wien, 2010). This model is summarised in a recent paper by Alexandra Kent and colleagues (Kent et al., 2017), who propose a framework that combines “the concepts of proximal, intermediate and distal determinants with those related to colonial oppression”, specifically focusing on the relational, systemic, and structural environments within which Indigenous health is shaped. In the *Xpey*’ (cedar tree) framework, *relational environments* related to the (re)production of Indigenous health inequities are conceptualized as the three elements of a tree: stem, core, and roots. Like the crown of a tree, *stem* environments (including human, non-human, and symbolic elements) influence individual and community health (the leaves) in the most explicit and direct ways, encompassing interpersonal relationships and the positioning or representation of people’s intersectional identities and cultures. Represented by the trunk of a tree, *core* environments connect stem and root environments to support or undermine health, including “systems of authorities, policies and bureaucracies; leadership and management within relevant institutions

and organizations; and the local systems and structures at the community level” (Kent et al., 2017, p. 399). While they have less direct influence on the health of individuals, these elements they strongly influence the relationships and settings within the stem environment. Finally, *root* environments “represent the historical, political, social and cultural contexts from which all other relational environments evolve” (Kent et al., 2017, p. 399; Loppie Reading & Wien, 2010); conditions observed in the leaves (individuals) are frequently evidence of the condition of critical root systems (Loppie Reading, 2015, p. 5). In the context of Indigenous health, these roots “take the form of colonial histories and intergenerational trauma, political relationships and arrangements, social and material inequities, and cultural connection or loss” (Kent et al., 2017, p. 400). In addition to risk factors and impacts that produce unfavorable outcomes, these relational environments also feature protective features that promote well-being and resilience (Kent et al., 2017).

Applying and adapting this model of health equity to structure this work, I am interested in how the political, social, economic, historical, institutional *roots* of governance, both settler-colonial and Indigenous, impact the *leaves* of Indigenous health and well-being through their influence on the *core* systems of environmental management (see **Figure 2**). In particular, I interrogate the role of the *stems* (and *branches*) in this model in reproducing or resisting health inequities and ecological degradation; as detailed in **Chapter 3**, these include the processes and practices of dispossession, (dis)connection, and resurgence, and related relationships, identities, roles and responsibilities, rights, authorities, and capacities. To expand on this model, I posit that situated Indigenous knowledges may be conceived of as the *sap* of the tree. Following Indigenous scholars’ emphasis on the primacy of land for both health and governance, I also explicitly situate the roots of health equity in the *land* itself.

Drawing on health equity literatures to focus on the *how*, I apply this decolonising health equity model to investigate how the processes, structures, relationships, and institutions of environmental management (re)generate inequities in Indigenous health. This has the potential to provide insight into *how* management institutions produce “patterns of winners and losers” (Deneulin & McGregor, 2009) by enabling connection of the knowledges and experiences of Indigenous people - through attention to local meanings, beliefs, priorities, and stories (Archibald, 2008; Kovach, 2009c; Simpson, 2011; Song, Chuenpagdee, & Jentoft, 2013)- to upstream regulatory, normative, relational, and cognitive-cultural institutions (Jentoft, 2004; Scott, 2013), illuminating the processes and structures that allocate resources and alter power dynamics (S. Coulthard, 2012; S. Coulthard, Johnson, & McGregor, 2011). In the context of this work, I use the adapted health equity model described above as a framing device to structure the work and to situate myself, but refrain from directly applying it as an externally-derived analytic tool. As elaborated below, the context and focus of this work (the *Sputc Project*) foregrounds Indigenous knowledges, cultural strengths, and political resurgence as key to the health and well-being of future generations of Indigenous people, in Canada and beyond.

3. Background

In the following sections, I provide a brief background on each of the areas described in the adapted decolonising health equity framework described in **Chapter 2** and their relationships: governance and (de)colonization; Indigenous systems of knowledges and governance; environmental management; and health and well-being outcomes of environmental management. This establishes my case study of the Nuxalk *Sputc Project* in the broader context of related literatures. Emphasizing environmental management as an under-recognised mediator of the relationship between governance or (de)colonization and Indigenous health, this serves to connect health equity literatures with those related to the impacts of environmental management, climate change, industrial development, and policy change on Indigenous communities.

Governance and (de)colonization

The *Sputc Project*, and by extension, this work, is located at the confluence of two systems of governance –settler-colonial and Indigenous – each with its own set of institutions. According to the decolonising health equity model outlined above (**Figure 2**), governance may be considered the *core* of the health equity tree, reproducing the social, political, historical, and cultural contexts and institutions that inform all else. While I do not assume to be an expert in Indigenous laws or governance, a decolonising perspective requires a basic understanding and engagement in Indigenous institutions, structures, and processes. In this section, I provide key definitions related to governance, and background on my engagement of the concepts of sovereignty, jurisdiction and authority, recognition, reconciliation, and resurgence that inform *Sputc Project* and as such provide a context for this work. These concepts inform the study context and focus described in **Chapter 4** and elaborated in *Paper 4*.

Following W. Richard Scott and Svein Jentoft (Jentoft, 2004; Scott, 2013), I define **governance** as the processes, institutions, and mechanisms by which society's actors influence actions and outcomes in a particular arena of influence. One useful model of governance outlines three institutional pillars that form a continuum "from the conscious to the unconscious, from the legally enforced to the taken for granted" (de la Torre-Castro & Lindström, 2010, p. 78). The *regulatory* pillar comprises formal and informal rules and regulations that govern behavior. The *normative* pillar is about the prescriptive and evaluative dimensions of social relations, appealing to obligation and conformity. The *cultural-cognitive* pillar refers to "the frames through which meaning is given" (de la Torre-Castro & Lindström, 2010, p. 78), and is concerned with shared belief systems, images, and symbols that determine what is taken as given. Reflecting work on values in environmental management, (Artelle et al., 2018; Gregory, Easterling, Kaechele, & Trousdale, 2016; King, 2004; Klain, Olmsted, Chan, & Satterfield, 2017; Murray, D'Anna, & MacDonald, 2016; Song et al., 2013), this pillar frames how knowledge is asserted, communicated, assessed, and appropriated, and whose knowledge is valued, structuring persistent patterns of behavior that determine control over resources. While I do not widely refer to the language of institutions in the papers that follow, this model informs how I conceive of "the state", and accounts for the reproduction of settler-colonial behaviours and values, while incorporating other actors (e.g. civil society, markets) as described by interactive governance models (Kooiman, Bavinck, Chuenpagdee, Mahon, & Pullin, 2008). It also complements the decolonising health equity model detailed above, in that it encompasses holistic ways of knowing and unspoken, cultural norms as essential elements of Indigenous governance and knowledge systems (detailed below).

In this research, I focus on - and problematize - *settler-colonialism* as a form of governance that has unjustly impacted Indigenous peoples. More specifically, I take interest in related processes and structures that have created dispossession and disconnection from ancestral lands and waters, and in how, by revitalising Indigenous knowledges and re-asserting lands-based management authority, the processes of decolonization and resurgence might bring about “the repatriation of Indigenous land and life” (Tuck & Yang, 2012, p. 1) to address resulting inequities.

Sovereignty, jurisdiction, and authority

While the state presupposes absolute **sovereignty** over Canadian lands and subjects, many argue that the basis of its authority is muddled and contestable (Alfred, 2005; Borrows, 1999; G. S. Coulthard, 2014; Manuel & Derrickson, 2015, 2017; Pasternak, 2017). The reality on the ground is more complex, and both subtle and blatant forms of legal pluralism are present in Canada (Asch, 2014; Borrows, 2002; Harland, 2016; Low, 2018; Mills, 2016; K. Shaw, 2008) and beyond (Bavinck & Gupta, 2014; Jentoft, Bavinck, Johnson, & Thomson, 2009; Rohe, Govan, & Ferse, 2018; Roughan, 2013). For example, Jeremy Webber (2016) details four interpretations of the concept of sovereignty, including forms that are not exclusive, suggesting that multiple assertions of sovereignty might exist “in a continual, unresolved – perhaps never resolved – tension” (Webber, 2016, p. 63). Shiri Pasternak (2017) underlines that the complex structure of settler-colonial authority is not without holes; rather, it arises from a patchwork of imperfect and contested institutions acting in concert (Pasternak, 2017). As elaborated in *Paper 4*, I understand **authority** to refer to the legitimate exercise of power, created by defining, communicating, and enforcing clear norms, rules, and laws (Kirby, 2017; Napoleon & Friedland, 2016; Napoleon & Overstall, 2007). Authority is enacted through assertion of jurisdiction,

which in turn is related to the legitimacy of related institutions and processes on the ground (Jones, Rigg, & Pinkerton, 2016; Pinkerton & John, 2008).

On the ground in Canada, Aboriginal and treaty rights are recognised and affirmed by section 35(1) of the Canadian constitution (1982). Supported by subsequent decisions of the Supreme Court, including *Delgamuukw* (1997) and *Tsilhqot'in* (2014), these rights include use and management of ancestral lands and waters (Borrows, 1999; Hoehn, 2016; Kotaska, 2013; Manuel & Derrickson, 2017). However, while it may be derived in part from state (e.g. Canadian) law, Indigenous authority also extends from *inherent rights* (Borrows, 2002; Napoleon, 2007; Napoleon & Overstall, 2007; D. Turner, 2006; Webber, 2016), which might better be characterised as responsibilities (Corntassel, 2012). In the case of often decentralised systems of Indigenous governance, authority related to inherent rights and responsibilities may be derived from formalised laws or implicit norms encoded by oral histories, place names, kinship systems, and cultural practices and upheld by collective, interactive processes (F. Brown & Brown, 2009; Napoleon & Friedland, 2016; Napoleon & Overstall, 2007). Decolonising perspectives underline that inherent rights have not been extinguished by the imposition of Canadian law, and remain embedded in systems of ancestral knowledge and governance (Alfred, 2005; Mills, 2016; Napoleon, 2007; Napoleon & Overstall, 2007; Simpson, 2008a). In this context, law “originates in social interaction and activities on the land” (Napoleon & Overstall, 2007, p. 4) and may not be distinguished from other forms of knowledge, including Indigenous ways of knowing and being (Corntassel, 2012; Mills, 2016; Simpson, 2008a).

Pasternak (2017) suggests that the lens of **jurisdiction** – “the power to speak the law” (Pasternak, 2017, p. 10) - is essential to understanding how authority is advanced (or contested).

Jurisdiction provides a means by which to question the state's assertion of authority and interrogate the processes and institutions that have served to dispossess Indigenous peoples and enclose Indigenous lands and waters on behalf of the state. For Pasternak and other decolonising scholars who underline the primacy of land and territoriality for Indigenous peoples (Alfred, 2005; G. S. Coulthard, 2014; Simpson, 2017; Tuck & Yang, 2012), jurisdiction "differentiates and organizes the "what" of governance [land]- and, more importantly because of its relative invisibility - the "how" of governance" (Pasternak, 2017, p. 8; Valverde, 2009, p. 144). It is through incomplete and potentially ungrounded state jurisdiction, alongside enduring Indigenous systems of governance, that the potential for Indigenous authority and self-determination emerges, rather than (or in addition to) through negotiation within the mechanisms of the state.

Authority and jurisdiction are mediated by perceived **legitimacy**, which determines peoples' behaviours on the ground (Pinkerton & John, 2008), particularly where authority is questionable or mixed (Bowie, 2013). In many Indigenous legal systems, decentralized institutions and interactive processes "result from the continual exercise of individual and collective agency and collaboration" (Napoleon & Overstall, 2007, p. 3; Simpson, 2017). In such contexts, legitimacy is derived from collective recognition, understanding, agreement, application, and enforcement (Kirby, 2017; Napoleon & Friedland, 2016; Napoleon & Overstall, 2007). Given this understanding, it is easy to see how the legitimacy of Canadian environmental management authority might be called into question by Indigenous peoples – including my research partners - whose health and well-being continues to be adversely impacted by related actions. Among others, Leanne Simpson (2014) and Jeremy Webber (2016) emphasize that assertions of sovereignty do not necessarily suggest conflict (Simpson, 2014; Webber, 2016); "[o]ne sovereignty does not negate the other, but they necessarily stand in terrific tension and pose

serious jurisdictional and normative challenges to each other” (Simpson, 2014, p. 10). As such, an assertion of Indigenous sovereignty does not need to represent a threat to the state, so much as a demand for human respect (Borrows, Chartrand, Fitzgerald, & Schwartz, 2019).

Recognition, reconciliation, and resurgence

Through this work, I have come to perceive a continuum of perspectives when it comes to the confluence of colonial and Indigenous governance systems (putting aside assimilationist viewpoints), from state reconciliation to radical resurgence, with important implications for how jurisdiction and authority are conceived of and enacted. This continuum is characterized by Borrows and Tully (2018) in terms of two forms and meanings of reconciliation and resurgence. One emphasizes recognition by the state and reconciliation of Indigenous peoples to the status quo; while the other highlights resurgence, refusal, and self-determination (Borrows & Tully, 2018).

In the case of the former set of perspectives, recognition and reconciliation are defined in terms of Indigenous peoples’ relationship with the state. Indeed, the very term **recognition** “implies two parties, the recognized and the recognizer” (von der Porten, 2012, p. 6); when an Indigenous community seeks recognition, the act of doing so creates a power imbalance favouring the state as the granter of recognition (Borrows, 1999; G. S. Coulthard, 2008, 2014). In Canada, the state will recognize the collective rights and identities of Indigenous peoples as long as it does not obstruct the objectives and interests of the state or “throw into question the background legal, political, and economic framework of the colonial relationship itself” (G. S. Coulthard, 2007, p. 451). **Reconciliation** between Indigenous people and the state is subject to similar power imbalances, and as a result, many Indigenous people are critical of reconciliation as currently enacted (Asch, 2014; Asch et al., 2018; Corntassel, 2012; G. S. Coulthard, 2014; Manuel &

Derrickson, 2017). While support for non-threatening cultural activities exists and discursive engagement with the goals of reconciliation and even decolonization are growing, ongoing political institutions and actions continue to undermine Indigenous rights and well-being in western Canada, as exemplified by recent conflict regarding pipeline construction in Wet'suwet'en territory (Bracken, 2019; Kung & Smith, 2019). Following years of disappointment and broken promises, including a failure to implement the recommendations of RCAP, TRC, and other commissions (Manuel & Derrickson, 2015; Reading, Loppie, & O'Neil, 2016), Canada's commitment to reconciliation beyond symbolic gestures and discourse appears to many to be lacking. From a legal perspective, this is exacerbated by conditions that acknowledge Indigenous claims only insofar as they fit within the framework of the Canadian Constitution, which presupposes exclusive crown sovereignty (Borrows, 1999; K. Shaw, 2008). Therefore, some argue that renewed commitment to building true Nation to Nation relationships will involve reconsideration of its orientation to sovereignty as currently expressed (Borrows, 1999, 2016; G. S. Coulthard, 2014; K. Shaw, 2008). For example, Jeff Corntassel (2012) operationalises the politics of recognition in terms of three resurgent shifts in framing: from rights to responsibilities, from reconciliation to resurgence, and from resources to relationships (Corntassel, 2012).

In general, the *Sputc Project* – and this research - is situated within a perspective that seeks to challenge “the politics of recognition” (G. S. Coulthard, 2007, 2008, 2014; Simpson, 2008a), adopting a second perspective on reconciliation and resurgence defined in terms of Indigenous peoples' relationships with their lands and waters, often entirely outside of state structures and paradigms. Indigenous governance and resurgence scholars advocate sourcing Indigenous power from within, by turning toward inherent, ancestral sources of knowledge, law, and governance

through cultural and political refusal, resistance, and **resurgence** (Alfred, 2005; Asch et al., 2018; Borrows, 2002; Corntassel, 2012; Corntassel et al., 2018; Simpson, 2008a, 2011, 2017). According to Leanne Betasamosake Simpson, resurgence is a set of practices in Indigenous theorizing, writing, organising, and thinking “through which the regeneration and reestablishment of Indigenous nations” can be achieved (Simpson, 2017, p. 16), resulting in “an extensive, rigorous, profound reorganizing of things” (Simpson, 2017, p. 48). Among others, underlines that cultural and political resurgence are interconnected, “and they are both generated through place-based practices – practices that require land” (Alfred, 2005; Corntassel, 2012; Simpson, 2017, p. 49). Because it is not directly concerned with territoriality, cultural resurgence is often acceptable within the Canadian settler-colonial structure. However, not long ago, even cultural practices were barred by *Indian Act* policies and authorities because they embodied political practices (Simpson, 2017). Indeed, “regenerating language, ceremony, and land-based practices is always political”; Indigenous practices require a land base, which fundamentally involves a “central and hard critique of the forces that propel dispossession” (Simpson, 2017, p. 50). While engaging, informed, and often inspired by theorists who advocate disengagement with the state in order to re-establish and reclaim Indigenous ways (Corntassel, 2012; G. S. Coulthard, 2014; Simpson, 2008a, 2011, 2017), my perspective is also closely aligned with Borrows and Tully’s (2018) constructive concepts of robust resurgence and transformative reconciliation. Rejecting unjust relationships reproduce ongoing inequities, robust resurgence is often nested within “non-violent, contentious relationships” with settlers, and within Indigenous communities (Borrows & Tully, 2018, p. 4). This enables a vision of reconciliation that has the potential to challenge unjust relationships, as aligned with a decolonising agenda (Alfred, 2005; Asch et al., 2018).

Indigenous knowledges

Place-based cultural and political knowledge systems constitute the “intellectual and theoretical home” of resurgence (Alfred, 2008; Simpson, 2004, 2008a, 2017, p. 16). As elaborated in the following sections, “(r)ecentreing the revitalisation of IK [Indigenous knowledges] within the knowledge systems themselves provides the only appropriate context for building an Indigenous resurgence” (Simpson, 2008c, p. 74).

"I believe one of our most critical and immediate tasks in building an Indigenous resurgence is ensuring that the knowledge of our ancestors is taught to the coming generations. But, according to our intellectual traditions, *how* we do this is as important or perhaps more important than the product of our efforts... So, the first thing we must recover is our own Indigenous ways of knowing, our own Indigenous ways of protecting, sharing, and transmitting knowledge, our own Indigenous intellectual traditions. And we must begin to practice and live those traditions on our own terms." (Simpson, 2008c, p. 74).

Indigenous knowledges (IK) encompass the ways of knowing and being that inform the Indigenous governance systems and management practices upon which I focus in this work. In this work, *Papers 2* and *3* in particular address the complexities of engaging and representing IK.

I employ the terms **Indigenous knowledges** (pluralized) or **knowledge systems** refer to a multitude of unique systems of knowledge held, used, and maintained by Indigenous peoples throughout the world, highlighting their diverse, dynamic, and place-based nature. The word *knowledges* is pluralized not only to denote the diversity of knowledge systems employed by Indigenous peoples, but also the different sources of knowledge included in each system (e.g. values, practices, language). When referring to knowledges specific to a particular place and

people (e.g. Nuxalk knowledges), I apply the term **ancestral** to highlight how knowledges and associated rights, roles, and responsibilities have been accumulated and transferred from generation to generation since time immemorial (N. J. Turner, 2014). According to most scholars, local or traditional ecological knowledge (TEK) is considered a limited or incomplete subset of IK (Latulippe, 2015b; McGregor, 2004).

Most scholars agree that the concept of IK is not easily defined (Battiste & Henderson, 2000), but some attempt to characterize it nonetheless. Indigenous knowledge systems are often described as both metaphysical and pragmatic, inseparable from everyday relationships with place (land), people, practices (Battiste & Henderson, 2000; Corntassel et al., 2018; McGregor, 2004; Simpson, 2014, 2017; S. Wilson, 2008). IK are derived from local ways of knowing and being, and made up of "multiple and multidimensional sources" (Kovach, 2017, p. 227), which may include stories and oral histories, personal experiences, narratives and personal accounts, spiritual practices, rituals, and dreams (Battiste, 2005; Chalmers, 2017; Coombes, Johnson, & Howitt, 2014; Houde, 2007; Kovach, 2009c; Louis, 2007). Nicolas Houde (2007) details six faces of TK: factual observations about environment, resource management systems, land uses; belief systems and values; cultural meanings; social relations; identities tied to place; and cosmology (Houde, 2007). Perhaps more pragmatically, Nicole LaTulippe (2015) elaborates four conceptions of IK: ecological, critical, relational, and collaborative (Latulippe, 2015b). As detailed below, I am most closely aligned with a *relational* notion of IK, which considers knowledges as a means to Indigenous empowerment and resurgence, to be used by and for Indigenous people. This may be contrasted with ecological conceptions of IK, which refer to IK as "a body of knowledge" often used to complement western science (Berkes, 2012b), and

collaborative conceptions of IK that attempt to respectfully engage or integrate knowledges in the context of adaptive management (Latulippe, 2015b).

Here, I engage a concept of IK that is relational and interpretative (Kovach, 2009c). I understand IK not as “an abstract product of the human intellect”, but as a set of context-specific, culturally embedded processes and institutions situated in “complex networks of social relations, values, and practices” (Nadasdy, 1999, p. 5). Knowledges are “nested, created, and re-created within the context of relationships with other living beings” (Kovach, 2009c, p. 47). As such, IK are not *about* relationships; they are *the relationships themselves* (McGregor, 2004; S. Wilson, 2008). A relational orientation emphasizes that IK is not a noun, or a thing to be extracted or defined; rather, knowledges involve process - informed actions conducted by a particular person, in a particular place and time, and in relationship to other people, places, and beings (Latulippe, 2015b; McGregor, 2004; Simpson, 2017). Held by people in context, such knowledges cannot be abstracted or disintegrated (Kovach, 2009c). Rather, they are embodied in personal and everyday acts and cultural practices (Corntassel et al., 2018; Simpson, 2017).

Given this orientation, I also adopt a concept of IK that is place- and practice-based, suggesting that Indigenous knowledges are “continually generated in relationship to place” (Simpson, 2017, p. 16), including land and community, and enacted through situated, embodied cultural and spiritual practices and “holistic, non-fragmented processes” (Kovach, 2017, p. 227). Land-based practices are “far more than provisioning activities” (Poe, Donatuto, & Satterfield, 2016, p. 11); they are deeply tied to peoples’ sense of belonging, identity, and lifeways, and play a vital role in transmitting cultural values and political protocols (McGregor, 2004; Simpson, 2014, 2017).

IK and governance: rebuilding institutions

While Indigenous resurgence may begin with personally reconnecting with the places, relationships, and practices that constitute Indigenous knowledges, reviving, articulating and enforcing Indigenous knowledges systems, including governance and systems legal traditions, is an important aspect of a broader movement toward decolonization and the resurgence of Indigenous political systems, economy, and nationhood (Napoleon & Overstall, 2007; Simpson, 2017; von der Porten et al., 2019). Ethical frameworks generated by place-based knowledges, including Glen Sean Coulthard's concept of *grounded normativity* (G. S. Coulthard, 2014), generate "profoundly different conceptualizations of nationhood and governmentality – ones that aren't based on enclosure, authoritarian power, and hierarchy" (Simpson, 2017, p. 22). This has important implications for systems and practices of environmental management (among others).

However, rebuilding Indigenous institutions, decision-making protocols, and knowledge sharing practices (Bowie, 2013; Kirby, 2017; Thielmann, 2012; von der Porten et al., 2015) requires that "the cultural basis of authority be restored in order to successfully assert political and economic rights" (Alfred, 2005; von der Porten, 2012, p. 12). This implies that knowledges need to be embodied, experienced, and applied by people in relationship to constitute legitimate grounds for governance. In contrast to a traditionalist stance that tends to value and promote pre-contact ways of being, the concept of IK employed here is *adaptive*. While traditionalism offers an appealing compass of direction for decision-making, identity, and governance based on "how things used to be done" (von der Porten, 2012, p. 7), it also has a tendency to be reductive, if not extractive. It is my understanding that upholding self-determination for Indigenous peoples and taking into account how Indigenous knowledges work requires respecting new interpretations and adaptations of ancestral knowledges by Indigenous people (Alfred, 2005; Simpson, 2008a;

von der Porten, 2012). Indeed, some argue that resurgence entails a “*responsibility* to interpret those teachings from an Indigenous lens, or rather, Indigenous *lenses*” (Simpson, 2008b, p. 17), and suggest that this involves turning inward to focus on everyday practices (Corntassel et al., 2018) and “an authentic Indigenous existence” in order to recapture and enact physical, political, and psychic spaces of freedom (Alfred, 2008, p. 11).

While underlining that First Nations’ inherent rights and responsibilities to manage territorial lands and waters according to Indigenous systems of governance, I also recognize that these systems have been undermined by generations of colonialism. As such, it cannot simply be assumed that contemporary Indigenous knowledge systems are intact and ready to be applied (Friedland & Napoleon, 2015). In this spirit, Napoleon and colleagues suggest that Indigenous people may wish to formally research and re-articulate their particular intellectual processes and ways of knowing, including practices, ethics, responsibilities, and relationships, in order to reinstate their authority within and beyond the community (Friedland & Napoleon, 2015; Kirby, 2017; Napoleon & Friedland, 2016; Napoleon & Overstall, 2007). In this work, the *Sputc Project* is detailed as an example of such a process in **Papers 2** and **3**, while related implications for Indigenous authority are elaborated in **Paper 4**.

Environmental management

In this work, I take interest in state and Indigenous institutions of environmental management as determinants of Indigenous well-being. According to the framework depicted in **Figure 2**, I position environmental management as the *core* or trunk of the tree, with related decision-making processes and power relations mediating health and well-being outcomes. In this section, I provide some key definitions and background related to environmental management,

and explore the role of state and Indigenous management in reproducing or challenging Indigenous realities.

For the sake of expediency, I use the terms *resources*, *environment*, and *lands and waters* somewhat interchangeably in this work. Based in settler-colonial perspectives, the terms **resources** or **natural resources** denote a separation between humans and nature, and tend to imply an extractive, neoliberal mentality (Corntassel, 2012; Mansfield, 2007; Pinkerton, 2015). Meanwhile, in accordance with the preferences of my research partners, I use the term ancestral **lands and waters** to refer to Indigenous territories as places imbued with names, stories, and spirit. Indigenous languages often include specific, place-based terms describing lands and waters, but there is but no common word that encapsulates this richness in English. I use the word **ancestral** rather than *traditional* or *hereditary* when referring to specific Indigenous lands and waters. This term prioritizes complex ways of understanding how places, and associated rights and responsibilities, names and stories, are associated with particular people and transferred from generation to generation, moving beyond the implication that they are merely the result of either tradition or heredity. Finally, I employ the word **environment** or **environmental** as a middle-ground term to refer to places that may be considered *resources* or ancestral *lands and waters*.

I use the terms environmental management and stewardship to refer to the purposeful protection of ecological integrity for present and future generations; this includes species and habitat conservation, planning, stewardship, and restoration, as well as enforcement of norms and laws related to harvesting, access, and distribution/allocation. **Management** generally refers to top-down, often species-specific approaches, and implies centralised authority. Under the settler-

colonial system, state resource management institutions and related systems of knowledge and power affect environmental access, use, monitoring, conservation, protection, and restoration (Bennett et al., 2018; Chuenpagdee & Jentoft, 2009; de la Torre-Castro & Lindström, 2010; Jentoft, 2004, 2007). Meanwhile, **stewardship** refers to actions informed by a holistic, reciprocal notion of the relationship between humans and the natural world, and implies an ethic of care and interconnection, reflecting Indigenous systems of governance. I was originally inclined to apply the term stewardship to any system based on ancestral knowledges, rights and responsibilities that predate colonization (Berkes, 2012b; Haggan et al., 2006; Trosper, 2002; N. J. Turner, Berkes, Stephenson, & Dick, 2013; N. J. Turner et al., 2008). However, local collaborators prefer to use the term management to emphasize equivalence of state and Indigenous authorities, so this often ends up being my term of choice.

The Canadian constitution requires consultation with First Nations regarding activities conducted on their territories that may affect rights and title, and there is increasing interest, on the part of DFO and others, in integrating IK into decision-making processes and engaging in collaborative management processes. In this work, an extensive literature related to co-management, knowledge integration, and Indigenous participation in decision-making is largely sidelined, beyond some references in the sections to follow. Rather, I focus on Indigenous leadership in environmental management, in the same way that I foreground Indigenous resurgence (*vs.* recognition), inherent rights and responsibilities, and Indigenous ownership and application of Indigenous knowledge (*vs.* its integration). Below, I briefly review related literatures from a decolonising perspective, examining environmental management as *dispossession*, *collaboration*, and *resurgence* and how each relates to the *Sputc Project*. Details related to how these relate to the specific context of this research are elaborated in **Chapter 4 (Study context)**.

Environmental management as dispossession

My first conception of environmental management as dispossession underlines how settler-colonial institutions have excluded, undermined, or ignored Indigenous peoples' established environmental knowledges and stewardship practices, creating dependency among Indigenous people, and dispossession of Indigenous lands. In this work, I take the Nuxalk loss of eulachon that led to the *Sputc Project* as an example of this kind of management.

With the goal of taking care of “the Indian problem”, the *Indian Act* (1876) purposefully subjugated Indigenous bodies, eroded Indigenous knowledge systems, including governance and legal systems (Joseph, 2018; Manuel & Derrickson, 2015, 2017). The *Act* created the reserve system, effectively dispossessing Indigenous peoples of the majority of their ancestral territories (1876 - present). On the west coast, reserves consisted of tiny parcels of land, justified by the guarantee of First Nations fishing rights, which were quickly eroded (C. Harris, 2004; D. Harris, 2008). The *Act* also banned potlatches and other cultural ceremonies fundamental to Indigenous systems of governance and management (1884 – 1951) and forced children into assimilatory residential schools (1886-1996). By imposing an elected chief and council system (1869), the *Indian Act* undermined ancestral systems of governance, and denied women status, undermining their role in society and imposing patriarchal social values (Alfred, 2009; Joseph, 2018).

While often underlined in its central role in controlling Indigenous people and lands, the *Indian Act* is not the only means by which Indigenous people continue to be dispossessed from ancestral lands and waters. Founded in neoliberal values and assumptions, environmental management policies also result in enclosure and privatization of “resources” (including fisheries), which exclude Indigenous peoples from access or benefit while making the landscape “legible” (and therefore governable) to settlers (G. S. Coulthard, 2007; Pasternak, 2017; Pinkerton & Davis,

2015; Pinkerton & Silver, 2011). Several detailed accounts exist of the blatant enclosure of Canada's west coast fisheries by federal and provincial regulation (C. Harris, 2002; D. Harris, 2001, 2008; Newell, 1993) According to Canadian law, coastal fisheries fall primarily under the jurisdiction of the federal department of Fisheries and Oceans Canada (DFO), which has the responsibility to regulate and monitor access and allocation of fisheries and their benefits. For the most part, the current regime "continues to treat fisheries as if they were simply a commodity, rather than a multi-generational embodiment of culturally embedded values" (N. J. Turner et al., 2013). Among others, depletion of marine species, including salmon, rockfish, forage fish, and shellfish has been significant in the past decades (Eckert, 2017; Gauvreau, Lepofsky, Rutherford, & Reid, 2017; Moody, 2008; A. K. Salomon, Tanape Sr, & Huntington, 2007; von der Porten, Lepofsky, McGregor, & Silver, 2016), while the ecological integrity of coastal environments remains under threat.

Beyond indicating their role in the larger context of settler-colonialism (Alfred, 2005; Corn tassel, 2012), a relatively small literature explores the specific *instruments and mechanisms* of environmental management as the means to Indigenous dispossession and exclusion (e.g. DFO policy, *SARA*). In the context of marine environments in coastal BC, Douglas Harris' and Cole Harris' work on enclosure of Pacific Coast fisheries (C. Harris, 2002; D. Harris, 2001, 2008) and Evelyn Pinkerton's work on fisheries privatization (Pinkerton, 2015; Pinkerton & Edwards, 2009; Pinkerton & Silver, 2011) are informative, in that they are explicitly framed as processes of enclosure or dispossession. In addition to policies of enclosure and privatization, I also consider marginalisation in environmental decision-making to be a process of dispossession, alongside resulting ecological degradation and contamination. Practically speaking, the federal obligation to consult with First Nations is often poorly or symbolically executed, sidelining First

Nations priorities and involvement and integrating Indigenous knowledges (IK) into designated “traditional ecological knowledge” sections or marginalizing Indigenous peoples’ input through process and power relations. Indeed, many IK solicitation processes focus on acquiring knowledge in ways defined by external experts for use by external audiences (academics, policymakers). As a result, IK are often extracted, abstracted, and (mis)interpreted, without due attention to – or respect for - their foundations, authorities, or context (Castleden, Mulrennan, & Godlewska, 2012; Nadasdy, 1999). As extensively elaborated elsewhere, many knowledge solicitation and integration processes do not provide sufficient resources, time, and capacity to respectfully engage Indigenous knowledges and peoples (Bohensky, Butler, & Davies, 2013; Nadasdy, 1999; Smith, 1999), nor do they adequately involve or benefit Indigenous communities (Bohensky & Maru, 2011; Castleden, Sloan Morgan, & Lamb, 2012; Davidson-Hunt & Michael O’Flaherty, 2007; Nadasdy, 1999, 2003). Building on critical scholars’ work on power imbalances, inequitable processes, and epistemological opacity in environmental research and practice, I consider this disregard for the relationship of Indigenous people, IK, and ancestral lands and waters a form of dispossession.

Environmental management as collaboration

A second conception of environmental management as a collaborative process is increasingly emphasized in the context of mounting social-ecological change and uncertainty, and examples of initiatives genuinely seeking to foreground Indigenous peoples’ values, interests, and expertise are exploding (Artelle et al., 2018; Eckert et al., 2018; A. Salomon et al., 2018).

Various forms of collaborative, adaptive, and co-management theories and practices focus on Indigenous inclusion or participation in resource management processes, and/or integration of Indigenous knowledges into existing management frameworks (Adams et al., 2014; Bohensky & Maru, 2011; Bowie, 2013; von der Porten, de Loë, & McGregor, 2016). Such work is supported

by a broader scholarship in environmental governance and resilience, which has highlighted the institutions that support healthy, sustainable social-ecological systems, and found that adaptive management with a strong local element is often (though not always) preferable to hierarchical command-and-control regimes (Armitage et al., 2008; Berkes, 2009, 2012a; Levin & Lubchenco, 2008; Mahon, McConney, & Roy, 2008; Plummer, 2009; Plummer & Armitage, 2007; Plummer et al., 2012). A growing literature points to the importance of complex or polycentric arrangements, interactive networks, and partnerships that encourage knowledge-sharing and social learning between scales of social and institutional aggregation (Armitage & Plummer, 2010; Brondizio, Ostrom, & Young, 2009; Folke, Hahn, Olsson, & Norberg, 2005). This suggests “revolutionary” management processes merging multiple disciplines, objectives, approaches, and ways of knowing (Berkes, 2012a; Howitt & Suchet-Pearson, 2006), complex, holistic, and integrative institutional arrangements (Folke et al., 2005; Jentoft & Chuenpagdee, 2015; Kooiman et al., 2008; Olsson, Bodin, & Folke, 2010; Plummer et al., 2012), and exploratory, collaborative processes (Khan & Neis, 2010).

In theory, collaborative processes have the potential to support Indigenous influence in environmental management, including “research and practice that builds self- governance capacity” and “innovative and transformative collaborative processes led by Indigenous peoples” (Bowie, 2013; Latulippe, 2015b, p. 125; McGregor, 2004). Drawing on ecological, critical, or collaborative notions of IK (Latulippe, 2015b), those advocating collaborative or co-management generally hold an optimistic, long- term view to building integrative management institutions that benefit Indigenous communities (Whyte, 2013). They recommend supportive contexts, institutional transformations, and reframing of relationships to enable “real” participation by or collaboration with Indigenous people (Latulippe, 2015b).

However, despite good intentions, many such processes replicate the power relations they seek to address, often requiring Indigenous people to conform to state-dominated politics of recognition and reconciliation (Castleden et al., 2017; Nadasdy, 2003). Most current management institutions and associated bureaucracies, biases, and funding reinforce colonial relationships and maintain inequitable decision-making authority and power sharing (Bowie, 2013; Mulrennan, Mark, & Scott, 2012; Nadasdy, 1999, 2003; Stevenson, 2006; von der Porten et al., 2015). Current adaptive and co-management practices often insufficiently account for the relationships and political positionality of Indigenous people to the land in question, neglecting to recognize their privileged legal position vis a vis other stakeholders and actors (Alfred & Cornthassel, 2005; Castleden et al., 2017; Gregory, Failing, & Harstone, 2008; Nadasdy, 2005; Singleton, 2009; von der Porten & de Loë, 2014). Further, disparate actors' capacities to fully engage Indigenous ways of knowing result in their unintended re-marginalization in many management processes (Castleden et al., 2017). As such, "what could pass for progressive processes were instead deeply political truth claims, which assumed (and thereby reinforced) both the legitimacy of the Settler state as the rightful sovereign over land and waters and Western (i.e., scientific) knowledge over other knowledge systems" (Castleden et al., 2017, p. 7). Given this reality, adaptive and collaborative management are peripheral to this work, in part because the particular context of eulachon management has not employed them, but also in the spirit of highlighting the third perspective on environmental management, to follow.

Environmental management as resurgence: Indigenous leadership

A third perspective on environmental management highlights Indigenous decolonization, resurgence, and leadership, problematizing settler-colonial relations that seek to subsume Indigenous peoples and knowledges into state management institutions, underlining that there remain significant limitations to Nation-to-Nation engagement (Bowie, 2013; Kirby, 2017;

Nadasdy, 1999, 2003; Stevenson, 2006). This viewpoint, exemplified by the *Sputc Project*, recognizes that truly collaborative environmental management requires direction from strong Indigenous governance structures and protocols and retention of Indigenous knowledges by Indigenous people (Bowie, 2013; Kovach, 2009c; McGregor, 2004; von der Porten et al., 2015; Williams & Hardison, 2013). In addition to international (e.g. UNDRIP) and constitutional rights, such decolonising perspectives suggest disengaging from co-management contexts, insofar as they continue to assume that management authority is derived from the existing, singular (state) systems of governance, referencing a wider range of authority sources, including inherent rights and responsibilities, laws and knowledges.

Indeed, ancestral rights and responsibilities are increasingly supported by a rapidly evolving legal and policy context that is, to some degree, facilitating the implementation of First Nations' management visions based on Indigenous priorities, values, and knowledge systems (Artelle et al., 2018; N. J. Turner et al., 2008; Eckert et al., 2018; Capistrano & Charles, 2012; Allison et al., 2012; D. Harris & Millerd, 2010; Castleden, Garvin, & Nation, 2009b; Manuel & Derrickson, 2017). While First Nations' management priorities are often congruent with Canadian law and/or aligned with existing management institutions, some Indigenous interests have the potential to challenge Canadian authority (Bowie, 2013; Kirby, 2017; Low, 2018; von der Porten et al., 2019, 2015). Indigenous management authority (in relation to the state) is being asserted using a number of strategies, including: (1) enforcing existing provincial or federal laws; (2) encouraging voluntary compliance with local laws through education and communication; (3) negotiating management plans and protocols and self-governance agreements; (4) negotiating directly with industry; and/or (5) litigation or direct action, including protests and blockades (Bowie, 2013; Frid, McGreer, & Stevenson, 2016; Jones et al., 2016; Kirby, 2017; Klain et al.,

2014; Kotaska, 2013; Pinkerton & John, 2008; von der Porten et al., 2019). Indigenous people are working to articulate, revitalize, and protect Indigenous knowledge systems, including legal systems and related management processes, priorities, rights, and responsibilities (Bowie, 2013; Mills, 2016; Napoleon, 2007; Napoleon & Overstall, 2007; Thielmann, 2012; von der Porten et al., 2015), even if this challenges state management institutions.

As a result, Indigenous knowledges are being represented by and for Indigenous people in traditional, new, and hybrid forms. Beyond the academy, these works emphasize to various extents stories, images, laws, maps, and participatory process in the representation of particular Indigenous knowledges, histories, and perspectives (F. Brown & Brown, 2009; K. T. Carlson, 2001; Heiltsuk Nation, 2019; James & Alexis, 2018; William & Armstrong, 2015). This is where *Sputc Project* is situated; details regarding its place in the context of Indigenous management on the west coast are elaborated in the **Chapter 4 (Study context)**. The research presented here serves to share learnings and insights related to the resurgent processes and outcomes of the *Sputc Project*, and how they supported articulation of Indigenous knowledges and assertion of management authority.

Health and environmental management

In this section, I outline the broad landscape(s) of scholarship that inform my understanding of the connection between environmental management and Indigenous health and well-being, and seek to locate myself therein. In terms of the decolonising health equity framework proposed in **Chapter 2 / Figure 2**, I differentiate here between the more distal health determinant *branches* - which I understand to include dispossession, exclusion, and resurgence, environmental conditions and change -and the *stems*, which I understand to include the resulting relationships and connections, identities, roles and responsibilities. These intermediate health determinants

mediate the relationship between environmental management and individual health and well-being (the leaves of the tree), as visible manifestations of underlying structures, processes and relationships. Below, I briefly summarize literatures in (a) health impacts and outcomes in environmental management and (b) Indigenous health determinants, decolonization, and resurgence, setting up my argument for an explicit connection between environmental management and Indigenous health and well-being. This focus on health and well-being is specific to this doctoral research and constitutes a unique contribution of this dissertation.

Impacts and outcomes of environmental management and social-ecological change

The literatures in collaborative and Indigenous management (reviewed above) only marginally engage health and well-being impacts and outcomes. Implicitly, such endeavours are concerned with Indigenous benefit from both process and outcomes, and are instructive insofar as they engage management *processes*. Increasingly, Indigenous well-being is also explicitly included as a goal of co-management agreements (Low, 2018). However, engagement with Indigenous health and well-being outcomes primarily highlight vague “social” benefits of Indigenous involvement or leadership in environmental management (Adams et al., 2014). It has been suggested that Indigenous leadership in resource management and locally-determined stewardship practices may benefit community health and well-being in myriad ways (Amberson et al., 2016; Burgess et al., 2009; Burgess, Johnston, Bowman, & Whitehead, 2007; Donatuto et al., 2011; M. Greenwood & de Leeuw, 2007; McMillan & Prosper, 2016; Parkes, 2011; Ross, 2011), but the mechanisms by which they do so are unclear. The literature specific to this arena primarily connects stewardship and well-being through proximal or individual-scale factors, including physical activity, employment, and economic benefits (Low, 2018). For example, local involvement in environmental management has been found to support community health by

providing access to resources (money, food, information), building local skills, knowledge and capacity (Burgess et al., 2009, 2007). However, stewardship is also recognised to support essential cultural and spiritual practices, providing important connections to lands and waters (F. Brown & Brown, 2009; Parkes, 2013; Stephens et al., 2007).

A related literature in health impacts and assessment identifies myriad mediators of the relationships between Indigenous health and social-ecological conditions, changes, or impacts related to resource development and environmental management, change, or depletion (Biedenweg & Gross-Camp, 2018; Cunsolo Willox et al., 2011; Donatuto et al., 2016, 2011; Richmond et al., 2005). Increasingly, assessment frameworks are moving beyond narrow, individual-centered notions of health to include physical, psychological, social, cultural, spiritual, and economic domains of well-being at the community and/or environmental scale (Biedenweg, 2016; Biedenweg & Gross-Camp, 2018; Biedenweg, Stiles, & Wellman, 2016; Breslow et al., 2016). Those interested in Indigenous health draw on a broader scholarship interested in considering *social dimensions* or assessing *social outcomes* related to social-ecological change, devising methods to assess or value intangible, relational, and social-cultural elements of Indigenous and ecological well-being (Bodin & Tengö, 2012; Breslow et al., 2016; Chan et al., 2012; Gregory et al., 2016; Klain et al., 2017; Satterfield, Gregory, Klain, Roberts, & Chan, 2013; Satterfield et al., 2013).

However, an ongoing disconnect between health research frameworks and Indigenous peoples' lived experiences of environmental relationships points to the importance of developing local definitions of well-being (Amberson et al., 2016; Biedenweg et al., 2016; Donatuto et al., 2016; Gregory et al., 2016). In this realm, I am informed by several recent frameworks developed in collaboration with west coast First Nations to inform locally-appropriate well-being indicators

related to resource management (Biedenweg, 2016; Breslow et al., 2016; Donatuto et al., 2016; Gregory et al., 2016). Of particular relevance to this work, Jaime Donatuto and colleagues (2016) have developed a set of Indigenous health indicators and attributes in the context of ecological depletion (seafood contamination) (Donatuto et al., 2016; Donatuto, Grossman, Konovsky, Grossman, & Campbell, 2014). Their assessment framework includes the domains of *education* and *cultural use* with the attributes of respect/stewardship (of ancestral lands and waters), sense of place (including engagement in traditional resource-based activities, connection to ancestors) and practice. It also includes the domains of *natural resource security*, defined as “local natural resources (air, water, land, plants and animals) are abundant, accessible and support healthy ecosystems and healthy human community” (Donatuto et al., 2014, p. 359), and the domain of *community connection*, which includes the attributes of work, sharing, and relations (Donatuto et al., 2016, 2014).

While this and other related literature helpfully moves toward respectfully characterizing Indigenous peoples’ relationships to territorial lands and waters in the face of changing environmental conditions, it does not address upstream determinants or environmental management processes. Indeed, while some assessment frameworks include the domains of governance or self-determination, the definitions, uses, and scales of related terms vary widely. For example, recent assessment frameworks include the attributes of trust in government, public services and health programming, freedom and voice, sovereignty, legitimacy, transparency, access and enforcement, power and political participation or decision-making (Amberson et al., 2016; Biedenweg, 2016; Breslow et al., 2016; Donatuto et al., 2016; Gregory et al., 2016). As such, it seems that the mechanisms linking governance, stewardship, and well-being require some clarification in the area of health assessment.

Indigenous environment, health, and resurgence

The decolonising health equity lens outlined above positions settler-colonialism as the fundamental determinant of Indigenous health, with particular interest in the processes that re-create the conditions of inequity. Indigenous scholars emphasize that the institutions of settler-colonialism have caused profound disconnection of Indigenous people from ancestral lands and waters, from each other, and from what it means to be Indigenous. They underline **disconnection, exclusion, and dispossession** – as well as their antidotes, self-determination and resurgence – as key processes and conditions mediating the relationship between settler-colonialism and Indigenous health and well-being (Adelson, 2005; Alfred, 2009, 2009; Cornthassel, 2012; M. Greenwood & de Leeuw, 2007; Parkes, 2013; Richmond, 2015; Richmond & Ross, 2009; Simpson, 2014).

Above, I suggested that environmental management is a key mechanism of settler-colonial dispossession. Yet, in the realm of Indigenous health research, references to environmental management as determinant of health are relatively sparse - with some notable exceptions (Alfred, 2009; H. Brown et al., 2012; Richmond, 2015; Richmond et al., 2005). Chantelle Richmond (2015) suggests that “it is time to think more critically about dispossession of land as a root cause [of ongoing health crises]... and to uncover – or at least begin to conceptualise – the multiple meanings and functions that the land holds for First Nations peoples” (Richmond, 2015, p. 58). Seeking to understand environmental dispossession as an underlying cause of Indigenous health inequities, Richmond and Ross (2009) identify several pathways through which dispossession is understood to act, including: balance, life control, education, material resources, social resources, and environment/culture connection (Richmond & Ross, 2009). Turner *et al* (2008) detail *invisible losses* experienced by coastal First Nations as a result of persistent exclusion from decision-making in environmental management. Often “precipitated through

dramatic changes in the traditional use of a resource, including its extirpation”, these losses include: cultural/lifestyle, order in the world, identity, health, emotional/psychological, self-determination, knowledge, and opportunity costs (N. J. Turner et al., 2008). Meanwhile, Taiaiake Alfred identifies disorientation, disempowerment, discord, and disease as effects resulting from settler-colonial policies (Alfred, 2009).

As detailed in the IK section above, the relationships between land, culture, and identity are essential to understanding the impacts of disconnection and dispossession (Alfred, 2009; Corntassel, 2012; Richmond, 2015; Richmond & Ross, 2009). Indigenous scholars underline that connection to ancestral lands and waters provides the context for building and maintaining key relationships (e.g. with community, lands, waters, and ancestors), cultural practices (e.g. fishing and hunting), and related, roles, identities, and knowledges (Adelson, 2000; M. Greenwood & de Leeuw, 2007; M. Greenwood et al., 2015; McGregor, 2009a; Parkes, 2013; Simpson, 2017). By compromising connections that support every aspect of well-being, settler-colonial management regimes impose cultural risks that are *de facto* health risks (Donatuto et al., 2011). These compound existing inter-generational trauma and related collective “cultural wounds” (Chandler & Dunlop, 2015), exacerbating a “spiritual crisis” arising from the erosion of fundamental ways of being, including ethics of interconnection, respect, and responsibility (Alfred, 2009; Corntassel, 2012). As detailed below, resurgent scholars suggest that collective “cultural medicines” are the best remedy for these impacts (Alfred, 2009; Chandler & Dunlop, 2015; Corntassel, 2012; Simpson, 2008c; Tanner, 2009). Such factors are readily linked to a constellation well-recognised protective health factors when it comes to Indigenous physical and mental health, including cultural connectedness, cultural continuity, social connection, and

identity (Auger, 2016; Chandler & Dunlop, 2015; M. L. Greenwood & Leeuw, 2012; Loppie Reading & Wien, 2010; Snowshoe, Crooks, Tremblay, & Hinson, 2017).

Decolonising scholars emphasize that just as disconnection is the source of settler-colonial harm, its remedy is one of re-connection - to culture, community, identity, and place (lands and waters) (Alfred, 2005; Corntassel, 2012; Simpson, 2017). For example, Taiaiake Alfred proposes that the process of Indigenous regeneration should result in five effects: (1) restoration of Indigenous presence on the land and revitalization of lands-based practices; (2) increases in traditional diet; (3) inter-generational transmission of knowledge and spiritual teaching; (4) strengthening of family activities and Indigenous social-cultural institutions as governing authorities; and (5) sustainable land-based economies (Alfred, 2009, p. 56). Leanne Betasamosake Simpson similarly suggests a four-part strategy to enable the revitalization of Indigenous community, which involves addressing issues of funding, language revitalization, resurgent vision, and re-awakening of inter-Indigenous relationships (Corntassel, 2012; Simpson, 2008c).

In this work, I consider environmental management as a pathway through which structural, relational, and (de)colonial processes affect Indigenous well-being. While touching on literatures in health and well-being assessment, a focus on decolonising health equity prompts me to focus on *how* environmental management affects the production and distribution of health and well-being outcomes, with attention to the role of settler-colonial power structures and exclusionary processes as well as proximal cultural, relational, and cognitive pathways promoting Indigenous well-being. As such, I connect literatures in the determinants of health and health equity with those in research on social outcomes and health assessments related to resource management and governance. In so doing, I work to understand how upholding

Indigenous management knowledges, rights, responsibilities, and authorities can serve to address existing inequities.

4. Context

This chapter serves to provide some contextual background for both the *Sputc Project* and for this research. Since time immemorial, Indigenous knowledge systems have supported sustainable social-ecological relationships using sophisticated systems of governance, holistic values, and sophisticated management practices (Haggan et al., 2006; King, 2004; Lepofsky & Caldwell, 2013; N. J. Turner & Berkes, 2006). However, since colonization, the use and transmission of Indigenous knowledges by Indigenous peoples has been interrupted and undermined by assimilationist policies, dispossession from ancestral lands and water, and exclusion from related decision-making processes and institutions. With important consequences for Indigenous health and well-being, these social-ecological changes have been exacerbated by related resource extraction, industrial development, ecological depletion, and climate change (Dolan et al., 2005; Ommer, 2007). Below, I provide a brief history of the dispossession of BC's coastal First Nations, focusing on Central Coast First Nations (CCFN)¹, and in particular, the Nuxalk Nation. I then provide some background on the current management context on the central coast, reviewing a legal and policy context that promotes, to some extent, Indigenous authority. Following this, I provide a background on Nuxalk people and territory, and on Nuxalk eulachon values and management.

A brief history of CCFN dispossession

The region currently known as the central coast of British Columbia or the Great Bear Rainforest is home to the largest coastal temperate rainforest in the world (Coastal First Nations, 2019b; DellaSala et al., 2011), and a diversity of marine and terrestrial life, deep ocean inlets, glacier-topped mountains, rivers and streams, steep avalanche-cleared slopes and dense, mossy

¹ CCFN include Heiltsuk, Wuikinuxv, Kitasoo/XaiXais, and Nuxalk Nations.

rainforest. This varied landscape provides a range of habitats for plants and animals capable of providing a wealth of nutritious foods (Coastal First Nations, 2019b; Kuhnlein, Harvey, Burgess, & Turner, 2009), and a foundation of cultural and political strength for the Indigenous peoples that now identify as four First Nations (Heiltsuk, Wuikinuxv, Kitasoo/XaiXais, and Nuxalk), known collectively as the Central Coast First Nations (CCFN) (Marine Planning Partnership Initiative, 2019). CCFN relationship to ancestral lands and waters inform ancestral social, cultural, political, and legal systems that for generations have supported their sustainable use and stewardship for the benefit of all beings (Artelle et al., 2018; F. Brown & Brown, 2009; Haggan et al., 2006; King, 2004; Lepofsky & Caldwell, 2013; Trosper, 2002; N. J. Turner et al., 2008).

Nuxalkmc (Nuxalk people) once occupied several linguistically and culturally distinct areas within the central coast region (Nuxalk, Kw'ahna, Ista, Talyu/Ats'aaxlh, and Suts'lhmi) (McIlwraith, 1992), within a territory of 1,800,000 hectares (Nuxalk Nation, 2019b).

Archeological, geological, and deep historical records in the form of stories indicate occupation of this region soon after glaciation, with occupation of the outer coast now proven to have existed approximately 13,000 years ago (McLaren et al., 2018; McLaren, Rahemtulla, White, & Fedje, 2015). Unlike their coastal neighbours, *Nuxalkmc* are said to have arrived from inland or to have descended from the mountain tops (McIlwraith, 1992; Snxakila, 2014). Place-based, family-owned origin stories constitute the foundation of Nuxalk governance and management systems, relating *Nuxalkmc* rights and responsibilities as they relate to particular locations and resources. Indeed, it is difficult to talk about Nuxalk territory without referencing *Nuxalkmc* past and present, and related stories. While much of my own learning about Nuxalk territories, history, and culture was gained from my relationships with generous and patient Nuxalk friends

and colleagues², I am also informed by detailed ethnographic references include Boas (1898), McIlwraith (McIlwraith, 1992), and Kennedy and Bouchard (Kennedy & Bouchard, 1990).

Thirty to forty-five permanent villages were strategically located along steep inlets and rivers to benefit from seasonal marine and terrestrial abundance (Kennedy & Bouchard, 1990; McIlwraith, 1992; Nuxalk Nation, 2019b), with upwards of 10,000 *Nuxalkmc* living in the Bella Coola Valley alone when smallpox decimated the region in 1862 (Swanky, 2016). Over time, survivors from different areas of the region converged in the village of *Q'umk'uts* (Bella Coola), at the intersection of the Bella Coola valley and the North Bentinck inlet of the Pacific Ocean (Kuhnlein et al., 2009; Wild, 2004). Bella Coola was soon occupied by contingents from the Hudson's Bay Company (1867) and Anglican missionaries (1880s), while a wave of Norwegian settlers arrived to clear land in nearby Hagensborg (1894) (Nuxalk Nation, 2019b; Wild, 2004). By the turn of the century, as Canada claimed sovereignty over Nuxalk lands and waters, Nuxalk governance systems were contravened by a common-law, open-access system, which fed thriving primary resource extraction industries (D. Harris, 2001, 2008; Hilland, 2013). Large-scale interactive (social, economic, cultural, and ecological) restructuring in the region continued, accompanied by exclusionary social processes and political mechanisms that continue to marginalize coastal First Nations access to, and management of, ancestral lands and waters (Dolan et al., 2005; Green, 2007; D. Harris, 2001; Jones, Shephert, & Sterritt, 2004; Ommer, 2007). As detailed in **Chapter 3**, the *Indian Act* (1876) created the reserve system, banned potlatching, and opened residential schools. Along with the introduction of smallpox, these interventions are known to *Nuxalkmc* as the four modern catastrophes (Snxakila, 2014). As

² See acknowledgements.

such, the Indian Act effectively dispossessed *Nuxalkmc* of the majority of their ancestral territories while undermining ancestral governance systems.

Over the following decades, environmental management policies exacerbated the impacts of exclusionary and assimilationist social and political policy (Alfred, 2009; Manuel & Derrickson, 2017). On the coast, reserves consisted of tiny parcels of land, justified by the guarantee of First Nations fishing rights on “public” waters, which were quickly eroded (D. Harris, 2008).

Adjacent fisheries, were subsumed by private license and quota management systems that tended to concentrate capital in the hands of an elite minority (D. Harris, 2001, 2008; Pinkerton & Edwards, 2009). Coastal fisheries were enclosed, cadastralised, and privatized through the introduction of quota systems and limits on Aboriginal fishing rights. Before long, extraction of ocean and forest resources was in full swing, with canneries and logging practices flourishing throughout the region, for the benefit of settler-colonial political economies. While local First Nations actively participated in the new colonial economy as fishers and labourers, this enclosure effectively excluded coastal peoples, including *Nuxalkmc*, from accessing or protecting local resources (D. Harris, 2001, 2008). Since this original dispossession, state management institutions, biases, and bureaucracies have replicated and reinforced settler-colonial interests, such that First Nations have continued to be excluded or marginalised in decision-making related to ancestral lands and waters (D. N. Edwards, Scholz, Tamm, & Steinback, 2005; D. Harris, 2001; D. Harris & Millerd, 2010; King, 2004; Manuel & Derrickson, 2015, 2017; Ommer, 2007; Pinkerton & Edwards, 2009).

Current management context: Unceded territory, relinquished authority

While the section above highlights losses and dispossession, this section underlines that settler-colonial mechanisms of control and domination were not entirely effective in eradicating

Nuxalkmc systems of knowledge, law, and authority in this region. Having never signed treaties with the Canadian government or otherwise relinquished territorial authority, ancestral lands and waters throughout this region are considered by *Nuxalkmc* to be unceded. *Nuxalkmc* relationships with ancestral lands and waters remain uninterrupted, and related systems of governance, law, management and protection that preceded the imposition of Canadian jurisdiction continue to be in effect (Hilland, 2013; Nuxalk Nation, 2019a). In myriad ways, *Nuxalkmc* are working to strengthen and uphold ancestral systems of government and culture by reconnecting people to the land, and asserting rights and responsibilities to manage ancestral territories according to local knowledges and priorities (Noisecat, 2018).

To some degree, coastal First Nations' implementation of management rights and responsibilities are facilitated by an evolving policy and legal context (Artelle et al., 2018; Eckert et al., 2018; Low, 2018; Manuel & Derrickson, 2015, 2017; N. J. Turner et al., 2008), at times forcing the hand of state institutions or negotiating Nation to Nation agreements with the Crown (Jones et al., 2016; Low, 2018; von der Porten et al., 2019). Supreme Court decisions³ have systematically upheld Aboriginal rights and title, including the rights use and manage ancestral lands and waters. For example, the Supreme Court's Tsilhqot'in decision granted the Nation title to 1700km of land within its traditional territory, including both "the right to decide how the land will be used" and "the right to pro-actively use and manage the land", effectively affirming Tsilhqot'in management rights and responsibilities (Schabus, 2014).

Evolving policy frameworks and agreements also increasingly support coastal First Nations' management authority (Curran, 2017; Low & Shaw, 2011). In particular, reconciliation

³ Including Calder (1973), Sparrow (1990), VanDerPeet (1996), Delgamuukw (1997), and Tsilhqot'in (2014).

agreements provide a means to acknowledge Indigenous rights, avoid legal conflicts, and shift “regional decision-making agency toward Indigenous governments in both co-management and government to government processes” (Adams et al., 2014, p. 3). Such agreements “aim to explicitly address economic, social and ecological objectives, and realize tangible benefits for Indigenous communities” (Low, 2018, p. 42) and “focus on closing the socio-economic gaps that separate Indigenous people from other British Columbians, and building a province where its citizens can participate in a prosperous economy” (Province of British Columbia, 2019). Of relevance here are *Coastal First Nations Reconciliation Protocol* (2009) and *Amending Agreement* (2016) with the province of BC and the *Reconciliation Framework Agreement for Bioregional Oceans Management and Protection* (2018) with the federal government. Signed by the Coastal First Nations (CFN)⁴, the former established a new Nation-to-Nation relationship between First Nations and the province, and now includes a shared decision-making framework to support ongoing implementation, which is sustainably funded through a carbon offset program (Coastal First Nations, 2019a; Coastal First Nations & Government of British Columbia, 2016; Low, 2018). According to the Canadian Prime Minister’s office, the latter reconciliation agreement “supports the collaborative planning, implementation, and integration of existing and proposed marine planning initiatives”, promoting “a more coordinated and efficient approach to the governance, management, and protection of oceans in the Pacific North Coast, including marine ecosystems, marine resources and marine use activities” (Prime Minister’s Office, 2018). Through these agreements and concurrent efforts, a conservation-based economy is envisioned by coastal First Nations, including the Nuxalk Nation (Coastal First Nations, 2019e). CFN have

⁴ CFN is an alliance of nine First Nations on British Columbia’s North Coast (Metlakatla, Gitga’at) and Central Coast (CCFN) and Haida Gwaii (Coastal First Nations, 2019c).

established local integrated resource management offices, including the Nuxalk Stewardship Office, and are developing capacity within their communities for stewardship, monitoring, conservation, and restoration based on local priorities and practices. Meanwhile, full-time guardian watchmen are employed to monitor and protect ancestral lands and waters through the Coastal Stewardship Network (Coastal First Nations, 2019d; Nature United Canada, 2019; Tides Canada, 2019), increasing authority to uphold ancestral laws and priorities (Kirby, 2017; Kotaska, 2013).

CCFN's management capacity is also supported by bridging organizations like the First Nations Fisheries Council (FNFC) (First Nations Fisheries Council, 2019) and the Central Coast Indigenous Resources Alliance (CCIRA) (Central Coast Indigenous Resource Alliance, 2019).

At the provincial level, the FNFC supports “full recognition and implementation of rights and title with regards to all aspects of aquatic resource management and sustainable harvesting” through four priorities: sustainable fisheries, capacity development, economic performance, and strategic outreach. The current FNFC strategic plan's (2015) mandate includes: advancing and protecting First Nations' rights and title, building and maintaining capacity related to fishing, planning, policy, law, management and decision-making; and facilitating discussions “related to the development of a British Columbia-wide, First Nations-based collaborative management framework that recognizes and respects First Nations jurisdiction, management authority and responsibilities” (First Nations Fisheries Council, 2015). Meanwhile, CCIRA has facilitated the development of a harmonized *Central Coast Marine Plan* (2015) that envisions increased First Nations' access to and benefit from coastal resources, taking up the call for an adaptive, ecosystem-based management approach informed by traditional and scientific knowledge (Marine Planning Partnership Initiative, 2015).

This dynamic and somewhat ambiguous governance context is creating renewed opportunity for CCFN leadership and self-determined initiatives in coastal management (Eckert, 2017; Frid et al., 2016; Gauvreau et al., 2017; Klain et al., 2014; von der Porten, Lepofsky, et al., 2016), and a movement toward collaborative, Nation-to-Nation decision-making, if not outright Indigenous management authority (Jones et al., 2016; Kotaska, 2013; Low, 2018; von der Porten et al., 2019). As a result, *Indigenous knowledges* (IK) are playing an ever-increasing role in environmental management in the region, both as employed by coastal First Nations (Adams et al., 2014; Eckert, 2017; Frid et al., 2016; Gauvreau et al., 2017; Jones, Rigg, & Lee, 2010; Klain et al., 2014; von der Porten, Lepofsky, et al., 2016), and as engaged by other decision-makers (Artelle et al., 2018; Eckert et al., 2018; A. Salomon et al., 2018). *Nuxalkmc* and neighbouring Nations are taking their places as legitimate stewards of ancestral waters by rebuilding and formalising traditional forms of management (Jones et al., 2010; Kirby, 2017; Kotaska, 2013) and implementing management practices based on locally-derived values, laws, and institutions (Adams et al., 2014; Eckert, 2017; Frid et al., 2016; Gauvreau et al., 2017; Jones et al., 2016; Klain et al., 2014; Pinkerton & John, 2008; von der Porten, Lepofsky, et al., 2016). On the west coast of BC alone, there are several examples of First Nations-led management of lands and waters, including conservancies in the Great Bear Rainforest (K. Turner & Bitonti, 2011), co-management of Gwaii Haanas National Park (Jones et al., 2010), First Nations-led management of Tla-o-qui-aht Tribal Park (Murray & King, 2012), and restoration of clam gardens in Salish Sea (Augustine & Dearden, 2014), and management planning agreements founded on shared jurisdiction (Low, 2018). Coastal First Nations have successfully challenged federal management authority on the water by exercising inherent and constitutional rights to fish and manage marine resources (Frid et al., 2016; Klain et al., 2014; Low, 2018; von der Porten,

Lepofsky, et al., 2016). Among others, the Heiltsuk Nation was successful in closing a commercial herring fishery using blockades and occupation of federal space (Low, 2018; von der Porten, Lepofsky, et al., 2016), while the nearby Kitasoo/XaiXais Nation as closed crab and sea cucumber fisheries by demanding voluntary compliance with local laws by commercial fishers (Frid et al., 2016; Klain et al., 2014). Meanwhile, Nuuchahnulth Tribal Council and Haida Nations have won injunctions against DFO-sanctioned commercial herring roe fisheries in their ancestral territories (Jones, Rigg, & Pinkerton, 2016; von der Porten, Cornthassel, & Mucina, 2019; von der Porten et al., 2019; von der Porten, Lepofsky, McGregor, & Silver, 2016).

In a remote and dispersed geographic context, the state's capacity to monitor and uphold federal environmental and fishing regulations is limited; management efficiency would be increased by sharing power with local authorities (Kirby, 2017; Kotaska, 2013). However, as evidenced by recent conflict related to oil and gas pipelines and transport (Bracken, 2019; Kung & Smith, 2019), the state's recognition of Indigenous rights in this region is far from complete. "For now, the contours of the norms for this new dance are being drawn faster on the ground than the pens of intellectuals and the rhetoric of the political classes can bear" (L. Axworthy and W. Kinew (2014) in (Von Der Porten et al., 2016, p. 68)). Given that the state's commitment to reconciliation is a work in progress, ongoing pressure and presence is required on the ground and in management decision-making.

Nuxalk well-being

Today, *Nuxalkmc* constitute over half of the Bella Coola valley's residents, with approximately 800 *Nuxalkmc* living on reserve land in *Q'umk'uts* village (Bella Coola) and nearby *Snxlh* (Four-mile) (Government of Canada, 2017). Several settler communities, as well as about thirty geographically dispersed recreational lodges and tourism operations have settled the central coast

region, with varied levels of permission from Indigenous rights holders. Bella Coola remains a relatively remote community, accessible by plane, ferry, or road (Highway 20), with a six-hour drive away to the nearest traffic light (in Williams Lake, 420 km to the east). Economically, communities continue to benefit to some degree from fishing, logging, and marine transportation. However, the region's resource-extraction economy has decreased substantially the 1990s. Nuxalk livelihoods, as well as those of many settler neighbours, continue to be connected to ancestral lands and waters through the practices of fishing, hunting, and harvesting, supporting a rich informal economy.

Objectively, health statistics related to *Nuxalkmc* are difficult to come by; as part of the Central Coast Regional District, health services are administered by Vancouver Coastal and First Nations Health Authorities. However, local studies indicate that *Nuxalkmc* experience higher than average rates of chronic disease, including diabetes (Barton, Thommasen, Tallio, Zhang, & Michalos, 2005; Patenaude, 2006; Thommasen & Zhang, 2006), overweight (Self, Birmingham, Elliott, Zhang, & Thommasen, 2005), and conditions reflect compromised immune systems that relate to nutrition and lifestyle factors (Kuhnlein, Fediuk, Nelson, Howard, & Johnson, 2013). *Nuxalkmc* also appear to experience disproportionate alcohol and drug use, and low assessment of quality of life (Barton et al., 2005; Thommasen, Hanlon, Thommasen, & Zhang, 2006). In the *First Nations Food, Nutrition, and Environment Study* survey (2009), only 25 percent of Nuxalk participants rated their health as "excellent or good" in contrast to 62 percent of Canadians aged twelve years and older (Kuhnlein et al., 2013). In terms of regional-scale determinants of health, education rates are low, while crime and poverty rates are some of the highest in the province (BC Stats, 2012), as are rates of food insecurity (Social Planning and Research Council of British Columbia, 2014). Unemployment rates are high and median incomes are half that of the rest of

the province (BC Stats, 2012; Robinson Consulting and Associates, 2012). Over half of the region's workers employed in a faltering marine sector (D. N. Edwards et al., 2005; Weicker, 2009), while in Bella Coola, where the majority of employment exists in public service, with increasingly prospects for employment in tourism (BC Stats, 2012).

My own observations over five years in the community, the harms of past and present colonialism continue to affect the well-being of *Nuxalkmc* people (Barton et al., 2005; Kramer, 2011). Inter-generational trauma and its effects are ever-present, manifesting in high levels of drug and alcohol abuse, physical abuse, family conflict, despair and hopelessness. The extent to which trauma affects everyday life, relationships, and resilience in the Nuxalk community is difficult to conceive of, let alone address (Linklater, 2014). The following excerpt is adapted from my fieldnotes (2017):

It's not only old people who die in Bella Coola. Although when they do, it is particularly tragic, as they take with them irreplaceable stores of culture and language. But also, young people die. And people die young. Youth, of suicide, homicide. Adults and middle-agers, of drug overdoses and mysterious causes, of chronic diseases and cancer.

LH recently shared a story about a kid attending a community Christmas feast asking "who died?" There are so many funerals. Indeed, the sputc feast was greatly celebrated in part because of its positive focus, despite the fact that it was celebrating a disappeared species.

My colleague keeps a maudlin record of yearly deaths in the community, highlighting elders and youth. Memorial mugs with photos of beloved relatives are the mainstay of

peoples' coffee breaks. There are always "too many deaths". It's always "too much".

Death hits the entire community, hard and often.

The impacts of social-ecological changes associated with settler-colonial priorities on Nuxalkmc relationships to ancestral lands and waters have been detailed extensively, including in Janet Winbourne's (1998) dissertation on salmon fisheries policy (Winbourne, 1998); Jennifer Kramer's dissertation and book (2011) on cultural ownership and identity (Kramer, 2011); and Sarah Burke's thesis (2010) on Nuxalk fisheries participation and social capital (Burke, 2010). Most impactful for the community, however, was the *Nuxalk Nutrition Project*, which worked to address the ongoing erosion of the use of traditional foods in the 1980s (Kuhnlein et al., 2013, 2009). The project highlighted social-ecological changes, including "enduring marginalization, poverty, and discrimination, along with constant environmental threats to Indigenous peoples' land and cultural resource base, which limits their access to healthy foods and heightens the risk of loss of heritage and identity" (Kuhnlein et al., 2013, p. 159). These changes had resulted in a dramatic dietary shift toward less nutritious, higher-calorie foods (Kuhnlein et al., 2013, 2009), a phenomenon known to increase prevalence of obesity and chronic diseases among Indigenous people (Kuhnlein & Receveur, 1996). This community-based project intended to document past and current Nuxalk food systems, and to use these food systems for health promotion, stressing the positive aspects of a traditional, lands-based diet (Kuhnlein et al., 2013, 2009). The *Nuxalk Nutrition Project* and its locally cherished products, *Nuxalk Food and Nutrition Handbook* (Nuxalk Food and Nutrition Program Staff, 1984) and the recipe book *Kanusyam a Snknic* (Nuxalk Food and Nutrition Program Staff, 1985), served as an example and touchstone for the *Sputc Project*.

While I have yet to find a term or framework to capture Nuxalk notions of health and well-being – not the goal of this dissertation – I draw on the Nuxalk notion of *tl'mstaliwa*, which approximates the notion of self-realisation, or the goal of living a full life, and of *kalhcmawastsut*, which refers to gathering one's spirit back. While *Nuxalkmc* refer to a medicine wheel with physical, emotional, intellectual, and spiritual quarters, this model does not originate in this region (Snxakila, 2018). However, *Nuxalkmc* are now researching and applying community-specific protective factors and determinants of health approaches (Dennis, 2018). Like other culturally-specific concepts of Indigenous health (Adelson, 2000; Holly Graham & Martin, 2016; Richmond, 2015), Nuxalk notions of health are inherently connected to territory and governance, and to community. Community catch-phrases that have risen to prominence and/or gained traction among indicate the importance of togetherness, connection, and harmony: *smaw ti slq'ilh* “one heart and one mind” and *iixsa ti mutilh* “we are medicine for each other” were the chorus featured in a song by Nuxalk youth (Nwe Jinan, 2016). Snxakila (Clyde Tallio) emphasizes that wellness is directly connected to governance; in order to reclaim management authority, *Nuxalkmc* need to re-learn what it means to be *Nuxalkmc*, enacting and practicing the relationships and structures that form the fabric of their social and political system. This requires lands-based presence and practice, and capacity to engage systems of ancestral governance. Being Nuxalk means taking ownership of one's own stories, and that means going through the four stages of Nuxalk life, properly and ceremoniously honoured to uphold relationships and responsibilities (Snxakila, 2014). As detailed in **Paper 1**, *Nuxalkmc* consider eulachon an essential part of “being Nuxalk”; the next section provides a background on this important relationship.

Nuxalk Eulachon

Sputc: Nuxalk eulachon values and management

Sputc is the Nuxalk word for eulachon, a small anadromous smelt that spawns in glacial-fed rivers in each of the four regions that constitute Nuxalk territory. The first fish to return after winter, eulachon have been called “salvation” or “starvation” fish, as they arrive when all other food sources – for humans and other beings – remain scarce (Moody, 2008). Eulachon are prized for their high oil content and use in the production of *sluq*’ or “grease”, a highly valued food and condiment that is traded throughout the province (Kuhnlein, Harvey, Burgess, & Turner, 2009; Kuhnlein, Yeboah, Sedgemore, Sedgemore, & Chan, 1996). Exceedingly nutritious, eulachon grease contains meaningful amounts of protein, calcium, and vitamin A, E, and K and a good balance of fats (Kuhnlein et al., 1996). A cultural keystone species (Garibaldi & Turner, 2004), eulachon remain vital to Nuxalk well-being, culture, and identity (Haggan, 2010b; Moody, 2008). Several have underlined the health and social values associated with eulachon, including their high nutritional value and use as a daily food, their economic value and use as a trade commodity, and their social value in bringing families together and giving reason to celebrate after a long winter (G. T. Edwards, 1978; Moody, 2008; Wild, 2004). However, the value of this precious fish still seems to be under-appreciated and knowledge of it localized. In the context of the *Sputc Project*, described below, this value and related knowledges are the focus of **Papers 1** and **3** respectively.

Until recently, *Nuxalkmc* sustainably stewarded local eulachon based on ancestral systems of knowledge and governance entrenched in broadly integrated social, cultural and economic protocols and practices (Hilland, 2013; Moody, 2008). For *Nuxalkmc*, eulachon management is part of a holistic social, cultural, legal, and spiritual governance system connecting families to traditional territories. While some traditional laws around eulachon management have been

recorded on the BC coast (Haggan, 2010b; Moody, 2008), there was no written record or collective understanding of ancestral management practices in Nuxalk territory when the *Sputc Project* began.

Before colonisation, eulachon runs were so abundant that the fish could be scooped up by hand. While it is difficult to be sure of their original abundance, it has been estimated that thousands of tonnes of eulachon were harvested each year (Moody, 2008). During the past century, a gradual decline in returns was observed in Nuxalk territory and throughout the coast, causing some concern among *Nuxalkmc* by the early 1990s. Attributing the changes to degraded environmental conditions and fishing technologies, *Nuxalkmc* responded to run declines by regulating in-river activities and disturbances, banning motor boats and float planes (Moody, 2008). Unfortunately, this action was insufficient, and the return of eulachon was beyond Nuxalk control: in 1999, eulachon failed to return to the Bella Coola River, and have not re-appeared in harvestable numbers since. Megan Moody (2008) explores possible reasons for the eulachon' local extirpation, and points to the probability of the crash being caused primarily by high by-catch mortality during an unprecedented shrimp trawl opening in the Queen Charlotte Strait in 1996-98, and exacerbated by complex climate change effects (Central Coast Indigenous Resource Alliance, 2016; Moody, 2008). Estimates of eulachon bycatch in this region are of approximately 90 tonnes (Hay, Harbo, Clarke, Parker, & McCarter, 1999), mirroring the entirety of the Bella Coola run in recent years (Moody, 2008). Although the area has now been closed to shrimp trawling and additional bycatch reduction devices and limits have been imposed, conservation action by the state has been slow, and limited in its engagement of *Nuxalkmc* input and expertise despite repeated calls for action (Senkowsky, 2007).

Eulachon provide an excellent example of ambiguous and contestable state jurisdiction, and fertile grounds for assertion of Indigenous (in this case, Nuxalk) management authority (Hilland, 2013). Because eulachon are commercially insignificant to the settler-colonial political economy, little attention has been paid to their management by the state, except in more populated the Fraser River (Fisheries and Oceans Canada, 2018). As such, *Nuxalkmc* see the federal fisheries management system as having failed in its fiduciary duty to protect eulachon, and mistrust ongoing regulatory processes that have the potential to undermine ancestral Nuxalk eulachon management authority (Hilland, 2013).

Listed as endangered by COSEWIC (Committee on the Status of Endangered Wildlife In Canada) in 2011 (Committee on the Status of Endangered Wildlife in Canada, 2011), eulachon are still (as of publication, 2019) in the processes of being considered for listing under *Schedule 1* of the federal *Species At Risk Act* (SARA, 2012). SARA is one of the main tools the Canadian state uses to carry out its obligations under the United Nations Convention on Biological Diversity, affirming the Government of Canada's commitment to prevent, recover, and manage extirpated, endangered or threatened species. However, it also has the potential to infringe on First Nations' rights according to *Section 35(1)* of the Canadian *Constitution*, with implications for Nuxalk eulachon use and stewardship (Hilland, 2013). As detailed in Paper 4, First Nations leadership have expressed concerns about the SARA listing process thus far, which appears to have been fractured, technical, and in general, insufficient. While incorporation of Aboriginal Traditional Knowledge (ATK) is an explicit priority of the SARA process in theory, and is supported by a number of draft policy documents, all parties agree that the communication and integration of ATK in this process is underdeveloped (First Nations Fisheries Council (FNFC), 2013; UVic Environmental Law Clinic, personal communication, December 14, 2012). With *de*

facto stewardship of eulachon by *Nuxalkmc* uninterrupted since colonization, the Nuxalk Nation continues to hold and assert inherent rights to manage eulachon according to ancestral knowledges and practices (First Nations Fisheries Council (FNFC), 2013; Hilland, 2013).

Nuxalkmc legal scholar Andrea Hilland (2013) details the governance context, including legal and jurisdictional conflicts, that led to the Nuxalk eulachon's demise. She highlights limitations to the constitutional protection of Aboriginal rights and the case laws that have addressed them as they relate to the restoration and enhancement that is currently required to bring back the eulachon (Hilland, 2013).

Nuxalk eulachon provide a vivid example of how coastal decision-making by the Canadian state has degraded essential Nuxalk lands and waters, and compromised related social-cultural practices and knowledges (Haggan, 2010b; Hilland, 2013; Moody, 2008). Kuhnlein (2013) reports that by 2009 (as compared to 1981), consumption of eulachon had gone down from 75% to 42% of Nuxalk households – doubtless on account of their lack of availability – but eulachon grease had gone up from 46% to 65% (Kuhnlein et al., 2013). Over time, eulachon have remained highly appreciated foods by *Nuxalkmc*, alongside spring and sockeye salmon, herring roe, and crab (Kennedy & Bouchard, 1990; Kuhnlein et al., 2009). After almost twenty years without eulachon, related values, benefits and knowledges have been weakening (Hilland, 2013; Moody, 2008), and Nuxalk elders fear that future generations are in the process of losing their connection to this invaluable fish (Senkowsky, 2007).

The Sputc Project

Since the disappearance of eulachon, Nuxalk community members, stewardship direction, and regional leadership have been demanding action based on Nuxalk management priorities and authority (Senkowsky, 2007). *Nuxalkmc* have additionally become experts in eulachon science

and monitoring, leading independent studies on eulachon abundance and biology in Nuxalk territory since 2001 (Moody, 2008). In 2013, a small run of eulachon (100s, not 100,000s) returned to the Bella Coola river. Alongside a widespread concern about the loss of eulachon-related knowledges and rights, this return highlighted the need for *Nuxalkmc* to document and articulate remaining eulachon knowledges, including management laws, values, and practices, for application by *Nuxalkmc* for the purposes of local eulachon stewardship. To address these needs, the *Sputc (Eulachon) Project* was initiated and led by the Nuxalk Nation's Stewardship Office.

As a doctoral candidate without prior ties to the community, I was invited to coordinate the *Sputc Project* by the Nuxalk Stewardship Office director and First Nations fisheries management leader, Ts'xwiixw (Megan Moody). The goals of the *Sputc Project* included: (1) documenting and sharing ancestral knowledge about eulachon history, values, management with *Nuxalkmc*; (2) engaging *Nuxalkmc* and moving toward community consensus on eulachon management priorities; and (3) learning about, upholding, and applying Nuxalk governance and decision-making structures and processes. From its inception, the *Sputc Project* was intended to be informed by Nuxalk ways of knowing, including cultural teachings, ancestral decision-making practices, and governance protocols. Further, the knowledge produced by the project was intended for use by *Nuxalkmc* – including managers, leaders, educators, and the community at large - and focused on documenting, interpreting, articulating, representing, and sharing Nuxalk knowledge in a manner congruent with Nuxalk knowledge systems. Megan initiated and directed the project as well as hosted community and organized events, while I coordinated its technical and practical aspects, including organising advisory committee meetings and helping to coordinate community events, conducting interviews, documenting and organising emerging

knowledge, co-writing summary text, interpreting and representing knowledge based on project team and community input, book design and layout. The Nuxalk Stewardship Office leadership and collaborators concurrently engaged in a number of resurgent eulachon-related activities. During the time of the eulachon run, an annual eulachon ceremony was initiated in 2014, including the raising of a welcoming pole that is a point of communion and pride among community members. Additionally, a series of knowledge-sharing workshops with neighbouring eulachon Nations, and the revival of educational grease-making camps re-established long-standing relationships and revived ancestral practices. This context served as a foundation for the *Sputc Project*, and for my research. The *Sputc Project* was also an exercise of *Nuxalkmc*'s inherent authority to manage, protect and restore eulachon. In this research, I position the project as a means to support community well-being, at once an expression of political self-determination, and a means to Indigenous resurgence.

PART B. METHODOLOGY

In the following three chapters, I present the research methodology used in the generation of the research papers that constitute the body of this dissertation. After defining key terminology below, **Chapters 5 – 7** cover research theory and approach, personal location/position, and research methods, respectively.

Due to the nature of this work, I have reflected a great deal on how knowledge is (re)generated and represented. Methodology is where knowledges and powers are reinforced or contested, sometimes in subtle ways, reproducing or resisting affronts to social and ecological justice and related inequities. Whether knowledges are generated through the application of the scientific method (positivist paradigm) or through the engagement and creation of relationships (Indigenous paradigm) has important implications for research outcomes and influence. For a long time now, “Indigenous peoples have insisted that they are ‘researched to death’, that research continues to be ‘about’ as opposed to ‘with’ or ‘by’ them, and that their stories are being ‘stolen’” (de Leeuw, Cameron, & Greenwood, 2012, p. 184). Indigenous scholars have challenged the extractive, exploitative, and pathologizing aspects of research, underlining how distinct Indigenous epistemologies are poorly served by Western systems of knowledge (Brant Castellano, 2004; Nadasdy, 1999; Smith, 1999). As a result, academic researchers are employing a diversity of approaches to redress past harms and create change.

In this dissertation, I use the term **methodology** to refer to the means by which knowledge is (re)generated through documentation, assessment, interpretation, articulation, and sharing or representation. I choose to use these terms rather adapting terms derived from more positivist paradigms, which tend to focus on knowledge as an abstract, unaffiliated object (e.g. data collection, analysis, results, and dissemination). Knowledge **documentation** refers to the

methods by which knowledges are gathered for the explicit purposes of knowledge (re)production and representation. **Assessment** is the often implicit process of framing or of deciding what knowledges are relevant. I use the term **interpretation** or meaning-making instead of the concept of analysis (which foregrounds researcher authority and objectivity), in order to emphasize the subjective nature of truth and knowledge (Kovach, 2009b). I use the term **articulation** to refer to the clarification and summary (in written or oral form) of existing knowledges, while knowledge **sharing** implies an iterative, two-way process of co-learning within the community. Meanwhile, I use the term **representation** to refer to the complex processes and decisions related to how knowledges are shared both within and beyond the community. Alongside Sarah de Leeuw and colleagues (2012), I might add “controlling” to this list (de Leeuw et al., 2012), in recognition of the principles of OCAP (ownership, control, access, and possession) that aim to address related issues in Indigenous research (First Nations Information Governance Centre, 2014; Schnarch, 2004). I use the term knowledge **solicitation** to refer to processes whereby Indigenous knowledges are requested or extracted for external use or external purposes. Depending on how it is conducted, research can be a form of knowledge solicitation - but is not necessarily so. Other forms of knowledge solicitation include journalism and documentary production (Housty, 2016; Smith, 1999), symbolic consultation by industry and government (Nadasdy, 1999), and knowledge integration processes (Bohensky et al., 2013; Bohensky & Maru, 2011; Nadasdy, 2003).

In the chapters to follow, I lay out the interrelated aspects research theory and approach, positionality, and methods employed in this doctoral research, as informed by Indigenous methodologists (Absolon, 2011; Kovach, 2009c, 2017; Smith, 1999; Smith et al., 2016; S. Wilson, 2008), resurgence scholars (Alfred, 2005; Alfred & Corntassel, 2005; Asch et al., 2018;

Corntassel, 2012; Corntassel et al., 2018; Simpson, 2008a, 2017), decolonising scholars (de Leeuw & Hunt, 2018; Tuck & Yang, 2012), and community-based researchers (Castleden, Sloan Morgan, et al., 2012; de Leeuw et al., 2012).

5. Research theory and approach

This section details the research theories and approaches that informed how this doctoral research was conducted. In so doing, it serves the purpose of “conceptual framework” outlined by some methodologists, in that it intends to make visible my beliefs about knowledge (re)production (Kovach, 2009c; Potts & Brown, 2005). This work is founded in critical theories and decolonising perspectives, and informed by a project engaging Indigenous theories (the *Sputc Project*). These perspectives inform an iterative, interpretive, community-engaged approach to research (Charron, 2012). As depicted in **Figure 3**, I consider community-engaged and Indigenous methodologies to be overlapping approaches; each may (or may not) have decolonising objectives (Evans, Miller, Hutchinson, & Dingwall, 2014; Kovach, 2009c, p. 31). Drawing on critical and Indigenous theories, this dissertation is aligned with community-engaged research approaches, while the *Sputc Project* is aligned with Indigenous research approaches. The research described here took place over the course of over four years of the *Sputc Project* (detailed in **Chapter 4**) and was originally conceived as a distinct add-on to the project, using some of the same resources and materials. However, as my integration into the project became central to the learning that informed this dissertation, this distinction was diminished. I see my research approach and intents as being most closely mirrored in a research framework elegantly articulated by Elizabeth Carlson (2016). Her framework that combines many of the important elements of IM and CBPR, outlining eight principles of anti-colonial research methodology for settler researchers: (1) resistance to and subversion of settler colonialism; (2) relational and epistemic accountability to Indigenous peoples; (3) land/place engagement and accountability; (4) egalitarian, participatory, and community-based methods; (5) reciprocity; (6) self-

determination, autonomy, and accountability; (7) social location and reflexivity; and (8) wholism (E. Carlson, 2016).

Below, I briefly review critical theories, Indigenous theories, and decolonising perspectives and explore how they inform community-engaged and Indigenous research approaches. I then return to how these theories and approaches relate to my work, pointing to three guiding principles that guided it (relational accountability, respectful representation, and reflexivity).

Critical and Indigenous theories

Critical and anti-oppressive **research theories** emphasize that one's choice of research methodology, and related privileging of knowledge sources and epistemologies, is political (L. Brown & Strega, 2005). Critical theorists (re)produce knowledge by addressing power differentials, interrogating who interprets, prioritizes, and owns research products. Ultimately, employing critical theories involves a fundamental engagement of assumptions about who produces knowledge, for whom, how, and for what purposes. In particular, critical theories demand that we interrogate whose interests are served, not only by research products but also by research *processes*, underlining the importance of participation, challenging existing power relations, and creating basis for political action (L. Brown & Strega, 2005; Kovach, 2009c).

While critical theories are based in western epistemologies, **Indigenous** research theories are founded in Indigenous knowledge systems (Absolon, 2011; Kovach, 2009c; S. Wilson, 2008), as described in **Chapter 3**. Based in a fundamentally different understanding of the nature of knowledge (re)production, Indigenous theory has important implications for research methodology, posing “substantive challenges to the concepts of knowing and being, of knowledge creation, knowledge work, and the making of meaning” (Smith et al., 2016, p. 132). For example, Shawn Wilson (2008) posits that research is relationship; therefore, generating new

knowledge involves creating more knots in the web of relationships (S. Wilson, 2008). In this work, I am primarily informed by an Indigenous research framework proposed by Margaret Kovach (Kovach, 2009c), which describes Indigenous knowledge systems as being made up of particular epistemologies and theory-principles. **Epistemologies** describe “ways of knowing”, including assumptions about the nature of knowledge and knowledge production, defining what kinds of knowledge count, or what kinds of knowledge are possible (Kovach, 2009c, 2017). Some common tenets of Indigenous epistemologies include holism, interconnection, and flux, fluidity or circularity (Atleo, 2007; Hart, 2010; Houde, 2007; Kovach, 2017; Louis, 2007; Simpson, 2017), all of which contribute to fundamentally relational ways of knowing and being. Interconnected with epistemology, **theory-principles** include teachings, values, and practices – including laws and protocols – that guide relationships with people, land, ideas, and the cosmos (Coombes et al., 2014; Kovach, 2017). While other Indigenous methodologists have defined slightly different research frameworks (Absolon, 2011; S. Wilson, 2008), their spirit remains congruent with the one described here, and elaborated in *Paper 2*.

Employing Indigenous knowledge systems “is a highly emergent and generative process” (Simpson, 2017, p. 48) which requires engagement of particular theories, strategies, and analysis grounded in the languages, philosophies, values, and ethical principles of particular communities and Nations (Simpson, 2008b, p. 15). According to Leanne Betasamosake Simpson (2017), Indigenous knowledge is a function of intellectual thought (theory), emotional knowledge, and action or movement:

“The act of doing generates and animates theory within Indigenous contexts, and it is the crucial intellectual mode for generating knowledge. Theory and praxis, story and practice

are interdependent, co-generators of knowledge. Doing produces more knowledge.”
(Simpson, 2017, p. 20).

In this regard, Simpson captures an important insight related to the relationship between place, practice, and Indigenous knowledges in the following account:

“I kept asking [elders] about governance, and they would talk about trapping. I would ask them about treaties, and they would take me fishing. I’d ask them about what we should do about the mess of colonialism, and they would tell me stories about how well they used to live on the land... I didn’t think they were answering my questions. I could see only practice. I couldn’t see their theory until decades later.” At that point, it became clear “that *how* we live, *how* we organise, *how* we engage in the world – the process – not only frames the outcome, it is the transformation. The *how* changes us. *How* is the theoretical intervention” (Simpson, 2017, p. 18).

Similarly, Glen Sean Coulthard (2014) argues that what distinguishes Indigenous knowledge systems from others is the principle of *grounded normativity*, which prescribes an “ethical engagement with the world” that flows from “land-connected practices and longstanding experiential knowledge” (G. S. Coulthard, 2014, p. 13). Like IK, grounded normativity isn’t an object or an abstract idea, “it is generated structure born and animated from deep engagement with Indigenous processes that are inherently physical, emotional, intellectual, and spiritual” (Simpson, 2017, p. 23).

Research approach

With some exceptions, community-engaged and Indigenous research approaches are often poorly distinguished in the literature (Chalmers, 2017; Dawson, Toombs, & Mushquash, 2017; Latulippe, 2015a), and as they relate to the theories outlined above. Below, I provide a brief

background on these approaches, their intersection, and their relationship to theory, detailing how they relate to decolonising perspectives in the following section.

Community-engaged approaches, including community-based participatory research methods (CBPR), draw primarily on critical, emancipatory, or anti-oppressive theories intended to disrupt (external) power structures, upholding marginalized people and their priorities (Duran, 2003; Israel, Schulz, Parker, & Becker, 1998; Minkler, 2005; Minkler & Wallerstein, 2003; Wallerstein, Duran, Oetzel, & Minkler, 2017). CBPR is “a process by which decision-making power and ownership are shared between the researcher and the community involved, bi-directional research capacity and co-learning are promoted, and new knowledge is co-created and disseminated in a manner that is mutually beneficial for those involved” (Castleden, Sloan Morgan, et al., 2012, p. 160). In so doing, it seeks to address systemic inequities and advocate policy change (Israel et al., 2010; Tobias, Richmond, & Luginaah, 2013).

Drawing on diverse ethical frameworks (Brant Castellano, 2004; First Nations Information Governance Centre, 2014; Kirkness & Barnhardt, 1991; Louis, 2007; Riddell, Salamanca, Pepler, Cardinal, & McIvor, 2017; Schnarch, 2004), many community-engaged researchers have articulated the requirements and challenges of conducting respectful, mutually beneficial research with Indigenous communities (Adams et al., 2014; Ball & Janyst, 2008; Brunger & Wall, 2016; Castleden, Garvin, & Nation, 2009a; Castleden et al., 2009b, 2017; Castleden, Sloan Morgan, et al., 2012; de Leeuw et al., 2012; LaVeaux & Christopher, 2009; Riddell et al., 2017; Tobias et al., 2013). Among others, the CBPR principles detailed by Israel (1998) have been widely adopted and adapted among Indigenous researchers (LaVeaux & Christopher, 2009). Community-engaged researchers underline that knowledge production in Indigenous contexts should be collaborative and relational, process-based rather than outcome-based, and strive to be

“socially embedded and socially accountable” through meaningful, long term relationships with Indigenous communities (Adams et al., 2014; de Leeuw et al., 2012, p. 182; Kovach, 2009c, 2017; Louis, 2007; S. Wilson, 2008). This requires that research be conceived, initiated, motivated, and led by Indigenous priorities for the benefit of Indigenous communities (Adams et al., 2014; Castleden, Sloan Morgan, et al., 2012; Coombes et al., 2014; Kovach, 2009c; Louis, 2007; Mulrennan et al., 2012). Decisions regarding objectives, roles, responsibilities should be defined together, research and analysis conducted jointly, and mutually beneficial research outcomes negotiated at research outset (Adams et al., 2014; Kovach, 2005, 2009c; Latulippe, 2015a; Mulrennan et al., 2012).

Clearly, community-engaged approaches have much to contribute to research with Indigenous communities that is responsible, respectful, reciprocal, and relevant (Kovach, 2009a, 2017; Latulippe, 2015a). Indeed, in the Canadian research context, CBPR is the recommended approach for conducting Indigenous research (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Research Council of Canada, 2014; Castleden et al., 2017; Moore, Castleden, Tirone, & Martin, 2017). As such, community-engaged approaches are increasingly recommended and applied in partnership with Indigenous people by those in the natural sciences, including environmental, conservation, and ecological researchers (Adams et al., 2014; A. Salomon et al., 2018). It seems that these approaches are engaged from a decolonising or conscientious perspective, informed by work in social sciences but increasingly divorced from their origins in critical theory, and necessarily invested in integration with scientific paradigms.

While community-engaged approaches are one means to conduct respectful research in Indigenous contexts, they may at times be insufficient to capture the nuances and complexity of

Indigenous ways of knowing (E. Carlson, 2016; Kovach, 2009c; Smith et al., 2016). An emerging literature interrogates “the unquestionable good of community engagement” (Brunger & Wall, 2016), demonstrating that ethical guidelines mandating community engagement are not always beneficial to community members (Brunger & Wall, 2016; Moore et al., 2017; Stiegman & Castleden, 2015). For example, Sarah de Leeuw and colleagues (2012) articulate four concerns with CBPR in Indigenous contexts: a) dissent may be stifled by non-Indigenous researchers’ investments in being “good”; b) claims to overcome difference and distance may actually retrench colonial research relations; c) the framing of particular methods as “best practices” risks closing down necessary and ongoing critique; and d) institutional pressures work against the development and maintenance of meaningful, accountable, and non-extractive relations with Indigenous communities (de Leeuw et al., 2012, p. 180). Eve Tuck and Wayne Yang (2012) similarly detail “moves to innocence” employed by settlers to ease or erase uncomfortable differences in power (Tuck & Yang, 2012). These concerns are increasingly echoed by others (E. Carlson, 2016; Castleden, Sloan Morgan, et al., 2012; Irlbacher-Fox, 2014; Moore et al., 2017; Smith et al., 2016; Stiegman & Castleden, 2015), complicating the task of Indigenous and settler researchers in choosing research methodologies.

Indigenous methodologies (IM) constitute a different approach to guiding culturally-embedded research methods, protocols, and practices that are accountable to Indigenous communities and consistent with local knowledge systems (Absolon, 2011; Kovach, 2009c, 2017; S. Wilson, 2008). Unlike CBPR, which are based in western knowledge systems and theories, IM are founded in Indigenous knowledge systems, including particular, place-based and culturally-embedded epistemologies and theory-principles (see **Chapter 3**). In the past decade, several Indigenous scholars have created frameworks based in specific Indigenous knowledge systems to

show how they might guide research and practice, emphasizing that engaging Indigenous knowledge systems has important implications for how research is conducted from conception to completion (Absolon, 2011; Kovach, 2009c, 2017; S. Wilson, 2008).

Because they challenge dominant modes of knowledge generation, IM are likely to expand on standard methods to produce knowledge in a new way (L. Brown & Strega, 2005; Kovach, 2009c; Smith, 1999). In practical terms, this might involve considering diverse knowledge sources, employing appropriate methods of knowledge seeking and sharing, and application of local protocols and practices. Research informed by Indigenous theory necessarily derives knowledge from local, relational ways of knowing, including stories, yarning, and oral histories, narratives and personal accounts, language, conversation, talking circles, and lands-based practices (Battiste, 2005; Chalmers, 2017; Coombes et al., 2014; Drawson et al., 2017; Kovach, 2009c; Louis, 2007; Simpson, 2014). While many of these methods are found in CBPR, their application should be culturally specific in the context of IM. As such, application of IM is not always possible or appropriate (E. Carlson, 2016; Kovach, 2009c, 2017; Latulippe, 2015a; Smith et al., 2016). In a recent review, Drawson (2017) found evidence of an increasing number of researchers employing culturally-specific methods (Drawson et al., 2017). However, there remains a disparity between their theoretical intents and actual research practices (E. Carlson, 2016; Smith et al., 2016; Tuck & Yang, 2012). Some Indigenous methodologists have expressed concern that researchers risk co-opting and externally defining IM (as they have IK), such that IM become another “technology of assimilation, of governance, and the disciplining of knowledge” instead of expanding opportunities and well-being of Indigenous people (Smith et al., 2016, p. 133; Tuck & Yang, 2012).

To be clear: without a basis in Indigenous knowledge systems, even properly conducted community-engaged research in an Indigenous context does not constitute IM (Coombes et al., 2014; de Leeuw et al., 2012; Kovach, 2009a, 2017; Louis, 2007); applying a generalised anti-oppressive lens, “increasing the self-determination and participation of research subjects and upholding values of reciprocity” does not in itself constitute decolonization (E. Carlson, 2016, p. 6). Margaret Kovach (2009) stipulates that any research or project representing Indigenous knowledges should demonstrate engagement with a specific Indigenous epistemology and be grounded in related theory-principles. If Indigenous knowledges are not referenced “as a legitimate knowledge system guiding the Indigenous methods and protocols within the research process, *then there is a congruency problem*” (emphasis added) (Kovach, 2009c, p. 36). As such, **epistemological transparency** is absolutely necessary to avoid subsuming Indigenous research methods under Western ways of knowing, or vice versa. Kovach asserts that addressing fundamental differences in epistemology gets to the core of knowledge production and purpose, and requires examining undeniable contradictions in values, priorities, language, and worldview that inform how researchers acquire, value, and share knowledge (Kovach, 2009c). While Indigenous and community-engaged methodologies have much in common, and are often theoretically and practically aligned, they also require differentiation (E. Carlson, 2016; Drawson et al., 2017; Kovach, 2005, 2009c; Smith et al., 2016). Indigenous methodologies overlap with qualitative approaches in that they value (responsible) process alongside content, and in that they are necessarily relational, self-reflexive and interpretative (Creswell, 2012; Kovach, 2009a; S. Wilson, 2008). IM further overlap with community-engaged approaches in that they are iterative, situated, and responsive (Easby, 2016; LaVeaux & Christopher, 2009). However, as reflected in use of different language and reference points in the respective literatures (Easby,

2016), IM and CBPR are epistemologically and theoretically distinct (Chalmers, 2017; Kovach, 2009c, 2017; Smith et al., 2016). While it is possible to combine Indigenous and western or community-engaged approaches (Botha, 2011; Kovach, 2009c; Peltier, 2018), the role of each in guiding the research needs to be explicit. In *Paper 2*, I further elaborate on the epistemological place of the *Sputc Project*, this dissertation, and how they relate to each other.

Decolonising research

Recognising that community-engaged methods may not be sufficient to conduct respectful research in Indigenous contexts, and that non-Indigenous people are poorly positioned to conduct research using IM, scholars in a variety of disciplines are increasingly seeking ways to decolonize their research (Adams et al., 2014; E. Carlson, 2016; Castleden et al., 2017; Fortier, 2017; Irlbacher-Fox, 2014). Part of a broader movement of decolonization in a variety of contexts (Gaudry & Lorenz, 2018; Grey & Patel, 2014; Kotaska, 2013; Tuck, McKenzie, & McCoy, 2014; Tuck & Yang, 2012; Wildcat et al., 2014), **decolonising** research perspectives are employed as an “analytical tool for making visible contradictions (in epistemology or methodology) and bringing Indigenous approaches out from the margins” (Kovach, 2009c, p. 82), revealing “the experiences and complexities of conducting research in colonial sites” (de Leeuw & Hunt, 2018; Kovach, 2009c, p. 83; Smith, 1999).

While some scholars position decolonising or anti-colonial approaches in their own methodological category (Chalmers, 2017), in this work I prefer to consider decolonization as an over-arching goal capable of informing any research methodology, even research which is not itself focused on Indigenous people or contexts (E. Carlson, 2016; Fortier, 2017). In this context, I primarily use the term decolonising as a verb – something that the methodology aims to do, an action or process – rather than as a noun describing a type of methodology. I take my cue from

bell hooks' (2000) use of the word love as being an intentional and constantly renewed action (hooks, 2000), reflecting Indigenous scholars' suggestions of the relationship between resurgence and love (Corntassel et al., 2018; Simpson, 2017). As depicted in **Figure 3**, both community-engaged and Indigenous methodologies may – or may not – be decolonising. In this spirit, Kovach details three options: tribal methodology (where Indigenous and resurgent epistemologies are central, critical and decolonising theory minimal); decolonising methodology (where decolonising aims are central, and practices more aligned with critical and transformative approaches); and a combination of the two, where a decolonising lens is applied within a tribal methodology (Kovach, 2009c, p. 80). This implies that employing Indigenous theory and related methodologies is one way of decolonising research (Kovach, 2009c), in that they constitute an act of resistance to external systems of knowledge production, emphasizing Indigenous peoples' "right to tell their own histories, recover their own traditional knowledge and culturally grounded pedagogies, epistemologies and ontologies" (Coombes et al., 2014; Stewart-Harawira, 2013, p. 41). However, IM may also engage internal knowledge systems and ancestral intellectual traditions, supporting cultural and political resurgence *without* engaging settler-colonial elements. As such, there is also the possibility of a resurgent research that is not focused on struggle against settlers, but on (re)producing knowledge for and by Indigenous people, including that concerned with "forms of thought and pathways of action that are beyond the boundaries of a colonial mentality" (Alfred, 2008, p. 10).

Decolonising research is also often based in critical theory and related community-engaged approaches, sharing their transformative goals (Smith, Tuck, & Yang, 2018). Decolonising perspectives similarly interrogate the means of knowledge production, suggesting a shifted balance of power from researcher to participants or communities. In particular, they recognize

the role of knowledge (re)production and ownership in working toward Indigenous resurgence and self-determination (First Nations Information Governance Centre, 2014), recognizing that “[i]f knowledge is fundamental to understanding, interpreting, and establishing values within a society, then control over its production becomes an integral component of cultural survival” (Hoare, Levy, and Robinson, 1993 (Kovach, 2005, p. 23)). Like CBPR, decolonising perspectives therefore centre the politics of representation within Indigenous research and how it illuminates underlying assumptions about power, highlighting respect and responsibility throughout the research process, and prescribing methods that give back to the community in ways that contribute to self-identified priorities (L. Brown & Strega, 2005; E. Carlson, 2016; Kovach, 2009c). As such, research in the natural sciences may be considered decolonising without being located on the simplified critical-indigenous continuum represented in **Figure 3**.

Decolonising research addresses the particular realities of settler-colonialism, including historical context, legal rights, land issues, and specific colonising practices, and aim to disrupt or subvert them “in order to push back against colonial institutions to make space for Indigenous resurgence” (E. Carlson, 2016, p. 9; Smith et al., 2016; Tuck & Yang, 2012). As such, approaches that seek to challenge settler perspectives and priorities may have objectives that are “incommensurable with decolonization”, because the “decolonial desires of white, non-white, immigrant, post-colonial, and oppressed people can be entangled in resettlement” (Tuck & Yang, 2012, p. 1). Following Tuck and Yang (2012), I wish to underline that decolonization as I see it is not metaphorical; as an intent informing a research approach, it should be grounded in real Indigenous interests and concrete action, particularly involving territory (Tuck & Yang, 2012). However, I also believe that a personal, internal process of decolonization is necessary for such work to be possible (Corntassel, 2012; Irlbacher-Fox, 2014).

My theory and approach

This dissertation research seeks change by “decentering the colonial relationship” (Kovach, 2009c, p. 80) and foregrounding resurgent knowledges and practices that are fundamentally concerned with land (M. Greenwood & de Leeuw, 2007; Simpson, 2014, 2017; Tuck & Yang, 2012). As elaborated in *Paper 2*, being explicit about this work’s theoretical foundations has been helpful in clarifying its goals and outcomes, and distinguishing them from those of the *Sputc Project*. Ultimately, the research presented here is founded epistemologically in the critical approaches employed by community-engaged scholars and related resurgent and decolonising theories, as described in my theoretical framework (**Chapter 2**) and elaborated above. While I report on a project that employed Indigenous methodologies, I did not myself employ IM in this work. Not being of Nuxalk (or Indigenous) ancestry, my capacity for deep engagement in Nuxalk knowledge systems was limited (see **Chapter 6 - Personal Location**).

However, learning from and collaborating with *Nuxalkmc* also fundamentally influenced my work; it would not have been the same if it had not been for these relationships. While not claiming to be an Indigenous thinker, I cannot either deny the influence of Indigenous thinkers in my work, both academic and Nuxalk. This engagement with Indigenous perspectives and values supports the decolonising nature of this work, but does not make it Indigenous. In addition to engaging Elizabeth Carlson’s (2016) decolonising research principles (detailed above) throughout my work (E. Carlson, 2016), I return to them in **Chapter 10 (Limitations and learnings)** as a means to reflect on my research process.

Guiding principles

Here, I wish to highlight three key methodological principles upon which this dissertation draws: relational accountability, respectful representation, and reflexivity. In so doing, I primarily

employ language employed by Indigenous methodologists, reflecting epistemological foundations that differ from those employed by many CBPR researchers. However, I also acknowledge that similar concepts and practices also exist in the community-engaged research literatures.

Relational accountability

Based in a fundamental understanding of the world as interconnected and whole, *relational accountability* calls attention “not only to the relationships... between researchers and research subjects, but also to the networks of relations through which a researcher (and knowledge itself) is constituted and held accountable” (de Leeuw et al., 2012, p. 182; S. Wilson, 2008). This requires accountability to all beings, including animal and spiritual entities, lands and waters, and future generations (Louis, 2007; S. Wilson, 2008). Being “accountable to your relations” (S. Wilson, 2008, p. 77) requires deep respect for the web of relationships that inform the research process. From this perspective, the purpose of knowledge (production) “is not to explain an objectified universe, but to understand one’s responsibilities and relationships and to engage in mutual reciprocity” (Latulippe, 2015a, p. 5; W. S. Shaw, Herman, & Dobbs, 2006). According to Wilson (2008), it follows that the objective of Indigenous research is to strengthen a web of relationships, constructing more “knots” in the web of relationships that (re)produce knowledge (S. Wilson, 2008, p. 79). Given this understanding, researchers are called to “spend time connecting to the land, nurturing lifelong relationships with Indigenous Knowledge holders, and have strong commitments to learning our languages, cultures, and intellectual traditions” (Simpson, 2008a, p. 17). As such, relational accountability is increasingly emphasized by those interested in providing guidance related to responsible, reflexive research practice (E. Carlson, 2016; Latulippe, 2015a; Louis, 2007; Nicholls, 2009; Peltier, 2018; Tobias et al., 2013)

Respectful representation

Respectful representation requires that researchers consider “how you represent yourself, your research and the people, events, and phenomena you are researching” (Absolon & Willett, 2004, p. 15). Moving beyond “giving voice” (Coombes et al., 2014), this means considering local ways of knowing and being (Kovach, 2017), such that the analysis is “true to the voices of all the participants” and reflects a shared understanding of knowledge meanings (S. Wilson, 2008, p. 101). While respectful representation is often most apparent during the stage of knowledge sharing or dissemination, it is contingent on mindful actions throughout the research process, including methods that consider local epistemologies, place-based protocols, experiences, and voices (Absolon, 2011; Absolon & Willett, 2004; Coombes et al., 2014; Kovach, 2009c, 2017; Louis, 2007; Nicholls, 2009).

Because Indigenous knowledges are developed and constituted in relationship, their meaning and integrity are lost when taken out of context (Simpson, 2008a; S. Wilson, 2008); they must remain situated in relationship to retain reliability, which is established by trust in the knowledge-holder, i.e. who is telling the story and how they situate themselves (Kovach, 2009c; Latulippe, 2015a; McGregor, 2004). Because "thematic groupings conflict with making meaning holistically" (Kovach, 2017, p. 129), analytic methods that categorise or de-contextualise as part of the documentation and interpretation process are often inappropriate in Indigenous settings (Castleden, Sloan Morgan, et al., 2012; Chalmers, 2017; Coombes et al., 2014; Kovach, 2009c, 2017; Latulippe, 2015a; S. Wilson, 2008). This is particularly true in the absence of a local partner entrenched in the relevant Indigenous worldview, which can lead to missed opportunities to revise analytic assumptions and interpretations (Castleden, Sloan Morgan, et al., 2012; Kovach, 2017).

To the extent that Indigenous epistemologies are engaged, Kovach (2009) suggests that research “ought to have a strong narrative component as part of its method and presentation of findings” (Kovach, 2009c, p. 35) in order to retain context and legitimacy. Consistent with reciprocal, relational ways of knowing, and other “emotive, affective, and narrative practices” (Coombes et al., 2014, p. 851), this highlighting local ways of knowing and providing space for the fluidity of metaphor and symbolism may require witnessing and interpretation (Kovach, 2009c, 2017; Louis, 2007; Thomas, 2005). Meanwhile, decolonising approaches require that outcomes be contextualised within the experiences of the communities involved, research outcomes and products should acknowledge conditions of Indigenous societies (settler-colonialism) while promoting Indigenous strength, resistance, and resurgence (Kovach, 2017). Research products or outcomes should be accessible to those they seek to represent, arising from and embodying local experiences, which may include stories and oral histories, narratives and personal accounts, spiritual practices, rituals, and dreams (Chalmers, 2017; Coombes et al., 2014; Kovach, 2009c; Louis, 2007; Smith et al., 2016).

Reflexivity

“In mainstream academic scholarship, authors often write as if they are speaking from ‘no particular social or historical location at all... This authoritative and abstracted third person omniscient stance and academic practice enacts an arrogant power dynamic” (E. Carlson, 2016, p. 16).

Whether considering Indigenous relationality or critically engaging the power relations within which knowledge systems are embedded and re-created, Indigenous research requires *reflexivity* or “researcher preparation”. Enabling the researcher to consider and acknowledge their position (location or standpoint), relationships, purpose, and limits (Absolon & Willett, 2005; Castleden,

Garvin, & First Nation, 2008; de Leeuw et al., 2012; Kovach, 2009c; Muhammad et al., 2015; Simpson, 2014; Smithers Graeme & Mandawe, 2017), reflexivity is “the researcher’s own self-reflection in the meaning-making process” (Kovach, 2009c, p. 32). All qualitative research “searches for contextualised realities and acknowledges many truths” (Kovach, 2009c, p. 26). Resisting neutrality, objectivity, and invisibility, transparency about research positionality recognize that all knowledge is situated knowledge (E. Carlson, 2016). This process acknowledges that because emerging knowledge is filtered through the eyes of the researcher, it is necessarily interpretive and relational (Kovach, 2009c, p. 32). According to Creswell (2003), reflexivity is also one way of establishing validity, in that it clarifies bias and establishes transparency (Kovach, 2009c).

Based in critical theory, CBPR is primarily concerned with reflexivity insofar as it engages and exposes the power relations within which knowledges are embedded, privileged, and re-created (de Leeuw et al., 2012; Wallerstein & Duran, 2006). In critical, anti-oppressive, and feminist approaches this practice is called “critical reflexivity”, emphasizing political examination of power, location, and privilege (L. Brown & Strega, 2005; Kovach, 2009c). Recognising that knowledge is always situated and “implicated in formations and systems of power”, in the context of Indigenous research, it is essential to recognise that positions are “often bound to or by colonialism” (de Leeuw & Hunt, 2018, p. 3). Elizabeth Carlson perfectly explicates what this means for decolonising research practices:

“Anti-colonial settler researchers examine and explicitly state their own social location with regards to the research and with regards to settler colonialism. They explore the impact of their social location on the research, and engage in critical reflexivity regarding the ways in which they enact and reproduce colonialism. Researchers are explicitly

present within the text of research reports, engaging with humility, placing their knowledge within the context of how it was gained, and acknowledging their teachers and mentors.” (E. Carlson, 2016, p. 8)

Meanwhile, based in Indigenous epistemologies, IM’s focus on reflexivity is more personal, highlighting the researcher’s place in – and responsibility to - a network of established relationships, including non-human relationships (Absolon & Willett, 2005; Kovach, 2009c; Smithers Graeme & Mandawe, 2017; S. Wilson, 2008). In IM, research is fundamentally about understanding self-in-relation (Kovach, 2009c; S. Wilson, 2008), with “the stories of both the researcher and the research participants are reflected in the meanings made” (Kovach, 2009c, p. 26). With this in mind, Ruth Nicholls (2009) helpfully proposes that reflexive processes might expand beyond the individual to encompass inter-personal and collective processes supportive of relational contexts and meaning-making (Nicholls, 2009).

6. Personal location

Through the process of this work, I have learned that all knowledge production occurs in places, by and with people, using particular practices (Corntassel et al., 2018; de Leeuw & Hunt, 2018; McGregor, 2004; Simpson, 2014, 2017). This section details the *where* and the *who* of knowledge production related to this dissertation, including my personal physical and social location, and to some extent, their evolution. This is important as evidence of reflexivity essential to my research process, and also as a means to situate myself in the context of related environment and relationships, as a means to move more clearly toward relational accountability (Absolon & Willett, 2005; Kovach, 2009c; Latulippe, 2015a; S. Wilson, 2008). In so doing, it is not my intention to re-centre myself, sidelining Indigenous priorities (de Leeuw et al., 2012; de Leeuw & Hunt, 2018), but to be transparent about who I am and where I am located. I believe that reflexivity is an important part of decolonising one's own thinking (Irlbacher-Fox, 2014), and a step toward action beyond metaphorical notions of decolonization (Smith et al., 2016; Tuck & Yang, 2012).

My physical location - how I got here

This work was written from my adopted home in the Bella Coola valley, on a homestead-farm in a town currently known as Hagensborg. Particularly before the birth of my daughter (2015), I spent a great deal of time exploring the surrounding mountains, climbing 1900m to the top of *Snukusikuulh* (Schoolhouse Mountain), whose shadow entirely eclipses my house from sun for two months of winter. I have taken time to get to know the trees, creeks, and rocks in my backyard, running my eyes along the contours of the mountaintops from this particular vantage, exhilarating as the angles change with my slightest displacement up or down the valley, and as textures and colours change with the seasons. I did not parachute in to a "field site" to conduct

this research (Brant Castellano, 2004). I adopted this place as my home; family members are now buried here, and my daughter is being raised here.

Not long ago, the area where my home is built was occupied by a Nuxalk village called *Nukits'*, whose inhabitants were almost entirely wiped out by the smallpox epidemic in 1862 (Swanky, 2016). Today, I recognize my relationship with the descendent of name-holder Anukits'm. My arrival in Bella Coola followed years of seeking this place. In one version of the story, my journey began with a series of dreams, where I joined Raven with a profound sense of peace as he flew over steep mountains and inlets. These dreams prompted me to leave my job as an epidemiologist at McGill University, and make my way back to the west coast. After several years' living on Sc'ianew land and soul-searching in academia, I was drawn to attend a course in social-ecological resilience at the Hakai Institute (2013). There, I first met Ts'xwiixw (Megan Moody), a Nuxalk fisheries expert and daughter of the late Qwatsinas⁵. Long inclined to live in Bella Coola, I followed up on this contact to ask if there were a way my interests and expertise could be of service to *Nuxalkmc*, and my involvement in the *Sputc Project* began. While this version of the story of my arrival to Nuxalk territory may strike some as sentimental, it has been consistently appreciated and validated by Nuxalk elders. On many occasions, it has given my presence here a sense of legitimacy; at times of insecurity or doubt, *Nuxalkmc* elders have reassured me that “you are meant to be here, you are here for a purpose”. One elder⁶ shared a Nuxalk belief that challenges and opportunities fall on your path for a reason, and that it is your

⁵ *Staltmc* Qwatsinas Edward Moody (b.1947 – d.2010) was an environmental and Indigenous rights activist, on the frontlines of the Nuxalk stand at Ista (Hipwell, 2010). He also did international advocacy with his collaborator and friend, the late Arthur Manuel (Manuel & Derrickson, 2015, 2017).

⁶ Skw'yac, Karen Anderson.

responsibility to take them up. This particular work fell on my path, and I took it up to the best of my ability.

Personal location and motivation

I was born and raised on the unceded territories of $x^w m \theta k^w \dot{y} \dot{a} m$ (Musqueam), Tsleil-Waututh, $S k w x w \acute{u} 7 m e s h$ (Squamish), and Lil'wat peoples, in the Greater Vancouver area and nearby coastal mountains of British Columbia. I locate myself in this research as a third- to sixth-generation settler of these territories, originally of Danish, English, Irish, and Scottish descent. Long aware that my presence on these lands exists in relationship with and in reliance on settler colonial society, I have historically taken little pride in my ancestral background. My father's parents were born in Western Canada and spent their adult lives in BC, working blue-collar jobs. My mother's father was a dairy farmer born in Denmark, while her mother was a dietician who grew up in Ontario. My mother and father hold PhDs in biophysics and nuclear physics, respectively, and as a result I grew up in a privileged educational context emphasizing a positivist worldview. As a white, Western-educated, English- (and French-) speaking, able-bodied woman, I hold the privilege of many intersecting positionalities. However, in the context of this work, my primary positionality is that of *k'umsiwa* (white settler) in Nuxalk territory – often, I find, to the exclusion of other more complex identities.

As a privileged settler, I recognize that I have not experienced settler-colonialism firsthand. However, I do feel the effects of the current extractivist, neoliberal political economic system – which bears down particularly hard on Indigenous people - and a resulting disconnection from land and spirit (Carlson, 2016; Cunsolo & Ellis, 2018; Klein, 2013; Simpson, 2017). I spent my twenties alternately resisting and avoiding this system, and my early thirties feeling depressed and powerless in its face. Recognising the intersections between this system and the realities of

settler colonialism (Klein, 2013; Simpson, 2017), I began to feel that “(p)articipating in and reproducing colonialism compromises our personal and collective integrity” (E. Carlson, 2016, p. 6). I saw one way forward as allying myself with, and creating space for, Indigenous peoples’ resistance and resurgence as a means to meet mutual goals of resistance and transformation (Irlbacher-Fox, 2014). As such, I recognize that my motivations are in part selfish; I do this work for the protection of my own environment, and for the betterment of my daughter’s future.

Leanne Simpson describes a Nishnaabeg prophecy where the world is in ecological crisis, and a choice regarding how to treat the earth is made. One outcome at this juncture is that we all learn from the elders of this land and come together in respect for it (Simpson, 2008a, 2011). Perhaps idealistically, it is my intention to be part of this movement, opposing the current system of ongoing settler-colonialism, and working toward social and ecological justice and the creation of a better world for all. As such, I am interested in supporting Indigenous resurgence from the ground up, in decolonising my own thinking and behavior, and in challenging settler institutions that are not in keeping with this vision (E. Carlson, 2016; Irlbacher-Fox, 2014). Aligned with a decolonising agenda, through this work I hope to create and hold space for those engaging in the deeper work of Indigenous resurgence and resistance.

Like many others (E. Carlson, 2016; de Leeuw et al., 2012; Fortier, 2017), I recognise that there is some tension, if not discord, in doing this work from the position I hold. I approach this work with the theoretical understanding that I cannot fully understand let alone legitimately represent Indigenous peoples, knowledges, and epistemologies. Despite my work and its potential value to some *Nuxalkmc*, I cannot claim the deep roots and experiences required to engage Nuxalk lifeways or worldviews with any level of sophistication. This is evident in my interactions with *Nuxalkmc* colleagues, friends, and acquaintances, where I continue to experience

misunderstandings and awkwardness characteristic of cross-cultural relationships. As a settler, I remain an outsider, and as such, am constantly running into the hazard and discomfort of my own privilege – particularly given my propensity to speak authoritatively when insecure.

While I am inspired by scholarship in robust and radical Indigenous resurgence (Alfred, 2005; Asch et al., 2018; Corntassel et al., 2018; G. S. Coulthard, 2014; Simpson, 2008a, 2017), I am best aligned with other decolonising settler scholars like Elizabeth Carlson (2016), who recognizes the following:

With Indigenous resurgence at the centre of anti-colonialism, the roles of white settler academics are at the periphery, making space, and pushing back against colonial institutions, structures, practices, mentalities, and land theft. Taking up the challenge to participate effectively in anti-colonial practice is more difficult and demanding than may be imagined. Fear, entitlement, and denial prevent many white settler people from engaging in anti-colonial practice. (E. Carlson, 2016, p. 6).

I agree with Carlson that “even though participation in anti-colonial practice on the part of white settlers is a limited possibility, it remains a moral and ethical responsibility” (E. Carlson, 2016, p. 6). This work represents my limited but wholehearted attempt to engage in this responsibility, as the first steps in what I hope to be a long life of decolonization and reconnection. In **Chapter 7 (Research methods)** and in the papers to follow, I do my best to engage complex issues related to knowledge (re)production and power, ownership and attribution, relational accountability, reciprocity, and respectful representation. In **Chapter 10 (Limitations and learnings)**, I further reflect on how my position impacted this work, seeking out scholarship by decolonising and anti-colonial settler scholars to inform my reflections.

7. Research methods

Based in extensive participation, experience, observation, and reflection, the research described in this work took place over the course of over four years in the context of the Nuxalk *Sputc Project* (detailed in **Chapter 4**). This work was originally conceived as a distinct add-on to the *Sputc Project*, with additional data generated from interviews and observational fieldnotes complementing overlapping resources and materials generated by the project. However, as I was integrated into the project, my evolving position in the community and awareness of my relational responsibilities resulted in a greater integration of research and project than expected. While methodologically distinct from the *Sputc Project*, this work would not have been possible without *Sputc Project* resources and materials, including funding (which I helped obtain), time, space, and relationships. Through my invested involvement in the *Sputc Project*, I came to know its collaborators and contents intimately; as a result, both its process and final product informed this research to a large extent. My involvement in the project and community were essential to the integrity of this research and its outcomes, and as a result of this iterative learning, my research methods evolved substantially. As such, this work reflects an inductive, interpretive research approach congruent with both community-engaged approaches and relational (including Indigenous) epistemologies detailed in **Chapter 5**. Below, I detail the methods of research initiation, knowledge documentation, interpretation, and representation used in this work.

Research initiation: ethics and permissions

As detailed in the section above, I arrived in Bella Coola in January, 2014 on the invitation of Megan Moody, director of the Nuxalk Stewardship Office. It was my expressed intent to support the coordination of an eulachon management project while conducting related, supportive doctoral research about health and well-being. Before the outset of the project and research,

detailed research agreements with the Nuxalk Stewardship Office and an official Band Council resolution were signed based on the ethical principles of outlined by both community-engaged and Indigenous researchers (detailed above) (Canadian Institutes of Health Research et al., 2014; Castleden, Sloan Morgan, et al., 2012; First Nations Information Governance Centre, 2014; Kirkness & Barnhardt, 1991; LaVeaux & Christopher, 2009; Louis, 2007; Schnarch, 2004; Tobias et al., 2013). Explicitly reviewing these foundations established mutual expectations and understandings of research responsibilities, rights, and benefits, highlighting the importance of relationship, responsibility, relevance, and reciprocity, and provided a set of resource documents for use by other researchers. In keeping with local protocol, I individually visited each of 22 *Staltmc* (hereditary leaders) to advise them on initiation of both the *Sputc Project* and of this research. As a result, this work had appropriate community consent from its inception, which provided me with a base of legitimacy from which to operate.

Knowledge documentation: research materials and knowledge sources

As detailed in *Papers 2* and *3*, this work is based on my access to, engagement with, and reflection on a number of research materials and knowledge sources shared with the *Sputc Project*, including: archival and contemporary photographs and images, recordings, videos, songs, and dances; interviews and interview transcripts; community workshops and knowledge exchanges. I also drew on secondary sources including ethnographic accounts (Cole & Barker, 2003; Kennedy & Bouchard, 1990; Kirk, 1986; McIlwraith, 1992) and grey literature, including regulatory documents. Recognising the importance of place-based learning and relationships, I actively participated in community events, ceremonies, and cultural practices, including grease-making, annual eulachon festival and ceremony, potlatches, and feasts. However, I learned most from my relationships with individual knowledge-holders. My position as *Sputc Project*

coordinator enabled me to work closely with, and learn a great deal from, a diversity of *Nuxalkmc* community members and leaders, including cultural knowledge keepers, elders, fishers, and eulachon grease-makers. Through regular meetings and informal strategic conversations with Megan Moody, I was fortunate to access an important, knowledgeable, and invested perspective on community relationships, ancestral governance, and regional politics. As is evident in the co-authorship of the papers in this work, this relationship informed much of my learning and perspective. Stewardship Office administrators (Skw'asmana (Angel Mack), Rhonda Dettling-Morton) held my hand in negotiating relationships, logistics, and protocol. Employed by an *Ancestral Governance Project* beginning in 2015, Nuxalk knowledge holders Snxakila (Clyde Tallio) and Nunanta (Iris Siwallace) shared cultural advice and teaching to guide the project and my own thinking. Core members of the project's advisory committee (Q'isinay (Horace Walkus), Sinuxim (Russ Hilland), Numutsta (Louise Hilland), Suulxikuuts (Joanne Schooner)), cultural advisors and co-writers (Nuximlaycana (Fiona Edgar), Skw'yac (Karen Anderson), Sixim (Esther Hans), Aycts'mqa (Lori George), Qwaxw (Spencer Siwallace), Stlts'lani (Banchi Hanuse), Asits'aminak (Andrea Hilland)), artists and weavers (Wiiqa7ay (Lyle Mack), Alvin Mack, Melody Schooner, Barb Schooner), and grease-making experts (including Taycwlaaksta (Bruce Siwallace), Q'isinay (Horace Walkus), Q'ay7it (Jimmy Nelson Sr.), Tl'msta (Stanley King), Qwalalha (Arthur Pootlass)) were also key to my education in Nuxalk culture, knowledge, and governance. The knowledge and voices of Nuxalk ancestors are also present in my learning (including Axtsikayc (Agnes Edgar), Ststayliwa (Felicity Walkus), Sisinay (Margaret Siwallace), Nunanta (Amanda Siwallace), Nuximlayc (Lawrence Pootlass)), as gleaned from recordings, photos, and *Nuxalkmc*'s stories about their own learning and

relatives. These are the people I primarily refer to when I speak of “knowledge holders” in this work.

As *Sputc Project* coordinator, I occupied a full-time office in the Nuxalk Stewardship Office for over two years and was included in related meetings and activities. I led or co-led most project activities, including advisory committee meetings (12+), open houses and workshops (6+), and project leadership meetings (40+). This provided me with abundant opportunity to build relationships, integrate into the community, and begin to learn about Nuxalk culture, language, and protocol. Over the course of nearly four years, I recorded over 350 meeting summaries and observational fieldnotes, documenting the entire project process from initiation to completion. These notes captured observations and insights from committee meetings, informal conversations, and community events, as well as responses and reflections of key participants and community members after project completion. In addition to recording knowledge shared as “facts”, I noted subjective observations, stories, experiences, and affect (emotions), and related my own reflections and learnings (Emerson, Fretz, & Shaw, 2011). Further reflections and learnings related to this process are included in **Section D (Limitations and Learnings)**. Several dozen regulatory documents and grey literature were consulted for the purposes of this work, including those related to the broader context of eulachon management by federal authorities (DFO), and the *Species at Risk Act* (SARA) listing.

Indigenous methodologists underline that understanding community authority and applying local protocol is essential to conducting respectful, meaningful research (Crook, Douglas, King, & Schnierer, 2016; Kovach, 2009c, 2017; Louis, 2007; Smith, 1999). Indeed, Margaret Kovach (2017) underlines that “protocols are ethics” in Indigenous research design (Kovach, 2017, p. 224). Involvement in the *Sputc Project* provided a valuable opportunity for me to learn about

and engage Nuxalk knowledge systems and ancestral decision-making protocols, practices, and institutions. I learned that following Nuxalk protocol meant ensuring broad community engagement, and recognising and affirming knowledge shared, gained, and witnessed through payment, feasting, gifting, and food at gatherings. Dovetailing other aspects of a relational Nuxalk epistemology, protocol also dictated engagement with actions that reflected an understanding of principles of reciprocity, reflexivity, patience, and respect. In this spirit, during the first three years of my presence in the community, my primary objective was engagement with the *Sputc Project* and completion of related materials for the community, which helped me build the relational capital (Kovach, 2017, p. 224) needed to do the work presented here.

As detailed in ***Paper 2***, engagement of *Nuxalkmc* beyond the project team and a core group of supporters was a challenge throughout the research process. Many *Nuxalkmc* recognized as knowledge-holders were unwilling to commit to a recorded interview of any kind. Despite persistent efforts, event attendance was disappointing, and incentivizing participation across family, social, and political obstacles difficult. As such, for both *Sputc Project* and my research, formal interviews were abandoned in favour of informal exchanges, community events, and a more culturally-relevant research process based on the development of genuine, reciprocal relationships and ongoing presence in the community. As my role and position in the community became known, informal conversations and interactions with Nuxalk knowledge holders and community members arose more naturally. This enabled *Nuxalkmc* to “share their experiences on their own terms” (Kovach, 2009c, p. 82), increasing attendance to issues of representation and voice. By the end of the project, I estimate that I had one-on-one conversations with over sixty knowledge holders, and interacted with at least 180 of

approximately 600 adult *Nuxalkmc* in the valley through community events, workshops, elders' luncheons, and casual conversations.

Interpretation and representation

Respectful interpretation and representation of the knowledge I gained during this research process was a fundamental priority. While this research process originally employed methods reminiscent of CBPR (e.g. interviews and participatory workshops, qualitative coding), these methods were adapted as I was integrated into the *Sputc Project*. As my understanding and relationships evolved over the course of the study, I shifted to more experiential and observational methods informed by relational epistemologies and Indigenous methodologies, attending to the principles of relational accountability, respectful representation, and reflexivity (Kovach, 2009c, 2017; Louis, 2007; S. Wilson, 2008). My methods of knowledge interpretation and sharing became increasingly open-ended and reciprocal as interviews transformed into conversations, and workshops and meetings took the form of open talking circles.

Contextualised iteration of knowledge documentation and interpretation processes reinforced underlying meanings, values, and teachings that enabled me to remain responsible and accountable to *Nuxalkmc* (Hart, 2010; Kovach, 2009c), including project collaborators, community, future generations, lands, waters, and spirits. However, as detailed below and in **Chapter 10**, this attempt at holistic learning came at the price of some detail.

Summarised below as they relate to research methods, my engagement with the principles of relational accountability, respectful representation, and reflexivity are elaborated in *Papers 2* and *3*, and returned to in the final chapter of this work.

For me, enacting **relational accountability** involved learning and applying Nuxalk protocols and practices, active listening and reflection, and responsibility to a network of relationships within

the community. Mirroring the *Sputc Project*'s adaptive and iterative process of learning and sharing (detailed in *Paper 2*), my research prioritized respectful relationships over anticipated timelines, allowing for the seasonal ebb and flow of individual availability, and respect for conflicting community priorities (e.g. funerals, fishing). As a result, the both project and research took place at a pace set by the community. Given that relational knowledges are "nested, created, and re-created within the context of relationships with other living beings" (Kovach, 2017). I believe that my responsibility to *relational accountability* was broader and deeper than the co-learning and mutual exchange with research participants highlighted by community-engaged researchers (Adams et al., 2014; Castleden, Sloan Morgan, et al., 2012; Wallerstein & Duran, 2006). Like Coombes (2014), I found that emphasizing relationship to this degree, "ethics becomes method; data becomes life; landscape becomes author; participants become family" (Coombes et al., 2014, p. 850) and team members become friends (de Leeuw et al., 2012). My responsibilities extended beyond research collaborators and project participants to eulachon themselves.

Through the process of this research, I learned that **respectful representation** of Nuxalk knowledges required appropriate direction and participation by *Nuxalkmc* in the process of interpretation or meaning-making (Coombes et al., 2014; Kovach, 2009b, 2017; Smith et al., 2016). While this was relatively well-executed for the *Sputc Project*, I only partly succeeded in so doing in my own research, confronting well-recognised issues related to community delineation (Duran, 2003; Minkler, 2005; Tobias et al., 2013; Wallerstein & Duran, 2006), authorship (Castleden, Morgan, & Neimanis, 2010), and participation (Brunger & Wall, 2016; Castleden, Sloan Morgan, et al., 2012; de Leeuw et al., 2012). While all four papers interpret and represent elements of Nuxalk knowledges, they are clearly founded in my own experiences,

interpretations, and learning. I alone reviewed my fieldnotes (recorded in Evernote, imported into NVivo10), extracting key reflections related to my research objectives. Emergent themes and learnings were then summarized and developed through a series of exchanges with Megan Moody, and reviewed by key community collaborators (see acknowledgements), who contributed significantly to the final representation of knowledge shared. I understand these exchanges to have been part of the interpretation or “analysis” process, and as such (along with the other processes of engagement and learning with *Nuxalkmc*) see these papers as having sufficient and specific enough voice in terms of respectful representation. Megan’s role in the development of these papers are recognised through her position as lead co-author. Megan also played a key role in affirming and/or re-framing the research papers to ensure proper representation of and benefit to *Nuxalkmc*.

In terms of interpretation and representation, ***Papers 2 – 4*** clearly elaborated my own interpretations and co-learning outcomes with Megan and others. However, ***Paper 1*** provided a greater challenge, as I found myself generalizing about Nuxalk knowledges and values without appropriate involvement of Nuxalk people in the interpretation and representation of results. I began by open coding research materials using NVivo10, generating summary impressions and themes linking eulachon to Nuxalk well-being. However, presenting results thematically fell short of describing the depth of the *Nuxalkmc* relationship to eulachon; much richness and insight existed in the interconnections and gaps between categories, and in the stories that connected them. I reached out to key *Nuxalkmc* collaborators and wellness experts to inform my interpretations. Advised to include a more narrative form and more personal voice, I chose to base my reporting on three stages of *Nuxalkmc* relationship with eulachon (abundance, loss, and recovery). This choice of contexts was informed by topics that arose during the *Sputc Project*,

and their local relevance and resonance was confirmed through multiple community events and advisory meetings. Limitations related to this method of interpretation and representation are detailed in *Chapter 10*.

Overall, this work represents my own personal learning; while it could not have come to pass without the substantial and invaluable contributions of *Nuxalkmc* knowledge-holders, I do not intend to represent *Nuxalkmc* knowledges and perspectives beyond my own interpretations of a diverse range of knowledges and viewpoints. In keeping with the principles of respectful representation and relational accountability, much of this work is written in the first person, from my position as a non-Nuxalk PhD candidate. Meanwhile, the term “we” is used when describing learning or decisions made by the *Sputc Project* team leadership except in *Paper 4*, where “we” represents myself and Megan as co-learners. As appropriate, I employ the present tense in the papers to follow, because my relationship with *Nuxalkmc* community members and territory is ongoing, as is my own evolving perspective.

PART C: PAPERS (RESULTS)

8. Papers introduction

This section constitutes the results of this dissertation, presenting four original papers in their current forms. As illustrated in **Figure 1**, each paper draws on different segments of what I understand to be inter-related theories and literatures, pulling on a particular thread of the web of knowledge generated through this case study as it relates to well-being, research methodology, Indigenous knowledges, management authority, and their intersection. In the first paper, I demonstrate why eulachon are so important for Nuxalk well-being and how both state and Nuxalk management practices affect this relationship. In *Papers 2* and *3*, I describe the methods and outcomes of the *Sputc Project*, exploring the role of Indigenous methodologies and knowledges (respectively) in promoting and communicating environmental management values, practices, and relationships essential to Indigenous well-being, resurgence, and authority. In *Paper 4*, I focus on how *Sputc Project* knowledges and methods strengthened Indigenous management authority, connecting the three previous papers. Reflecting the research objectives outlined in **Chapter 1**, the rationale and leading research questions for each paper are briefly summarized below, followed by a note on authorship.

Paper 1: Understanding the health impacts of (de)colonized environmental management on indigenous well-being: a case study of Nuxalk eulachon

Through *Paper 1*, I intend to fulfill a need identified by Nuxalk Nation leadership to document the value of eulachon and the impacts of their sudden disappearance for the health and well-being of *Nuxalkmc*. I seek to (1) describe how eulachon-related values, practices, and relationships support *Nuxalkmc* well-being; (2) detail the impacts of eulachon loss for *Nuxalkmc* well-being; and (3) explore how eulachon-related practices and relationships, including local

stewardship, support *Nuxalkmc* well-being, cultural strength, and political resurgence in the present day. This paper establishes the connection between environmental management and Indigenous well-being in this case study, and addresses *research objective 1* (characterizing Nuxalk understandings of the connections between eulachon and Nuxalk well-being).

Paper 2: The Nuxalk Sputc Project process: applying community-engaged and Indigenous approaches in support of local eulachon management authority

In *Paper 2*, I engage a need expressed by environmental researchers and practitioners to learn from successful processes led by Indigenous people and informed by Indigenous approaches to engaging culturally-specific, place-based knowledges and priorities. Aiming to inform and expand on the range of methodological options available to Indigenous researchers and settler allies, I share learnings and insights from the *Sputc Project* process as an example of how community-driven and Indigenous methodologies might be operationalized in the context of environmental management, demonstrating how engaging Nuxalk knowledges influenced the *Sputc Project* process from conception to completion. This connects the processes of environmental knowledge (re)production to health determinants, and addresses *research objective 2* (describing the *Sputc Project* process).

Paper 3: Indigenous knowledges, Indigenous authority: *Alhqulh ti Sputc* and the respectful representation Nuxalk eulachon knowledges

In *Paper 3*, I consider how Indigenous knowledges might be respectfully represented and articulated by Indigenous people. I describe the form and content of Nuxalk eulachon knowledges represented in a product of the *Sputc Project*, a book called *Alhqulh ti Sputc*, and how the book was distributed, received, and used by the community. This background supports an informed discussion of what was required to respectfully represent Nuxalk knowledges in this

context, and how these knowledges may be used in support of self-determined eulachon management. This addresses *research objective #3* (exploring the challenges of documenting Indigenous knowledges).

Paper 4: The Nuxalk *Sputc* (Eulachon) Project: Strengthening Indigenous management authority from the ground up

While Indigenous leadership in environmental management is increasingly advocated, there are relatively few examples of how Indigenous management authority is built at a grassroots level.

In *Paper 4*, I explore the management of eulachon as a case of contested jurisdiction in environmental management, examining how the *Sputc Project* strengthened Nuxalk management authority. I then detail the practical management priorities that arose through the project process and their implications for the management of this endangered fish. This addresses *research objective 4* (describing Nuxalk stewardship institutions) and *research objective 5* (situating the *Sputc Project* within the larger social-ecological and governance context).

Authorship and format

As detailed in the methods and conclusions sections, this work is the result of a long process of collaboration and learning with a diversity of colleagues, friends, knowledge-holders, processes, traditions, ceremonies, and landscapes. Heather Castleden and colleagues (2010) emphasize that standards related to the practice of acknowledging community contributions to academic work are emerging and varied (Castleden et al., 2010). In this case, I have chosen to avoid essentialization and mis-representation by choosing not to include the community as a whole as co-author, opting for detailed acknowledgements sections and methods that underline extensive community contribution. All papers herein are co-(joint)-authored by Megan Moody (Ts'xwiixw), my primary collaborator, colleague, mentor, and friend. Megan set the context of this work (the *Sputc Project*) and led the process throughout. I was responsible for the

documentation and interpretation of learnings related to this work, including structure, focus, theoretical content and references. While I drafted each paper, Megan provided substantial input throughout the writing process during monthly and sometimes bi-weekly meetings; many (but not all) of the ideas represented here began and ended with her. Included as a co-author on Papers 1-3, Snxakila (Clyde Tallio) contributed substantially to my initial learning and reviewed draft manuscripts in detail. Other *Nuxalkmc* who provided substantial input into unfinished drafts are appropriately referenced in each paper's acknowledgements section. Academic supervisors and committee members are listed as authors in order of the extent of their contribution to each paper.

Each paper is formatted according to the requirements of the journal to which it is intended to be submitted.

PAPER 1: ARTICULATING THE IMPACTS OF (DE)COLONISING ENVIRONMENTAL MANAGEMENT: A CASE STUDY OF NUXALK EULACHON AND WELL-BEING

Authors: Rachelle Beveridge, Bernie Pauly, Megan Moody, Snxakila (Clyde Tallio), Chris Darimont, Grant Murray.

ABSTRACT

Indigenous peoples' experience of settler-colonialism continues to exacerbate health inequities in Canada and beyond. Research that takes interest in articulating Indigenous values and priorities as part of existing decision-making processes is necessarily confronted with the complexity of working with Indigenous knowledges, recognizing that their integration is inherently problematic, yet also wishing to uphold their value in decision-making. I seek to inform ongoing work at the intersection of Indigenous health and environmental management, drawing on decolonizing scholarship in the fields of health equity and social determinants of health, to underline *how* structures, relationships, and processes related to settler-colonialism (e.g. ecological depletion, environmental dispossession, exclusion from decision-making, enclosure and commercialization of "resources") affect Indigenous health and well-being, and explore Indigenous resurgence and leadership in resource management as a means to redress harm.

The region currently known as the central coast of British Columbia represents a complex and dynamic site of negotiation, collaboration, and conflict regarding environmental management and its impacts. In this paper, based in over four years' involvement in a related community-engaged research project, I share my learnings and observations about the relationship between Nuxalk eulachon (*Thaleichthys pacificus*), management, and the well-being of *Nuxalkmc* (Nuxalk people). Tracing the path of eulachon abundance, collapse, and renewal, I outline: (1) the value of eulachon in every aspect of Nuxalk life; (2) the impacts of eulachon loss for Nuxalk well-being; and (3) how current eulachon-related cultural practices, including local stewardship, continue to support *Nuxalkmc* well-being in the present day. Through the example of Nuxalk eulachon, I illustrate key interactions between environmental management and Indigenous community well-being, underlining integrating elements including cultural knowledges and practices (e.g. fishing, canoeing, stewardship), relationships and connections (e.g. to lands and waters, community, and ancestors), and responsibilities and identities (e.g. fisherman, grease-maker, guardian). I then revisit eulachon stewardship as an expression of Nuxalk resurgence, strength, and self-determination, and reflect on this work's implications for research and practice.

Acknowledgements: *Stutwiniitscw* to key *Nuxalkmc* collaborators whose perspectives informed this work: Charles Nelson and Peter Tallio (draft revision); Iris Siwallace, Fiona Edgar, Spencer Siwallace, Louise Hilland, Russ Hilland, Horace Walkus, Joanne Schooner, and *Sputc Project* colleagues and collaborators. I also acknowledge the funders of my research (CIHR, Vancouver Island University Institute of Coastal Research, OceanCanada) and the *Sputc Project* (Tides Canada, Nature United, Vancouver Foundation).

Keywords: Indigenous health, well-being, eulachon, environmental management, stewardship, colonialism.

Author contributions: Conceptualization, R.B. and M.M.; Methodology, R.B., M.M.,; Writing – Original Draft Preparation, R.B. and M.M.; Writing – Review & Editing, R.B., M.M., B.P., G.M., C.D., C.T.; Supervision, G.M., B.P., C.D., Project Administration, R.B. and M.M.; Funding Acquisition, R.B., M.M., G.M., B.P. .

Conflicts of interest: None to declare.

Formatted for: People and Nature / International Journal of Environmental Research and Public Health

INTRODUCTION

Experiences of environmental dispossession are key to the Indigenous experience of settler-colonialism. Impacts on Indigenous peoples' use, access, and management of ancestral lands and waters carry cultural risks that are "*de facto* health risks" (1–7), compromising relationships (e.g. with community, lands, waters, ancestors), practices (e.g. fishing, hunting), and identities, roles, and responsibilities (e.g. fisher, guardian) that are key to every aspect of well-being (1–5,7–10). These realities have compromised Indigenous community health and well-being in myriad ways, exacerbating existing health inequities in Canada and beyond (8,11–13). As a result, Indigenous peoples are increasingly asserting rights and responsibilities to manage ancestral lands and waters (or "natural resources") (14–17).

I use the terms **management** and **stewardship** to refer to decision-making values, institutional structures and processes related to the access, use, conservation, and restoration of the environment. In general, *management* refers to top-down, often species-specific approaches, while *stewardship* implies an ethic of care and interconnection. I use the notions of **health** and **well-being** more or less interchangeably, recognizing that these concepts need to be defined locally (18,19). If pressed, I would employ Breslow's (2016) definition of well-being as being "a state of being *with others and the environment*, which arises when human needs are met, when individuals *and communities* can act meaningfully to pursue their goals, and when individuals *and communities* enjoy a satisfactory quality of life" (emphasis added) (20). Aligned with Indigenous notions of health, this conception highlights the interconnection of individual, community, and ecological well-being.

In this paper, I engage – and seek to inform – ongoing work at the intersection of Indigenous health and environment, drawing on decolonizing scholarship in the fields of health equity and social determinants of health. Researchers that take interest in articulating Indigenous values and priorities as part of existing decision-making processes are necessarily confronted with the complexity of working with Indigenous knowledges, recognizing that their integration and de-contextualisation is inherently problematic (21–23), yet also wishing to uphold their value in decision-making. Further, while Indigenous well-being is included as a goal of co-management and reconciliation agreements, the processes and pathways linking them are vaguely defined (24). Among others, those interested in cultural and social values (25–27) and community-defined health and well-being impacts related to social-ecological change and environmental management (18,19,25,28–32) continue to wrestle with the practical aspects of conveying cumulative, invisible, or intangible elements of well-being (3,7,10,26,28,33).

Here, I suggest that those seeking to articulate relationships between environmental management and health could benefit from aligning with critical and **decolonizing** scholarship, including that in the field of health equity. This scholarship positions settler-colonialism and its remedies, self-determination and resurgence, as

fundamental determinants of Indigenous health and well-being (1,8,12,34–37). Related literatures focus on the intersectoral and intersectional structures and processes through which settler-colonialism operates to constitute, perpetuate, and govern inequitable health experiences and outcomes in everyday life (36,38,39). Decolonizing scholars highlight the mechanisms and processes, relationships and structures of **dispossession**, often pointing to the *Indian Act* (1876) as a key instrument in the perpetuation of the impacts of settler-colonialism (36,40–43), including disorientation, disempowerment, discord, disease, and persistent intergenerational trauma (1). However, other policies, including those related to fisheries regulation (44–46), have also caused Indigenous peoples' *disconnection* from ancestral lands and waters, *exclusion* from environmental decision-making, and *enclosure*, exploitation, and depletion of ecosystems. Yet, with some exceptions, environmental management is only marginally considered in its role in structuring Indigenous health and well-being (1,5–7,47).

In response to the depletion of a wide range of marine species and ongoing marginalization in environmental management processes, First Nations¹ in coastal British Columbia are increasingly reclaiming management authority and leadership in environmental decision-making that impacts their well-being (16,48–52). Among others, the Nuxalk Nation makes a strong case for the local management of eulachon (*Thaleichthys pacificus*) (53,54). A cultural keystone species (10,55), Nuxalk eulachon have not returned to spawn in harvestable numbers since they suddenly disappeared in 1998 (56). However, despite their absence, the fish remain vital to the well-being of *Nuxalkmc* (53,56). cursory accounts of nutritional, medicinal, and economic uses and benefits (56–59) fail to capture the full value of this species or the impacts of its loss, which is largely attributed fisheries mismanagement in the marine environment, beyond Nuxalk jurisdiction (53,56).

In this paper, I attempt to fulfill a need identified by Nuxalk Nation leadership to articulate the value of eulachon and the impacts of their sudden disappearance for the well-being of *Nuxalkmc*, the Nuxalk people. In so doing, I take interest in understanding *how* structures, relationships, and processes related to settler-colonialism (e.g. ecological depletion, environmental dispossession, exclusion from decision-making, enclosure and commercialization of “resources”) affect Indigenous health and well-being, and explore Indigenous resurgence and leadership in environmental management as a means to redress this harm. Recognising that (de)colonization is “about the land” (60–63), I understand the story of Nuxalk eulachon to be one of dispossession and resurgence, underlining the role of environmental management as a key element shaping *Nuxalkmc* relationship to eulachon, and associated well-being.

¹ Under Section 35(2) of the Constitution Act (1982), First Nations are designated as one of three recognised legal categories of Indigenous peoples in Canada, alongside Inuit and Metis.

Informed by over four years' involvement in a related community-engaged research project in Nuxalk territory, this work represents my interpretation, observations, and learnings about Nuxalk eulachon, stewardship, and well-being, supported by community collaborators. I tell this story from my position as a non-Indigenous settler because I believe so doing will create space for understanding and change, advancing Nuxalk resurgence and self-determination (64). Following a description of study context and methods, I describe three periods of *Nuxalkmc*'s relationship with eulachon: abundance, collapse, and renewal. Reflecting on the role of environmental management as a structure and process that shapes Indigenous health and well-being, I then discuss lessons for decolonizing research, policy and practice at the junction of environmental management and Indigenous well-being.

STUDY CONTEXT

The region currently known as the Central Coast of British Columbia is a place of great ecological abundance and cultural strength. Before colonization, over fifty villages occupied Nuxalk territory, comprising 1,800,000 hectares, with upwards of 10,000 *Nuxalkmc* living in the Bella Coola valley alone (65,66). Today, approximately 800 *Nuxalkmc* adults and 1200 settlers live in the valley, at the intersection of a steep, glacier-fed river valley and the North Bentinck arm of the Pacific Ocean (67). Following a series of systemic assimilationist policies, referred to as the four modern catastrophes (smallpox, potlatch ban, reserve system, and residential schools), *Nuxalkmc* have been deeply affected by settler-colonialism and associated inter-generational trauma, disconnection, and displacement; for example, Jennifer Kramer (2006) identifies six thefts experienced by the Nuxalk people: theft of resources, land, people, children, cultural knowledge, and objects (68). Systematic appropriation of commercial fishing and logging industries and degradation of Nuxalk lands and waters (10,69,70) have resulted in high rates of unemployment, poverty, and food insecurity (71–74), with real consequences for chronic disease rates (75–78) and quality of life (71,77,79). However, *Nuxalkmc* also have a history of resistance to infringement on territorial resources (80,81). Nuxalk livelihoods continue to be supported by and connected to ancestral lands and waters through the practices of fishing, hunting, and harvesting, and *Nuxalkmc* are working to address and heal from the harms of past and present colonialism.

Sputc is the Nuxalk word for eulachon, a forage fish that spawns in glacier-fed rivers throughout the west coast. Until recently, *Nuxalkmc* had a thriving relationship with *sputc*, a gift from the creator, which supported by ancestral systems of knowledge and governance (53,56,65). For thousands of years, these systems supported sustainable use and management of ancestral territories for the benefit of all beings, and served as a pillar of the Nuxalk economy (7,10,82–84). The resulting abundance enabled *Nuxalkmc* to catch tonnes of eulachon each year (56). Notably, eulachon were present in each of the major rivers occupied by the Nuxalk Nations' constituent

groups, and remain a common thread that continues to define *Nuxalkmc* as a people. In 1999, eulachon failed to return to the rivers of Nuxalk territory, and have not appeared in harvestable numbers since. Since their disappearance, eulachon-related values, benefits, and knowledges have weakened, and Nuxalk elders fear that future generations are in the process of losing their connection to this invaluable fish. Though explanations for their disappearance vary, *Nuxalkmc* experts recognise that the population's collapse resulted from bycatch in an expanded, federally-regulated shrimp trawl fishery, and exacerbated by climate change (53,56). Although some areas have now been closed to shrimp trawling and additional bycatch limits have been imposed, conservation action has been slow (53). Nuxalk eulachon stewardship priorities have been sidelined, and eulachon's importance for Nuxalk well-being undervalued.

Because eulachon fishing was largely unregulated prior to their disappearance, *sputc* is associated with a sense of pride and agency, a symbol of Nuxalk strength and identity; eulachon's disappearance is therefore a form of dispossession. *Nuxalkmc* are resolute in enacting ancestral responsibilities to protect and restore eulachon in Nuxalk territories, according to local stewardship practices and protocols. In 2014, *Nuxalkmc* initiated the *Sputc Project*, a community-directed process intended to engage *Nuxalkmc* on the topic of eulachon management. As detailed below, this project provided the foundation for the work described here.

METHODS

Informed by an inductive, interpretive research approach and community-based participatory approaches (85–87), this research is based in extensive participation, observation, learning, and reflection over the course of four years, in the context of the Nuxalk *Sputc Project*. As a doctoral candidate without prior ties to the community, I was invited to coordinate the project by the Nuxalk Stewardship Office director and First Nations fisheries management leader, co-author MM. MM initiated and directed the project, while I coordinated its technical and practical aspects. Through my invested involvement in the *Sputc Project*, I came to know its collaborators and contents intimately; both project process (88) and final product (89,90) informed this research to a large extent. I worked closely with, and learned a great deal from, a diversity of *Nuxalkmc* community members and leaders, including cultural knowledge holders, elders, fishers, and eulachon grease-makers. My integration into the project and community were essential to the integrity of this research and its outcomes. As a non-*Nuxalkmc* new to the community, *reflexivity* was essential to the research process (91–95); details related to my personal and social location and their evolution are elaborated in my PhD dissertation (96).

Before the outset of the project and this research, detailed agreements (with Nuxalk Stewardship Office) and resolutions (with Band Council) were signed based on ethical principles outlined by both community-engaged and Indigenous researchers (93,97–102). Explicitly reviewing these foundations established mutual expectations and

understandings of research responsibilities, rights, and benefits, highlighting the importance of relationship, responsibility, relevance, and reciprocity, and provided a set of resource documents for use by other researchers. Ethics approval was also obtained through the University of Victoria's REB (protocol # 14-075, 2014 – 2019).

Research materials included interviews, fieldnotes, archival materials, and my own observations and experiences. As *Sputc Project* coordinator, I occupied a full-time office in the Nuxalk Stewardship Office for over two years. I fully engaged in project activities, including advisory committee meetings (12+), project events, open houses and workshops (6+), project leadership meetings (40+), informal conversations and interactions with knowledge holders, community events and feasts. I recorded over 350 pages of meeting minutes and fieldnotes that captured observations and insights from informal conversations and events. In addition to recording knowledge shared as "facts", I noted subjective observations, stories, experiences, and affect (emotions), as well as my own reflections. Near the beginning of the project, I conducted semi-structured interviews with key elders, leaders, and cultural knowledge-holders alongside a local co-researcher. Identified by project partners and community members, eight men and four women over the age of 50 were interviewed for 1-2 hours, covering topics including eulachon use and values, fishing and preservation, trade, grease-making practices, impacts of loss, stewardship, and well-being. Similarly structured informal conversations were also held with knowledge holders unwilling to commit to a recorded interview. Photos, videos, and audio materials about eulachon practices, knowledges, and history were shared by community members from online archives and family records, along with stories of their origins and content. In addition, access to twelve interview transcripts with eleven men and five women was granted from a previous traditional knowledge study on eulachon (103). While these supplemental materials were not focused on well-being, they invariably pointed to the value of eulachon for *Nuxalkmc*.

In terms of analysis, I began by open coding research materials, generating summary themes linking eulachon to Nuxalk well-being. However, presenting results thematically fell short of describing the depth of *Nuxalkmc's* relationship to eulachon. As my understanding and relationships evolved over the course of the study, I therefore adapted my methods of analysis and reporting in order to attend to *respectful representation* and *relational accountability* (91–93,104), choosing to report my learnings in a more narrative form (91,105), and saving theoretical interpretations for the discussion. Written from my position as a non-Nuxalk academic researcher, the accounts below represent one version of this story, based on my own experiences, observations, and notes, and corroborated by key community collaborators².

² The first person form is not intended to diminish the contributions of other authors. Drafts of the paper were revised by co-authors (MM, CT) and community collaborators (SS, DH, PT, CN), and reviewed by academic mentors (GM, BP, CD), who each contributed to the final representation of knowledge shared here.

RESULTS

In the three sections below, I describe in a simplified and somewhat essentialized narrative of my own understanding of how *sputc* (eulachon) support Nuxalk *tl'mstaliwa* – the full human experience, or the full expression of a human being from birth to death. I detail three periods of *Nuxalkmc*'s relationship with eulachon: abundance, collapse, and renewal. In the first section, I describe the place of eulachon in Nuxalk life during eulachon abundance, detailing three contexts that illustrate how eulachon-related values, practices, and relationships support *Nuxalkmc* well-being: eulachon time (fishing and grease-making); daily life; and stewardship. In the second, I build on these contexts to outline the impacts of eulachon loss for Nuxalk well-being. In the third section, I outline current eulachon-related practices that continue to support *Nuxalkmc*'s relationship to eulachon, bolstering Nuxalk well-being, resurgence, and self-determination in the present day.

Sputc abundance

Not long ago, early spring was a time of anticipation on the Bella Coola river, as *Nuxalkmc* watched for signs of *sputc*: thick clouds of seagulls and “eulachon weather” chasing the fish up the river. Those who remember emphasize that *sputcm* (eulachon time) provided an opportunity for valuable knowledge exchange between generations; important lessons about how to live well and how to be *Nuxalkmc* were transmitted through storytelling and learning-by-doing the Nuxalk way (see (89)). *Sputcm* meant hard work, but also brought joy, laughter, and a sense of purpose and togetherness. Elders recount memories of time spent at the river, where extended families worked together to process the fish over the course of three to four weeks.

Over the past years, I have learned that during *sputcm*, many *Nuxalkmc* had a valued role and identity (fisher, cook, guardian) associated with specialized knowledges and capacities that were handed down from generation to generation. Highly skilled fishermen put in long days of hard, physical work to feed the community, while children prepared and sorted *sputc* for the smokehouse. It took a family of specialized workers to produce *sluq'* (eulachon grease), a highly nutritious oil and valued trade commodity. Everyone knew their place; even small roles like tending the fire or feeding cooks were filled without a centralized leader, demonstrating community interconnections and cohesion, and a felt sense of togetherness. Going through the motions of fishing, river navigation, making and mending *alhtiixw* (eulachon nets) and *satl'a* (river canoes), and processing fish involved detailed processes and skills, which reinforced underlying values and knowledges fundamental to Nuxalk ways of being, and supported key relationships and responsibilities. For example, the first catch of *sputc* was offered to the entire community and delivered to elders, reinforcing the Nuxalk law to “always share a meal”, and emphasizing the cultural practice of distributing wealth. Historically, *sputcm* also marked the end of the ceremonial winter dances (where values and teachings were related) and the beginning of harvest season (where

values and teachings were applied through collaborative practices). This shift implied a change in community leadership and focus from spiritual to practical, accompanied by significant ceremony (106).

During the *Sputc Project*, *Nuxalkmc* were eager to document eulachon fishing knowledges: information on harvesting materials, knots, techniques and conditions; observations about recent river changes and sedimentation patterns. These details were accompanied by humorous stories of time with family, often accompanied by related advice or lessons. Many emphasized that each eulachon processing step is a particular expression of Nuxalk culture, unique to each family or region of origin. *Nuxalkmc* take great pride in the specific taste and colour of local grease, easily distinguishing between that made by different families or communities, and attributing the differences to particular methods of fermentation, cooking, and purification.

Historically, eulachon and grease permeated all elements of **daily life** in Bella Coola, including social and cultural institutions, economic relationships, and spiritual practices. Grease was served with every meal, added to salmon and potatoes, breads, stews, and berries. Until recently, *sputc* provided food security in lean years, and a fresh pulse of nutrients in the spring. The fish figured centrally in cultural events, ceremonial meals, and community feasts, where an abundance of grease was associated with wealth and generosity. As *Sputc Project* coordinator and researcher, I heard many positive accounts of the everyday uses and values of *sputc*: favourite recipes, funny stories, and childhood memories of family time spent at the river, roasting eulachon over the fire. *Nuxalkmc* were also quick to mention that grease is strong medicine. A powerful spring tonic that helps cleanse the body, it used for treatment of a variety of conditions and illnesses. Among elder *Nuxalkmc*, it is well known that when grease was present, other medicine was rarely needed, underlining Nuxalk beliefs about the explicit health and nutritional benefits of the fish. Because grease was once the backbone of the Nuxalk economy, extensive trade routes between the coast and the interior were known as “grease trails”. Grease also increased status and power in personal and family trade relationships, increasing the gravitas of cultural and political events (e.g. potlatches, rodeos).

Collapse

It has been twenty years since Nuxalk *sputc* disappeared. Symbolically and practically, the valley’s long, dark winters have been extended by a spring empty of celebration or purpose. It is my understanding that without *sputcm*, an essential opportunity for each person to find their place as a valued community member, connecting with loved ones and neighbours, has vanished. *Nuxalkmc* describe missing the sense of community that came at *sputcm*, when everyone had a role to play, and everyone was connected – to each other, and to the river. Without the presence of *sputc*, *Nuxalkmc* are gradually forgetting or giving up ancestral practices, roles, responsibilities, and identities related to *sputc*, fishing, and stewardship. For example, *satl’a* (river canoes) and

alhtiixw (traditional eulachon nets) have almost entirely disappeared, and few *Nuxalkmc* remember how to use them. A loss of togetherness during *sputc* is often associated with reduced vibrancy in other community events, attributed to the year not being started in collaboration.

Nuxalkmc often speak of missing the taste of fresh eulachon, of potatoes topped or bread baked with grease. Meanwhile, a whole generation of *Nuxalkmc* have only rarely sampled the fish. Elders express concern that today's youth will lose the taste for *sputc* and all it represents. A lack of grease at community meals is often noted; when present, the precious liquid changes the way people feast, adding an element of levity and excitement. Elders jokingly squabble over limited supplies, and families laugh at their childrens' faces as they try grease. Physical and spiritual connection to the fish is further exacerbated by an engagement with the market economy, which undermines values related to responsibility. Historically, many *Nuxalkmc* abhorred selling grease for money, as this was seen to devalue the fish and contribute to over-harvesting. Now, *Nuxalkmc* access grease from other territories for local consumption at great expense: a 250ml jar may be procured for \$30-50. As such, the loss of *sputc* has not only weakened *Nuxalkmc* trade relationships, but may also be undermining cultural values related to conservation.

Once a foundation of Nuxalk livelihoods and a symbol of wealth, eulachon loss is often associated with reduced prosperity and well-being. Most *Nuxalkmc* directly associate *sputc* loss with a decline in physical health among community members, particularly youth and elders. Without *sputc*, *Nuxalkmc* are forced to rely on non-traditional and processed sources of fat and protein, with links to unhealthy diets. Increases in the prevalence of cardiovascular disease, cancer, arthritis, and diabetes are attributed in part to the consumption of unhealthy food, but also frequently implicate the psychological, relational, and spiritual effects of eulachon disappearance. Similarly, many report that mental health issues already prevalent in the community, including depression, substance use, and suicide, have been on the rise since the disappearance of *sputc*. As such, the loss of *sputc* is associated with an overall reduction in *Nuxalkmc* quality of life – cultural, social, spiritual, and psychological - and an explicit symbol of well-being to many:

Among *Nuxalkmc*, loss of *sputc* brings up palpable despair, anger, and sadness. My questions about eulachon and well-being were answered with stories of disconnection from land, river, and community, tinged with regret and nostalgia. Such reactions underline the fish's role in maintaining relationships and responsibilities essential to Nuxalk identity. Rivers empty of eulachon in springtime add insult to injury after other major social-ecological impacts on Nuxalk well-being. Reflecting this, conversations with *Nuxalkmc* about *sputc* invariably referenced other settler-colonial impacts (e.g. residential school, alcoholism, suicide) and other experiences of dispossession (e.g. reduced fishing opportunities, deforestation, steelhead decline). Indeed, *sputc* loss dovetails other impacts

of colonisation that have compromised cultural continuity and ecological integrity, interrupting daily practices that bring richness and meaning to life, and prompting accounts of other experiences of recent and historic trauma.

Further, eulachon extirpation is associated with a more general loss of control over ancestral lands and waters associated with settler-colonial dispossession. The systematic marginalization of Nuxalk protocols, practices, and values in decision-making has resulted in a profound disempowerment and disengagement that permeates the entire community, undermining not only self-sufficiency but forward-thinking action. Subsumed by a colonial framework, *Nuxalkmc* have experienced a loss of agency, gradually forgetting or giving up long-standing stewardship practices, responsibilities, roles, and identities. Further, because eulachon fishing was unregulated by the state prior to their disappearance, *sputc* loss was particularly harmful in that it undermined a remaining opportunity for self-determination, and everything that flowed in and out of being responsible, sustainable stewards: “they took it away from us – the fish, and our capacity to manage it” (107). Following a lack of action to address *sputc* loss on the part of Canadian authorities, hopelessness, anger, and frustration are often expressed by *Nuxalkmc* in relation to eulachon. Indeed, though I use the word loss to describe *sputc*’s disappearance, it is understood by many *Nuxalkmc* as theft – another word for dispossession.

Sputc renewal: resurgent practices and stewardship action

In many ways, the loss of *sputc* was a wake-up call for *Nuxalkmc*; “*sputc* reminded us that we are in charge of our own decisions” (106). Given the ubiquity and high value of eulachon, it is no surprise that **stewardship** is an important part of *Nuxalkmc*’s relationship with the fish. For thousands of years, *Nuxalkmc* have held the responsibility to respect and protect eulachon for the benefit of all beings and future generations. This responsibility is connected to ancestral histories that recount the first arrival of eulachon in each of four Nuxalk regions, establishing *Nuxalkmc* in place even before the arrival of salmon. This origin stories show that the fish structured of how the community was built and how environmental governance was conceived, in support of *tl’mstaliwa*, the full human experience, providing the foundations of Nuxalk identity and authority (see (89)). Stories and lessons handed down by *Nuxalkmc* first ancestors included sophisticated stewardship practices which, until recently, ensured the long-standing continuity of Nuxalk eulachon: the river was regularly tended to ensure optimal flow and sedimentation for spawning, and prominent community members were assigned the role of “river guardian” to enforce rules, protocols, and practices (called *sxayaxw*) about river conduct and fishing practices. However, much of what historically informed eulachon stewardship was part of Nuxalk *st’cw*: the ethics, values, and behaviours that constitute “being Nuxalk”, but are rarely formally taught or explicitly stated. For example, unspoken understandings and practices related to food distribution and waste were instrumental in

preserving *Nuxalkmc*'s relationship with eulachon. As such, eulachon stewardship played a pivotal role in maintaining *Nuxalkmc* ecological and social-cultural integrity.

Indeed, eulachon are a salient example of failed environmental management impacts Indigenous health and well-being. For *Nuxalkmc*, *sputc* are part of a holistic social, cultural, legal, and spiritual governance system connecting families to ancestral territories and responsibilities. As such, Nuxalk health and *sputc* stewardship are entwined.

Effective eulachon stewardship requires that *Nuxalkmc* be healthy, active, and engaged in decision-making processes (108), informed and empowered to apply cultural knowledges and values to the conservation, protection and renewal of eulachon. Through the *Sputc Project*, we learned that daily habits, seasonal practices, and stewardship actions related to *sputc* are an expression of knowledges that inform what it means to “be *Nuxalkmc*”, entwined in a holistic notion of well-being and the goal of *tl'mstaliwa*. However, some expressed concern that before *Nuxalkmc* can manage *sputc*, they need to re-learn what it means to “be *Nuxalkmc*”. This means taking ownership of one's own stories, enacting and practicing the relationships and structures that form the fabric of the Nuxalk social and political system. Knowledge-holders emphasized that preserving eulachon knowledges requires that *Nuxalkmc* not abandon their spiritual and cultural connection to *sputc*. Given the importance of hands-on knowledge transmission, they suggested that *Nuxalkmc* need to sustain spiritual connections, cultural practices, and ancestral sources of stewardship authority, despite the fishes' continued absence, enacting the relationships and structures that form the fabric of the Nuxalk social and political system through lands-based presence and practice. With this understanding, *Nuxalkmc* are beginning to purposefully re-establish eulachon-related cultural, spiritual, and stewardship practices at the community level.

Over the past decades, local stewardship initiatives, including a yearly eulachon abundance survey and river monitoring, have provided meaningful employment and supported Nuxalk expertise in local eulachon management. They have also created opportunities for social and ecological connection, and transmission of knowledge between generations. Building on this foundation, the Nuxalk Stewardship Office initiated the *Sputc Project* with the intention to bolster local knowledges and authority related to eulachon stewardship. The project emphasized *Nuxalkmc* relationships with *sputc*, community, land, and ancestors, connecting them to Nuxalk authorities and governance systems, and representing *sputc*-related knowledges and practices a valued resource book for community members (see (89)). Touted as a vehicle for healing from colonialism, the book has been described as “a way for *Nuxalkmc* to process grief and loss” (109). The project's methods of documenting, interpreting, representing and applying Nuxalk eulachon knowledges and practices engaged the ancestral governance system and local protocol, supporting self-determined governance and decision-making capacity (54).

Other eulachon-related cultural practices are also being revived in Nuxalk territory. Recognising the cultural knowledge, spirituality, and ceremony as important elements of eulachon stewardship, the Stewardship Office initiated a community *Sputc Ceremony* in 2014 (110). During an uplifting inaugural event, a carved pole was raised to symbolize *sputc*'s arrival (and restoration) to the Bella Coola River. Cultural knowledge keepers sang the ancestral *sputc* song, and conducted an ancient ceremony affirming *Nuxalkmc* spiritual connection to the fish. Now a yearly event, the *Sputc Ceremony* brings the community together, reinstating the joyful feeling of *sputcm*. In the absence of the fish and fishing, this ceremony connects community to fundamental relationship with *sputc* (where management planning might not), reinforces responsibility, and rekindles hope. Following three years of ceremony, *Nuxalkmc* elders and youth recently made grease for the first time in twenty years (111). The grease camp was occupied continuously for over two weeks, and a positive, festive atmosphere prevailed, rain or shine. Diverse community members visited the grease camp; knowledge was shared and stories told. Several of those involved remarked at feelings of connection to the river, to Nuxalk identity, and to each other. For some, the distinct, strong smell of fermenting fish brought tears and memories; for others, myself included, elation at an enriched understanding of elders' stories. Once present, elders visiting the camp were reminded of Nuxalk words related to grease-making, which might otherwise have been forgotten forever. This initiative also re-invigorated important relationships with neighbouring communities (as sources of fish and knowledge), as well as enabling the renewal of food distribution protocols (ensuring that all community members accessed available fish). As such, there was a feeling of coming together and renewed interconnection, which is captured in a common Nuxalk word: *lixsatimutilh* (we are medicine for each other).

Through these activities, Nuxalk connection to *sputc* was strengthened. In 2018, several small schools of eulachon were observed in the Bella Coola river (112). News of *sputc*'s presence quickly spread through the community, and I joined a line of cars and people watching seagulls swooping above the river. My heart sang as Nuxalk leaders and elders voluntarily tended the river access point to prevent disturbance of the fish – still a very small fraction of the original run - evidence of community-driven stewardship envisioned by the *Sputc Project*, based on the community adage of interrelationship: *smaw ti slq'ilh* (one heart, one mind). While the reasons for eulachon's potential return remains unknown, it has been attributed by *Nuxalkmc* to the community's growing attention to its relationship with the fish, including spiritual, cultural, ceremonial, and stewardship practices. As such, increased involvement in culture and stewardship based on local protocols and practices is not only a movement toward ecological integrity, but an expression of a larger agenda of self-determination with the potential to foster social-well being among *Nuxalkmc*.

DISCUSSION

In the results above, I relate a simplified and at times essentialized account of the story of Nuxalk eulachon abundance, collapse, and renewal in relation to Nuxalk health and well-being. Building on these accounts, this discussion is presented in two sections. In the first, I consider how eulachon support *Nuxalkmc* wellbeing by highlighting interconnected processes, experiences, relationships, identities, roles, responsibilities, and practices. In the second, I explore the implications of this work for research, policy, and practice, detailing how a decolonizing perspective helped me to articulate the depth of *Nuxalkmc*'s relationship with *sputc*.

Nuxalk sputc and interconnected well-being values

In the accounts above, I intended to illustrate the depth and richness of *Nuxalkmc*'s connection to eulachon as a symbol of wealth and well-being, and a source of cultural and political strength related to health, resurgence, and self-determination. In so doing, I suggested that *Nuxalkmc*'s revitalised relationship with eulachon may be an important contributor to community well-being and healing, even in the absence of eulachon. Focusing on eulachon as an example of **dispossession**, I noted how the mechanisms of environmental management impact Nuxalk well-being through the processes of *disconnection* of (or reconnection to) ancestral lands and waters, *exclusion* of (or resurgence in) *Nuxalkmc* knowledges in environmental decision-making, and exploitation and *depletion* (or protection) of environments.

Through the accounts above, I intended to demonstrate congruence with Indigenous notions of well-being as a holistic, relational state indistinguishable from that of community, land, and spirit (8,12,113–116), showing how well-being benefits associated with eulachon may occur simultaneously, and impacts related their loss may act in concert (7). For example, grease-making is a practice that reinforces relationships, supports inter-generational knowledge transmission, strengthens identity and connection to land, and produces an oil that is valued in trade and medicine. Drawing on scholarship by resurgent and decolonizing scholars (1,23,63,117–120), I particularly wish to highlight the roles of eulachon-related knowledges and practices (e.g. fishing, canoeing, grease-making, stewardship), relationships (e.g. with the river, elders, ancestors, and neighbours), roles, responsibilities, and identities (e.g. grease-maker, river guardian, knowledge-holder) in supporting Nuxalk well-being. These interrelated elements are key pathways connecting Nuxalk eulachon and well-being, beyond categorization into the standard domains of physical, psychological, social, cultural, spiritual, and economic well-being (20,30).

The accounts above show that *Nuxalkmc*'s connection to eulachon strengthens other **relationships**, including those with ancestors and the spirit world, family and community, culture and language. Indeed, eulachon may be characterized as an important and symbolic strand in the social fabric of a society that is highly community-oriented and identified. Beyond the recognised benefits of social connection (121–123), cultural connectedness,

cultural continuity, and Indigenous identity are part of a constellation of protective factors when it comes to Indigenous physical and mental health (8,124–127). While insufficiently captured in the accounts above, I have come to learn that the role of **spiritual connection** is paramount to connecting the processes of dispossession to Indigenous health. Castellano (2015) emphasizes that “spiritual health is expressed and sustained in relationships with family and friends. It is enlarged in reconnecting with the land that supports our feet” (128). In this regard, Linda Tuhiwai Smith (2016) emphasizes:

“...it is important to recognize the depth of expertise of our own community based knowledge keepers to conduct those extraordinary, metaphysical tasks, such as mediating the material and spiritual world, escorting a spirit on a physical and spiritual journey, binding ancient genealogies with contemporary realities, sustaining relationships while healing collective grief, seeking visions and teachings from our ancestors, or cleansing people and spaces. The knowledge that sits behind these roles and responsibilities is often not recognised, understood or valued by non-indigenous colleagues or institutions, likened more - as it often is - to religious rituals, dogma and ceremonies than to forms of knowledge production” (116).

Connection to lands and waters has also long been emphasized in supporting Indigenous peoples’ well-being (37,113,118,120,129–132), including those related to “bush camps” and other lands-based education initiatives (118,133–137). Scholars have equally highlighted how settler-colonial dispossession has shaped Indigenous health and well-being by reducing access to and use of traditional resources, undermining core cultural practices and knowledge transmission, and compromising social relationships (1,3,7,24,37,130). Taiaiake Alfred underlines that the “disconnection from the spiritual, cultural, and physical heritage of our Indigenous homelands is the real reason for the cultural and physical disempowerment of First Nations, as collectivities and individuals” (1).

In the accounts above, I suggest that eulachon-related (i.e. lands-based) **practices** play a vital role in transmitting knowledges beyond those related to the fish alone, including language, values, and core cultural and political practices (23,63,134,135), in order to support “spiritual revitalization and cultural regeneration” essential to wellness (1). Among others, eulachon provide the context to enact technical knowledges, including fishing and processing, grease-making, ceremony, and stewardship. Despite the fish’s absence, these practices remain highly valued by many *Nuxalkmc*. Entwined in complex knowledge systems, such practices are “far more than provisioning activities” (138); they are deeply tied to peoples’ sense of identity, belonging and lifeways. Eulachon-related practices also create the context for meaningful **roles and responsibilities** (e.g. fisher, grease-maker, guardian) that give purpose and structure to individual and collective life, supporting culture, social relationships, knowledge transmission, and management systems (1,3,5,10,24,37,139–141).

Nuxalkmc's relationship with eulachon is tied to a broader cultural and political context that affects the community collectively. Recognizing the depth and magnitude of eulachon's value for the community as a whole is therefore essential to understanding the impacts of their loss. Through the accounts above, I speak to *Nuxalkmc*'s affective (emotional) experiences of eulachon disappearance, including anger, grief, and disconnection as natural responses to a great loss, trauma, and injustice involving body, mind, and spirit - and also as related to a collective loss of agency in relationship to the environment. Cunsolo and colleagues (2011) similarly describe an emotional "mood" experienced by an entire Northern community as a result of climate change (142). *Nuxalkmc*'s experience of profound natural and cultural loss parallels that described by others as a *cultural wound* (125), a *spiritual crisis* (1), *solastalgia* (143), *ecological grief* (144) or a hole in the *order of things* (7). Eulachon's disappearance has affected the community as a whole: its fabric, its vitality, its cohesion. Healing from the ongoing impacts of settler-colonialism requires that "shared cultural wounds" be addressed collectively and "treated with "cultural medicines" prescribed and acted upon by whole cultural communities" (1,63,118,119,125).

Through the accounts above, I suggest that just as eulachon loss is a sign of dispossession, revitalization of eulachon knowledges and practices may play both symbolic and practical roles in Nuxalk healing from the impacts of settler-colonialism. In particular, in the third section I highlight local eulachon stewardship as an important symbol of cultural and political resurgence. Taking care of eulachon is part of being *Nuxalkmc*; it provides identity and belonging for those actively involved, and collective responsibility for community members more generally. Loss of *sputc* was particularly harmful in that it undermined one of very few remaining instances of Nuxalk authority, compromising important governance capacities and conservation values fundamental to ecological and social-cultural wellness. Beyond supporting proximal and intermediary determinants of health (e.g. employment) (145–147), the *Sputc Project* and related initiatives supported Nuxalk well-being by reconnecting cultural and spiritual practices with ancestral responsibilities, governance protocols, and renewed agency. Just as these practices survived settler-colonial regulation and assimilation, *Nuxalkmc* are surviving a (temporary) loss of eulachon. Indeed, it may be these same relationships, responsibilities, and practices that bring eulachon back.

Implications for research and practice

Below, I reflect on the implications of this work for research and decision-making, theory, policy and practice, focusing on the role of environmental management as a determinant of health, and discuss how a decolonizing perspective might serve interested scholars and practitioners at the intersection of health and environmental management.

Although well-being is increasingly considered as a goal of management negotiations and agreements, including those on BC's central coast (24,148), the processes and pathways linking management and well-being are often unclear, while the means and frameworks used to assess the impacts of policy or social-ecological change are incongruent with local realities and meanings (24). This work corroborates others' in underlining the importance of local definitions of well-being in relating environmental management values and outcomes, and recommending any formal assessment of Indigenous well-being be conducted in collaboration with Indigenous people, beginning with an appropriate and considered community engagement process (5,18,19,28,30–32,36,149). Notably, many of the insights above are reflected in well-being assessment frameworks developed in partnership with First Nations of the Salish Sea, which seek to inform locally-determined processes for well-being research related to environmental management (18,28,30,31). These frameworks move toward capturing the impacts of depleted environments on First Nations' relationships to ancestral lands and waters, community, and culture, as well as the importance of self-determination and participation in decision-making. In particular, I find a great deal of congruence in health indicators developed by Jaime Donatuto and colleagues (2015). Originally used to assess the impacts of contaminated seafoods, this framework includes the domains of cultural use, community connection, education, natural resource security, self-determination, and resilience/balance (18). Each indicator is accompanied by a set of explanatory attributes that successfully capture complex Salishan notions of well-being, interweaving spirituality and connection to land throughout. The congruence of these indicators with the accounts above is testament to the validity of both studies, and suggests that Donatuto's framework and methods might inform future well-being indicator and assessment work by *Nuxalkmc* or other coastal Nations.

This study complements existing work in the determinants of health “beyond the social” by highlighting the overarching role of settler-colonialism in reproducing health inequities. In particular, I highlight the mechanisms and structures of dispossession as key to perpetuating settler-colonialism and its impacts, including disconnection of Indigenous people from ancestral lands and waters, exclusion of Indigenous peoples and knowledges from environmental decision-making, and enclosure, exploitation, and depletion of ecosystems (1,43,60,61,133). Yet, the role of environmental management as a determinant of Indigenous health and well-being is rarely underlined, with few explicitly connecting the dots between the institutions and processes of dispossession and Indigenous peoples' lived experiences (1,37,38,43,44,62). In the accounts and discussion above, I make a clear case for considering environmental management (according to state or ancestral laws) as a determinant of Indigenous health and well-being, and local stewardship as an important expression of Indigenous strength and resurgence. In particular, I show *how* Nuxalk health and well-being is systematically constituted, (re)produced, and governed through settler-colonial or resurgent systems of environmental management. Because land and its occupation and control are central to the project of decolonization (1,60,62), any decolonizing health theory must have

environmental management at its core. By centering the processes of dispossession and environmental management as root determinants of health, this work provides an example of how a grounded decolonizing lens might be added to current Indigenous health equity or social determinants frameworks.

However, following Sarah de Leeuw and colleagues (2015), I would suggest that simply “adding colonialism” or its corollaries (i.e. management) to a social determinants of health or well-being assessment framework does not sufficiently enable consideration of the realities of Indigenous people’s health (2), including the ways in which settler-colonialism interacts with other systems, processes, environments, and determinants. I suggest that a research informed by health equity lens drawing on theories of social justice (150), intersectionality (13,151) and decolonization might move from a focus on “how we define well-being” (and the processes by which we define it) (32) to learning about how related structures and processes are (re)produced, governed, and embodied, connecting local meanings to structural and relational determinants of health. This requires considering the systems and institutions that govern whose knowledges, values, and meanings are prioritized in decision-making, whose authority counts, and how these systems might be transformed to support Indigenous self-determination.

Some of these considerations are increasingly addressed in the realm of collaborative and community-engaged environmental management (15,21,87,152,153), which recognize that related processes, policies, and structures matter. The roles of Indigenous peoples and knowledges in environmental decision-making may therefore be considered expressions of (de)colonisation that are key to promoting (or exacerbating) well-being. Mirroring this work, health equity scholars suggest that addressing inequities begins with engagement with the community impacted by governance structures and relationships (154,155). Future action based on this understanding suggests that addressing and healing from the harms of settler-colonialism and related disconnection and dispossession will require challenging and transforming existing institutions and taking up systemic and intersectoral solutions to promote protective factors, community recovery, and cultural and political resurgence. Over a decade ago, Nancy Turner (2008) suggested six processes to develop “a more positive and equitable basis for decision-making” around land and resources: focusing on what matters to the people affected; describing what matters in meaningful ways; making a place for these concerns in decision-making; evaluating future losses and gains from a historical baseline; recognizing culturally derived values as relevant; creating better alternatives for decision-making (7). Since then several have detailed what this kind of change might look like on the ground (10,15,51,52,152). In the case of eulachon management, a site of interaction between large-scale social-ecological change and Nuxalk well-being, this means supporting social and cultural programs, lands-based education, and knowledge transfer related to the fish, as well as ensuring local stewardship priorities and practices are upheld and respected at every level of jurisdiction (see (54)).

CONCLUSION

This paper served to connect two separate spheres of research and practice, applying health equity theory in the context of environmental management and Indigenous well-being, and highlighting the relevance of environmental management to those interested in the determinants of health and health equity. Through a case study of eulachon in Nuxalk territory, I attempted to articulate the importance of eulachon for *Nuxalkmc* health and well-being during three stages of their relationship: abundance, collapse, and renewal.

Taking up Indigenous perspectives and a decolonizing agenda, many have underlined that the social, political, cultural, and historical contexts of settler-colonialism constitute the roots of ongoing health inequities, implying that self-determination and resurgence are the foundations of Indigenous well-being. Applying health equity perspectives, I moved beyond consideration of proximal determinants of health or categorical health assessment frameworks to highlight the structures, values, and processes constitute, (re)produce and govern Nuxalk well-being to produce inequitable health outcomes. In particular, focusing on eulachon as an example of dispossession, I noted how the mechanisms of environmental management impact Indigenous well-being through the processes of disconnection (or reconnection), political and cultural exclusion (or resurgence), and enclosure, exploitation, and depletion (or protection) of ecosystems and their inhabitants. Beyond the standard domains of physical, psychological, social, cultural, spiritual, and economic well-being, I demonstrated how eulachon support every aspect of *Nuxalkmc* well-being and highlighted interconnected values including cultural knowledges and practices (e.g. fishing, canoeing, stewardship), relationships (e.g. to lands and waters, community, and ancestors), roles, responsibilities, and identities (e.g. fisherman, grease-maker, guardian). These may shed light on the intangible or cumulative impacts of interest to those interested in assessing the connection between environmental conditions or management and Indigenous well-being.

In this work, I highlighted the role of Nuxalk eulachon and their disappearance as evidence of settler-colonial impacts, and Nuxalk stewardship revival as an expression and symbol of cultural resurgence and political self-determination. Invested in bolstering Indigenous well-being in the face of ongoing settler-colonial impacts and related social and ecological inequities, I intend to support those interested in promoting the perspectives and priorities of Indigenous leaders and communities. Ultimately, addressing and healing from the harms of colonialism will require cultural and political strength in every aspect of life, from the personal to the systemic. Through this work, I suggest that over and above participation or integration in environmental management processes, Indigenous well-being requires leadership and self-determination in any related decision-making. From this perspective, local stewardship of (and jurisdiction over) ancestral lands and waters may be an important cultural medicine and health equity strategy.

REFERENCES

1. Alfred T. Colonialism and State Dependency. *Journal of Aboriginal Health*. 2009;(November):42–60.
2. de Leeuw S, Lindsay NM, Greenwood M. Introduction: Rethinking Determinants of Indigenous Peoples' Health in Canada. In: Greenwood M, de Leeuw S, Lindsay NM, Loppie Reading C, editors. *Determinants of Indigenous Peoples' Health in Canada: Beyond the Social*. Toronto: Canadian Scholars' Press; 2015. p. xi–xxix.
3. Donatuto J, Satterfield TA, Gregory R. Poisoning the body to nourish the soul: Prioritising health risks and impacts in a Native American community. *Health, Risk & Society*. 2011 Apr;13(2):103–27.
4. Greenwood M, de Leeuw S. Teaching from the land: Indigenous people, our health, our land, our children. *Canadian Journal of Native Education*. 2007;30(1):48–53.
5. Richmond C. The Relatedness of People, Land, and Health: Stories from Anishinabe Elders. In: Greenwood M, de Leeuw S, Lindsay NM, Loppie Reading C, editors. *Determinants of Indigenous Peoples' Health in Canada - Beyond the Social*. Toronto: Canadian Scholars' Press; 2015. p. 47–63.
6. Richmond C, Elliott SJ, Matthews R, Elliott B. The political ecology of health: perceptions of environment, economy, health and well-being among [] Namgis First Nation. *Health & place*. 2005;11(4):349–365.
7. Turner NJ, Gregory R, Brooks C, Failing L, Satterfield T. From invisibility to transparency: identifying the implications. *Ecology and society*. 2008;13(2).
8. Loppie Reading C, Wien F. *Health Inequalities and the Social Determinants of Aboriginal Peoples' Health*. National Collaborating Centre for Aboriginal Health; 2010.
9. Teegee T. Take care of the land and the land will take care of you: resources, development, and health. In: Greenwood M, de Leeuw S, Lindsay NM, Loppie Reading C, editors. *Determinants of Indigenous Peoples' Health in Canada: Beyond the Social*. Toronto: Canadian Scholars' Press; 2015. p. 120–33.
10. Turner NJ, Berkes F, Stephenson J, Dick J. Blundering Intruders: Extraneous Impacts on Two Indigenous Food Systems. *Human Ecology*. 2013 Jun 9;
11. Greenwood M, de Leeuw S, Lindsay N. Challenges in health equity for Indigenous peoples in Canada. *The Lancet*. 2018 Apr;391(10131):1645–8.
12. Greenwood M, de Leeuw S, Lindsay NM, Loppie Reading C, editors. *Determinants of Indigenous Peoples' Health in Canada - Beyond the Social*. Toronto: Canadian Scholars' Press; 2015. 279 p.
13. Hankivsky O, editor. *Health inequities in Canada: Intersectional frameworks and practices*. UBC Press; 2011.
14. Thielmann T. Enhancing the Environmental Stewardship Authority of Indigenous Peoples [Internet]. Coastal First Nations / UVic Environmental Law Centre / West Coast Environmental Law; 2012 May p. 36. Available from: <https://www.indigenousguardianstoolkit.ca/community-resource/enhancing-environmental-stewardship-authority-indigenous-peoples-coastal>

15. von der Porten S, de Loë R, Plummer R. Collaborative Environmental Governance and Indigenous Peoples: Recommendations for Practice. *Environmental Practice*. 2015 Jun;17(02):134–44.
16. Jones R, Rigg C, Pinkerton E. Strategies for assertion of conservation and local management rights: A Haida Gwaii herring story. *Marine Policy*. 2016 Oct;
17. Harris D, Millerd P. Food Fish, Commercial Fish, and Fish to Support a Moderate Livelihood: Characterizing Aboriginal and Treaty Rights to Canadian Fisheries. *Arctic Review on Law and Politics*, Vol 1, pp 82-107, 2010. 2010;
18. Donatuto J, Campbell L, Gregory R. Developing Responsive Indicators of Indigenous Community Health. *International Journal of Environmental Research and Public Health*. 2016 Sep 9;13(9):899.
19. Panelli R, Tipa G. Placing Well-Being: A Maori Case Study of Cultural and Environmental Specificity. *EcoHealth*. 2007 Dec;4(4):445–60.
20. Breslow SJ, Sojka B, Barnea R, Basurto X, Carothers C, Charnley S, et al. Conceptualizing and operationalizing human wellbeing for ecosystem assessment and management. *Environmental Science & Policy*. 2016 Dec;66:250–9.
21. Nadasdy P. The Politics of Tek: Power and the “Integration” of Knowledge. *Arctic Anthropology*. 1999;36(1/2):1–18.
22. Bohensky EL, Butler JRA, Davies J. Integrating Indigenous Ecological Knowledge and Science in Natural Resource Management: Perspectives from Australia. *Ecology and Society*. 2013;18(3).
23. McGregor D. Coming Full Circle: Indigenous Knowledge, Environment, and Our Future. *The American Indian Quarterly*. 2004;28(3):385–410.
24. Low M. Practices of sovereignty: negotiated agreements, jurisdiction, and well-being for Heiltsuk Nation [PhD, Resource Management and Environmental Studies]. [Vancouver, BC]: University of British Columbia; 2018.
25. Chan KMA, Guerry AD, Balvanera P, Klain S, Satterfield T, Basurto X, et al. Where are cultural and social in ecosystem services? A framework for constructive engagement. *BioScience*. 2012;62(8):744–756.
26. Satterfield T, Gregory R, Klain S, Roberts M, Chan KM. Culture, intangibles and metrics in environmental management. *Journal of Environmental Management*. 2013 Mar;117:103–14.
27. Artelle K, Stephenson J, Bragg C, Housty J, Housty W, Kawharu M, et al. Values-led management: the guidance of place-based values in environmental relationships of the past, present, and future. *Ecology and Society*. 2018 Aug 24;23(3).
28. Gregory R, Easterling D, Kaechele N, Trousdale W. Values-Based Measures of Impacts to Indigenous Health. *Risk Analysis*. 2016 Aug 1;36(8):1581–8.
29. Donatuto J, Grossman EE, Konovsky J, Grossman S, Campbell LW. Indigenous Community Health and Climate Change: Integrating Biophysical and Social Science Indicators. *Coastal Management*. 2014 Jul 4;42(4):355–73.

30. Biedenweg K, Stiles K, Wellman K. A holistic framework for identifying human wellbeing indicators for marine policy. *Marine Policy*. 2016 Feb;64:31–7.
31. Amberson S, Biedenweg K, James J, Christie P. “The Heartbeat of Our People”: Identifying and Measuring How Salmon Influences Quinault Tribal Well-Being. *Society & Natural Resources*. 2016 Dec;29(12):1389–404.
32. Biedenweg K, Gross-Camp N. A brave new world: integrating well-being and conservation. *Ecology and Society* [Internet]. 2018 May 30 [cited 2018 Dec 23];23(2). Available from: <https://www.ecologyandsociety.org/vol23/iss2/art32/>
33. Prout S. Indigenous Wellbeing Frameworks in Australia and the Quest for Quantification. *Soc Indic Res*. 2012 Nov 1;109(2):317–36.
34. Czyzewski K. Colonialism as a Broader Social Determinant of Health. *International Indigenous Policy Journal* [Internet]. 2011 May [cited 2018 Feb 15];2(1). Available from: <http://ir.lib.uwo.ca/iipj/vol2/iss1/5/>
35. de Leeuw S, Greenwood M. Beyond Borders and Boundaries: Addressing Indigenous Health Inequities in Canada Through Theories of Social Determinants of Health and Intersectionality. In: Hankivsky O, editor. *Health Inequities in Canada: Intersectional Frameworks and Practices*. Vancouver: UBC Press; 2011. p. 53–70.
36. Richmond C, Cook C. Creating conditions for Canadian aboriginal health equity: the promise of healthy public policy. *Public Health Reviews*. 2016 Dec;37(1).
37. Richmond C, Ross NA. The determinants of First Nation and Inuit health: A critical population health approach. *Health & Place*. 2009 Jun 1;15(2):403–11.
38. Brown H, McPherson G, Peterson R, Newman V, Cranmer B. Our Land, Our Language: Connecting Dispossession and Health Equity in an Indigenous Context. *Canadian Journal of Nursing Research*. 2012;44(2):21.
39. Dhamoon RK, Hankivsky O. Why the theory and practice of intersectionality matter to health research and policy. In: Hankivsky O, editor. *Health Inequities in Canada: Intersectional Frameworks and Practices*. Vancouver: UBC Press; 2011. p. 16–50.
40. Asch M. *On Being Here to Stay: Treaties and Aboriginal Rights in Canada*. University of Toronto Press; 2014. 230 p.
41. Coulthard GS. Subjects of empire: Indigenous peoples and the ‘politics of recognition’ in Canada. *Contemporary Political Theory*. 2007;6(4):437–60.
42. Joseph B. *21 Things You May Not Know About The Indian Act: Helping Canadians Make Reconciliation with Indigenous Peoples a Reality*. Port Coquitlam: Indigenous Relations Press; 2018. 189 p.
43. Pasternak S. *Grounded Authority: The Algonquins of Barriere Lake against the State*. U of Minnesota Press; 2017. 487 p.

44. Harris D. *Fish, law, and colonialism: The legal capture of salmon in British Columbia*. Toronto: University of Toronto Press; 2001.
45. Harris D. *Landing native fisheries: Indian reserves and fishing rights in British Columbia, 1849-1925*. Vancouver: UBC Press; 2008. 266 p. (Law and society series).
46. Newell D. *Tangled Webs of History: Indians and the Law in Canada's Pacific Coast Fisheries*. Toronto ; Buffalo: University of Toronto Press; 1993. 306 p.
47. Black K, McBean E. Increased Indigenous Participation in Environmental Decision-Making: A Policy Analysis for the Improvement of Indigenous Health. *International Indigenous Policy Journal*. 2016 Oct 1;7(4).
48. Eckert L. *Towards indigenous marine management: a case study of yelloweye rockfish on the central coast of British Columbia [Masters thesis]*. [Victoria]: University of Victoria; 2017.
49. Gauvreau A, Lepofsky D, Rutherford M, Reid M. "Everything revolves around the herring": the Heiltsuk–herring relationship through time. *Ecology and Society*. 2017 Apr 26;22(2).
50. Klain S, Beveridge R, Bennett N. Ecologically sustainable but unjust? Negotiating equity and authority in common-pool marine resource management. *Ecology and Society*. 2014 Dec 18;19(4).
51. von der Porten S, Corntassel J, Mucina D. Indigenous nationhood and herring governance: strategies for the reassertion of Indigenous authority and inter-Indigenous solidarity regarding marine resources. *AlterNative: An International Journal of Indigenous Peoples*. 2019;
52. von der Porten S, Lepofsky D, McGregor D, Silver JJ. Recommendations for marine herring policy change in Canada: Aligning with Indigenous legal and inherent rights. *Marine Policy*. 2016 Dec;74:68–76.
53. Hilland A. *Extinguishment by extirpation: The Nuxalk eulachon crisis [Master of Laws]*. [Vancouver]: University of British Columbia; 2013.
54. Beveridge R, Moody M, Murray G, Darimont CT. Paper 4 - The Nuxalk Sputc (Eulachon) Project: strengthening Indigenous management authority from the ground up. In: RACHELLE BEVERIDGE PHD DISSERTATION - IP. Victoria: University of Victoria; 2019.
55. Garibaldi A, Turner N. Cultural Keystone Species: Implications for Ecological Conservation and Restoration. *Ecology and Society*. 2004 Apr 13;9(3).
56. Moody M. *Eulachon past and present [Master of Science]*. [Vancouver]: University of British Columbia; 2008.
57. Edwards GT. Oolachen time in Bella Coola. *The Beaver*. 1978;(Autumn):32–7.
58. Kuhnlein HV, Yeboah F, Sedgemore M, Sedgemore S, Chan HM. Nutritional Qualities of Ooligan Grease: A Traditional Food Fat of British Columbia First Nations. *Journal of Food Composition and Analysis*. 1996 Mar;9(1):18–31.
59. Haggan N. The case for including the cultural and spiritual values of eulachon in policy and decision-making. Vancouver, B.C.; 2010 p. 44.

60. Tuck E, Yang KW. Decolonization is not a metaphor. *Decolonization: Indigeneity, Education and Society*. 2012;1(1):1–40.
61. Coulthard GS. *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition*. Mineapolis: University of Minnesota Press; 2014. 229 p.
62. Alfred T. Opening words. In: Simpson LB, editor. *Lighting the Eighth Fire: The Liberation, Resurgence, and Protection of Indigenous Nations*. Winnipeg: ARP Books; 2008. p. 9–12.
63. Simpson LB. *As We Have Always Done: Indigenous Freedom through Radical Resistance*. 3rd ed. edition. Minneapolis: Univ Of Minnesota Press; 2017. 216 p.
64. Noisecat JB. The resurgence of the Nuxalk. *Canadian Geographic* [Internet]. 2018 [cited 2018 Dec 14];(Sept/Oct). Available from: <https://www.canadiangeographic.ca/article/resurgence-nuxalk>
65. McIlwraith TF. *The Bella Coola Indians*. Toronto: University of Toronto Press; 1992. 1558 p.
66. Kennedy D, Bouchard RT. Northern Coast Salish. In: *Handbook of North American Indians*. Washington: Smithsonian Institution; 1990. p. 441–52.
67. Nuxalk Nation. Nuxalk Territory Maps [Internet]. 2019 [cited 2019 Jan 18]. Available from: <http://www.nuxalk.net/html/maps.htm>
68. Kramer J. *Switchbacks: Art, Ownership, and Nuxalk National Identity*. UBC Press; 2011. 169 p.
69. Winbourne J. *Taking Care Of Salmon: Significance, Sharing, and Stewardship in a Nuxalk Food Fishery* [Master of Environmental Science]. [Nova Scotia]: Dalhousie University; 1998.
70. Burke CL. When the fishing's gone: understanding how fisheries management affects the informal economy and social capital in the Nuxalk Nation [M.A., Resource Management and Environmental Studies]. [Vancouver, B.C.]: University of British Columbia; 2010.
71. Kuhnlein HV, Fediuk K, Nelson C, Howard E, Johnson S. The Legacy of the Nuxalk Food and Nutrition Program for the Food Security, Health, and Well-Being of Indigenous Peoples in British Columbia. *BC Studies*. 2013;(179):159.
72. Weicker F. Social and economic assessment and analysis of First Nation communities and territorial natural resources for integrated marine use planning in the Pacific North Coast Integrated Management Area [Internet]. Ference Weicker & Company Ltd; 2009 [cited 2013 Jun 7]. Available from: <http://ccira.ca/media/documents/pdf/marine-sector-report-f-w.pdf>
73. BC Stats. *Local Health Area 49 - Bella Coola Valley Socio-Economic Profile*. Victoria; 2012 p. 10.
74. Social Planning and Research Council of British Columbia. *Who Gets Sustenance? Community Voices Speak About Access to Local, Healthy Food*. Burnaby: Social Planning and Research Council of British Columbia (SPARC BC); 2014.
75. Thommasen HV, Zhang W. Health-related quality of life and type 2 diabetes: A study of people living in the Bella Coola Valley. *BC Medical Journal*. 2006;6(48):272–9.

76. Patenaude J. Prevalence of diabetes mellitus in the Aboriginal and non-Aboriginal people living in the Bella Coola Valley. [Ottawa]: Library and Archives Canada = Bibliothèque et Archives Canada; 2006.
77. Barton SS, Thommasen HV, Tallio B, Zhang W, Michalos AC. Health And Quality Of Life Of Aboriginal Residential School Survivors, Bella Coola Valley, 2001. *Soc Indic Res.* 2005 Sep 1;73(2):295–312.
78. Self BR, Birmingham LC, Elliott R, Zhang W, Thommasen HV. The prevalence of overweight adults living in a rural and remote community. The Bella Coola Valley. *Eat Weight Disord.* 2005 Jun 1;10(2):133–8.
79. Thommasen HV, Hanlon N, Thommasen C, Zhang W. Alcohol drinking habits and community perspectives on alcohol abuse in the Bella Coola Valley. *Canadian journal of rural medicine.* 2006;11(1):15–21.
80. Hipwell WT. Chapter 9: Environmental Conflict and Democracy in Bella Coola: Political Ecology on the Margins of Industria. In: Adkin LA, editor. *Environmental Conflict and Democracy in Canada.* Vancouver: UBC Press; 2010. p. 222–49.
81. Mack J. Remembering Ista. *Women & Environments International Magazine*; Toronto. 2006 Fall;(72/73):16–8.
82. Trosper RL. Northwest coast indigenous institutions that supported resilience and sustainability. *Ecological Economics.* 2002;41(2):329–344.
83. Haggan N, Turner N, Carpenter J, Jones JT, Menzies C, Mackie Q. 12,000+ years of change: Linking traditional and modern ecosystem science in the Pacific Northwest. Vancouver, B.C.: Fisheries Centre, University of British Columbia; 2006.
84. Lepofsky D, Caldwell M. Indigenous marine resource management on the Northwest Coast of North America. *Ecological Processes.* 2013;2(1):12.
85. LaVeaux D, Christopher S. Contextualizing CBPR: Key principles of CBPR meet the Indigenous research context. *Pimatisiwin.* 2009;7(1):1.
86. Carlson E. Anti-colonial methodologies and practices for settler colonial studies. *Settler Colonial Studies.* 2016;7(4):496–517.
87. Adams MS, Carpenter J, Housty JA, Neasloss D, Paquet PC, Service C, et al. Toward increased engagement between academic and indigenous community partners in ecological research. *Ecology and Society.* 2014;19(3).
88. Beveridge R, Moody M, Pauly B, Snxakila CT, Murray G, Darimont CT. Paper 2 - The Nuxalk Sputc Project process: applying an Indigenous methodology in support of local eulachon management authority. In: RACHELLE BEVERIDGE PHD DISSERTATION - IP. Victoria: University of Victoria; 2019.
89. Beveridge R, Moody M, Snxakila CT, Murray G, Pauly B, Darimont CT. Paper 3 - Indigenous knowledges, Indigenous authority: Alhquh ti Sputc and the respectful representation Nuxalk eulachon knowledges. In: RACHELLE BEVERIDGE PHD DISSERTATION. Victoria, B.C.; 2019.
90. Sputc Project Team. *Alhquh ti Sputc (The Eulachon Book).* Bella Coola: Nuxalk Stewardship Office; 2017. 172 p.

91. Kovach M. *Indigenous Methodologies: Characteristics, Conversations, and Contexts*. University of Toronto Press; 2009. 299 p.
92. Wilson S. *Research Is Ceremony: Indigenous Research Methods*. Black Point, N.S: Fernwood Publishing; 2009. 144 p.
93. Louis RP. Can You Hear Us Now? Voices from the Margin: Using Indigenous Methodologies in Geographic Research. *Geographical Research*. 2007;45(2):130–139.
94. Absolon K, Willett C. Putting Ourselves Forward: Location in Aboriginal Research. In: Brown L, Strega S, editors. *Research As Resistance: Critical, Indigenous, and Anti-oppressive Approaches*. Toronto: Canadian Scholars' Press; 2005. p. 97–126.
95. Nicholls R. Research and Indigenous participation: critical reflexive methods. *International Journal of Social Research Methodology*. 2009 Apr;12(2):117–26.
96. Beveridge R. RACHELLE BEVERIDGE PHD DISSERTATION - IN PROGRESS [PhD, Social Dimensions of Health]. [Victoria]: University of Victoria; 2019.
97. Schnarch B. Ownership, control, access, and possession (OCAP) or self-determination applied to research: A critical analysis of contemporary First Nations research and some options for First Nations communities. *International Journal of Indigenous Health*. 2004;1(1):80.
98. Kirkness VJ, Barnhardt R. First Nations and Higher Education: The Four R's—Respect, Relevance, Reciprocity, Responsibility. *Journal of American Indian Education*. 1991;30(3):1–15.
99. Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada. Tri-council policy statement: ethical conduct for research involving humans 2014. 2014.
100. Moore C, Castleden H, Tirone S, Martin D. Implementing the Tri-Council Policy on Ethical Research Involving Indigenous Peoples in Canada: So, How's That Going in Mi'kma'ki? *The International Indigenous Policy Journal* [Internet]. 2017 Apr 24;8(2). Available from: <https://ir.lib.uwo.ca/iipj/vol8/iss2/4>
101. Castleden H, Sloan Morgan V, Lamb C. "I spent the first year drinking tea": Exploring Canadian university researchers' perspectives on community-based participatory research involving Indigenous peoples. *The Canadian Geographer / Le Géographe canadien*. 2012;56(2):160–179.
102. Mulrennan ME, Mark R, Scott CH. Revamping community-based conservation through participatory research. *The Canadian Geographer / Le Géographe canadien*. 2012;56(2):243–259.
103. Winbourne J. 2002 Central Coast Eulachon Project: Final Report of Traditional Ecological Knowledge Survey. WKNTC; 2002 p. 51.
104. Kovach M. Doing Indigenous methodologies - A letter to a research class. In: Denzin NK, Lincoln YS, editors. *The Sage Handbook of Qualitative Research*. 5th ed. SAGE Publications Ltd; 2017. p. 214–34.
105. Coombes B, Johnson JT, Howitt R. Indigenous geographies III: Methodological innovation and the unsettling of participatory research. *Progress in Human Geography*. 2014 Dec 1;38(6):845–54.

106. Snxakila (Clyde Tallio). personal correspondence. 2018.
107. Moody M. personal correspondence. 2018.
108. Siwallace S. personal correspondence. 2018.
109. Tallio P. personal correspondence, Director of Nuxalk Health. 2018.
110. Thompson C. Community celebrates eulachon with Sputc Ceremony. Coast Mountain News [Internet]. 2014 Apr 7; Available from: <https://www.coastmountainnews.com/news/community-celebrates-eulachon-with-sputc-ceremony/>
111. Thompson C. Ooligan grease making camp returns to the banks of the Bella Coola River. Coast Mountain News [Internet]. 2017 Apr 5; Available from: <https://www.coastmountainnews.com/news/ooligan-grease-making-camp-returns-to-the-banks-of-the-bella-coola-river/>
112. Thompson C. Bella Coola sees biggest eulachon run in almost 20 years – Coast Mountain News. Coast Mountain News [Internet]. 2018 Apr 17; Available from: <https://www.coastmountainnews.com/news/bella-coola-sees-biggest-run-of-eulachon-in-almost-20-years/>
113. Adelson N. “Being Alive Well”: Health and the Politics of Cree Well-Being. Toronto: University of Toronto Press; 2000. 141 p.
114. McMillan LJ, Prosper K. Remobilizing netukulimk: indigenous cultural and spiritual connections with resource stewardship and fisheries management in Atlantic Canada. *Rev Fish Biol Fisheries*. 2016 Dec 1;26(4):629–47.
115. Prosper K, McMillan LJ, Davis AA, Moffitt M. Returning to Netukulimk: Mi’kmaq cultural and spiritual connections with resource stewardship and self-governance. *The International Indigenous Policy Journal* [Internet]. 2011 Oct [cited 2016 Dec 19];2(4). Available from: <http://ir.lib.uwo.ca/iipj/vol2/iss4/7/>
116. Smith LT, Maxwell TK, Puke H, Temara P. Indigenous knowledge, methodology and mayhem: What is the role of methodology in producing indigenous insights? A discussion from Mātauranga Māori. 2016;4(3):131–56.
117. Corntassel J, Alfred T, Goodyear-Ka’opua N, Silva NK, Aikau HK, Mucina D, editors. *Everyday Acts of Resurgence: People, Places, Practices*. Daykeeper Press; 2018. 124 p.
118. Alfred T. *Wasase: Indigenous Pathways of Action and Freedom*. University of Toronto Press; 2005. 313 p.
119. Corntassel J. Re-envisioning resurgence: Indigenous pathways to decolonization and sustainable self-determination. *Decolonization: indigeneity, education & society*. 2012;1(1).
120. Simpson LB. *Lighting the Eighth Fire - The Liberation, Resurgence, and Protection of Indigenous Nations*. Winnipeg: ARP Books; 2008. 232 p.
121. Szreter S, Woolcock M. Health by association? Social capital, social theory, and the political economy of public health. *Int J Epidemiol*. 2004 Aug 1;33(4):650–67.

122. Berkman LF, Glass T, Brissette I, Seeman TE. From social integration to health: Durkheim in the new millennium. *Social Science & Medicine*. 2000;51(6):843–57.
123. Kawachi I. Social capital and community effects on population and individual health. *Annals of the New York Academy of Sciences*. 1999;896(1):120–130.
124. Auger MD. Cultural Continuity as a Determinant of Indigenous Peoples' Health: A Metasynthesis of Qualitative Research in Canada and the United States. *The International Indigenous Policy Journal*. 2016;7(4):3.
125. Chandler MJ, Dunlop WL. Cultural wounds demand cultural medicines. In: Greenwood M, de Leeuw S, Lindsay NM, Loppie Reading C, editors. *Determinants of Indigenous Peoples' Health: Beyond the Social*. Toronto: Canadian Scholars' Press; 2015. p. 78–89.
126. Greenwood ML, Leeuw SN de. Social determinants of health and the future well-being of Aboriginal children in Canada. *Paediatrics & Child Health* (1205-7088). 2012 Sep 8;17(7):381–4.
127. Snowshoe A, Crooks CV, Tremblay PF, Hinson RE. Cultural Connectedness and Its Relation to Mental Wellness for First Nations Youth. *J Primary Prevent*. 2017 Apr 1;38(1):67–86.
128. Brant Castellano M. The Spiritual Dimension of Holistic Health: A Reflection. In: Greenwood M, de Leeuw S, Lindsay NM, Loppie Reading C, editors. *Determinants of Indigenous Peoples' Health in Canada: Beyond the Social*. Toronto: Canadian Scholars' Press; 2015. p. 33–8.
129. Battiste M, Henderson JY. *Protecting indigenous knowledge and heritage: a global challenge*. Saskatoon: Purich Publishing Ltd; 2000. 324 p. (Purich's Aboriginal issues series).
130. Simpson LB. *Dancing On Our Turtle's Back: Stories of Nishnaabeg Re-Creation, Resurgence, and a New Emergence*. Winnipeg: ARP Books; 2011. 164 p.
131. Brown F, Brown YK. *Staying the Course, Staying Alive: Coastal First Nations Fundamental Truths: Biodiversity, Stewardship and Sustainability*. Biodiversity BC; 2009.
132. Kirmayer LJ, Valaskakis GG. *Healing Traditions: The Mental Health of Aboriginal Peoples in Canada*. UBC Press; 2009. 527 p.
133. Tanner A. The Origins of Northern Aboriginal Social Pathologies and the Quebec Cree Healing Movement. In: Kirmayer LJ, Valaskakis GG, editors. *Healing Traditions: The Mental Health of Aboriginal Peoples in Canada*. Vancouver: UBC Press.; 2009. p. 249–71.
134. Simpson LB. Land as pedagogy: Nishnaabeg intelligence and rebellious transformation. *Decolonization: Indigeneity, Education & Society*. 2014;3(3).
135. Wildcat M, McDonald M, Irlbacher-Fox S, Coulthard GS. Learning from the land: Indigenous land based pedagogy and decolonization. *Decolonization: Indigeneity, Education & Society*. 2014;3(3):15.
136. Legat A, Barnaby J. *Walking the Land, Feeding the Fire: Knowledge and Stewardship Among the Tlicho Dene*. 2 edition. Tucson: University of Arizona Press; 2012. 184 p.

137. Irlbacher-Fox S. *Finding Dahshaa: Self-Government, Social Suffering, and Aboriginal Policy in Canada*. Vancouver, BC: UBC Press; 2009. 216 p.
138. Poe MR, Donatuto J, Satterfield T. "Sense of Place": Human Wellbeing Considerations for Ecological Restoration in Puget Sound. *Coastal Management*. 2016 Sep 2;44(5):409–26.
139. Parkes M. Ecohealth and aboriginal health: common ground. *NCCA*; 2013 p. 12. (Emerging Priorities).
140. Berkes F. *Sacred ecology*. 3rd ed. New York: Routledge; 2012. 363 p.
141. Sangha KK, Le Brocque A, Costanza R, Cadet-James Y. Ecosystems and indigenous well-being: An integrated framework. *Global Ecology and Conservation*. 2015 Jul 1;4:197–206.
142. Cunsolo Willox A, Harper SL, Edge VL, Landman K, Houle K, Ford JD. 'The land enriches the soul:' On climatic and environmental change, affect, and emotional health and well-being in Rigolet, Nunatsiavut, Canada. *Emotion, Space and Society*. 2011;
143. Albrecht G, Sartore GM, Connor L, Higginbotham N, Freeman S, Kelly B, et al. Solastalgia: the distress caused by environmental change. *Australasian psychiatry : bulletin of Royal Australian and New Zealand College of Psychiatrists*. 2007;15 Suppl 1:S95-8.
144. Cunsolo A, Ellis NR. Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*. 2018 Apr;8(4):275.
145. Kingsley J, Townsend M, Henderson-Wilson C, Bolam B. Developing an Exploratory Framework Linking Australian Aboriginal Peoples' Connection to Country and Concepts of Wellbeing. *International Journal of Environmental Research and Public Health*. 2013 Feb 7;10(2):678–98.
146. Kingsley JK, Townsend M, Phillips R, Aldous D. "If the land is healthy ... it makes the people healthy": the relationship between caring for Country and health for the Yorta Yorta Nation, Boonwurrung and Bangerang Tribes. *Health & place*. 2009 Mar;15(1):291–9.
147. Burgess C, Johnston FH, Berry HL, McDonnell J, Yibarbuk D, Gunabarra C, et al. Healthy country, healthy people: the relationship between Indigenous health status and "caring for country." *Medical journal of Australia*. 2009;190(10):567–572.
148. Price K, Roburn A, MacKinnon A. Ecosystem-based management in the Great Bear Rainforest. *Forest Ecology and Management*. 2009;258(4):495–503.
149. Jernigan VBB, Salvatore AL, Styne DM, Winkleby M. Addressing food insecurity in a Native American reservation using community-based participatory research. *Health Education Research*. 2012 Aug;27(4):645–55.
150. Powers M, Faden R. *Social justice: the moral foundations of public health and health policy*. Oxford University Press, USA; 2006.
151. Levac L, McMurtry L, Stienstra D, Baikie G, Hanson C, Mucina D. Learning across Indigenous and Western knowledge systems and intersectionality: reconciling social science research approaches. *SSHRC / University of Guelph*; 2018 p. 48.

152. Bowie R. Indigenous self-governance and the deployment of knowledge in collaborative environmental management in Canada. *Journal of Canadian Studies/Revue d'études canadiennes*. 2013;47(1):91–121.
153. Castleden H, Martin D, Cunsolo A, Harper S, Hart C, Sylvestre P, et al. Implementing Indigenous and Western Knowledge Systems (Part 2): “You Have to Take a Backseat” and Abandon the Arrogance of Expertise. *International Indigenous Policy Journal*. 2017 Oct;8(4).
154. Solar O, Irwin A. A conceptual framework for action on the social determinants of health. 2007;
155. Marmot M, Friel S, Bell R, Houweling TAJ, Taylor S, others. Closing the gap in a generation: health equity through action on the social determinants of health. *The Lancet*. 2008;372(9650):1661–1669.

PAPER 2: The Nuxalk *Sputc Project*: applying community-engaged and Indigenous approaches in support of Indigenous management authority

Authors: Rachelle Beveridge; Megan Moody; Bernie Pauly, Grant Murray; Chris Darimont.

Abstract

In the face of ecological depletion arising from post-contact environmental mismanagement, Indigenous knowledges, priorities, and perspectives are increasingly applied in decision-making that affects community and ecological well-being. Many external researchers and decision-makers have learned to solicit Indigenous knowledges using community-based research methods and participatory processes. However, Indigenous scholars and leaders are increasingly moving beyond these standard practices to apply *Indigenous methodologies*, engaging local epistemologies and culturally-relevant methods to produce respectful, relevant research outcomes in support of local priorities. In this paper, I share experiences and learning from the Nuxalk *Sputc Project* to illustrate how an Indigenous research process was developed and applied by the Nuxalk Nation's Stewardship Office in Bella Coola, B.C. (unceded Nuxalk territory). The project documented, interpreted, articulated, and represented Nuxalk knowledge about eulachon (*Thaleichthys pacificus*) values and management using an iterative, community-driven process informed by Nuxalk protocols and knowledge systems. I begin by detailing the project process, including project initiation, decision-making and community engagement processes, and methods of knowledge documentation, interpretation, articulation, representation, and sharing. Then, drawing on the broader literature on both Indigenous and community-engaged research, I show that while the *Sputc Project* process shared many commonalities with qualitative methodologies, particularly community-based participatory research (CBPR), its distinctly Nuxalk approach was key to its success. Based on my experience with the *Sputc Project*, I return to the theoretical and practical question of choosing Indigenous methodologies, and discuss how engaging Nuxalk knowledges influenced this process from conception to completion, resulting in an emergent methodology that prioritized *relational accountability*, reciprocity, locally-grounded methods of knowledge documentation and interpretation, and *respectful representation*. I suggest that engaging Indigenous methodologies and related priorities can move researchers and decision-makers toward authentically and respectfully engaging Indigenous values and priorities, and ultimately, toward supporting Indigenous authority and oversight in the production, interpretation, articulation and representation of knowledge used in environmental management.

Keywords: CBPR, community-engaged, eulachon, Indigenous methodology, management, research methods, Nuxalk.

Acknowledgements: Snxakila (Clyde Tallio); Russ Hilland, Horace Walkus, Louise Hilland, Joanne Schooner (technical advisors); Iris Siwallace, Fiona Edgar, Angel Mack, Rhonda Dettling-Morton, Evangeline Hanuse, Nicole Kaechele (Nuxalk stewardship office staff/contractors and project team members); Lori George, Karen Anderson, Dale McCreery, Lyle Mack (culture, language, and visual advisors); Banchi Hanuse, Spencer Siwallace, Andrea Hilland (*Alhqulh ti Sputc* writers and collaborators); Jeff Snow, Bruce Siwallace, Melody Schooner, Grace Hans, Arthur Pootlass, Jimmy Nelson Sr., Peter Siwallace, Cathy Hans; Stanley King, Cecil Moody (*Sputc Project* interviewees and informants); Ernie Tallio and the Nuxalk Guardian Watchmen, Jason Moody and Nuxalk bear study/fisheries crew (Nuxalk Stewardship); Celia Bell (*Alhqulh ti Sputc* designer); Wally Webber and Nuxalk *Statalmc* (community leadership); all of the other *Nuxalkmc* who helped me learn what is written here, their relations, ancestors, and elders; *sputc*.

Funders of PhD research: CIHR Doctoral award, VIU Institute of Coastal Research fellowship, Ocean Canada (SSHRC) fellowship.

Funders of Sputc Project: Nature United (TNC) Canada, Tides Canada, Vancouver Foundation.

Formatted for: Ecology and Society

INTRODUCTION

Indigenous peoples' priorities, perspectives, and knowledges are increasingly sought and valued in environmental research and decision-making (Adams et al., 2014; Harris and Millerd, 2010; von der Porten et al., 2015), where community-engaged methods and participatory processes are often employed and even recommended in collaborative research with Indigenous communities (Canadian Institutes of Health Research et al., 2014; Moore et al., 2017a; Tobias et al., 2013). However, such methods are not always appropriate in their engagement of Indigenous knowledges (Castleden et al., 2012; de Leeuw et al., 2012; Kindon, 2008; McGregor, 2009, 2004; Nadasdy, 2005, 1999), and are often insufficient in their support of Indigenous leadership and decision-making (Brunger and Wall, 2016; Castleden et al., 2017; von der Porten et al., 2015). Some scholars therefore recommend that research be led by Indigenous people and priorities (McGregor, 2004; Simpson, 2017, 2014), as informed by decolonizing and *Indigenous methodologies* (IM) (Kovach, 2009, 2005; Wilson, 2008). While these methodologies are occasionally referenced by community-engaged researchers in environmental management (de Leeuw et al., 2012; Latulippe, 2015a; von der Porten et al., 2019), there are few examples of their application in these settings. There is therefore a need to learn from successful engagement of place-based knowledges, values, and priorities led by Indigenous people and informed by Indigenous approaches.

With important implications for how research is conducted from conception to completion, choice of methodology informs how knowledge is sought, documented, interpreted, articulated, and represented. In this work, I use the terms *documentation* (vs. "data collection") to refer to the earlier stages of research where knowledges are collected and written down, and *interpretation* (vs. "analysis" or "results") to refer to the processes of meaning-making that ensue. I use the term *articulation* to refer to the clarification of existing knowledges for internal use, and the term *representation* to refer to knowledge sharing more generally, including with outsiders.

In this paper, I provide an example of a community-driven research project informed by Indigenous methodologies, detailing how it was conducted and what made it distinct from other community-engaged processes. Initiated and led by the Nuxalk Stewardship Office in Bella Coola, B.C., the *Sputc Project* drew on a uniquely Indigenous (Nuxalk) research approach to support local management of eulachon (*Thaleichthys pacificus*). Below, I begin with a brief background on community-based and Indigenous methodologies in environmental management, an elaboration of the project context, and a description of the research methods used to develop this paper. I then outline the *Sputc Project* process and discuss how applying a Nuxalk approach influenced project methods from conception to completion, resulting in a project that prioritized *relational accountability*, responsible, contextualized methods of knowledge

documentation, interpretation, and articulation, *respectful representation*, and *reflexivity*. Engaging the broader methodological and theoretical literature, I then highlight commonalities and distinctions between IM and other community-engaged methodologies, their relationship to decolonizing goals, and their implications for Indigenous environmental management leadership.

Aligned with theory that requires both self-location and reflexivity in the analysis and reporting of research results (Absolon and Willett, 2005; Kovach, 2009; Nicholls, 2009), this paper reports primarily on my personal perspective and learnings about the *Sputc Project* process; outcomes and implications of the project are elaborated elsewhere (Beveridge et al., 2019b, 2019c, 2019a). “I” refers to my position as first author, project coordinator, and academic researcher without prior ties to the community, while “we” refers to decisions and learning by the *Sputc Project* team¹ (detailed below). My social location, its evolution, and its impact on this research are detailed elsewhere (Beveridge, 2019).

Background

Until recently, *Indigenous knowledges* (IK) and related systems of governance supported sustainable systems of resource management on Canada’s west coast (Gauvreau et al., 2017; Haggan et al., 2006; Lepofsky and Caldwell, 2013; Turner and Berkes, 2006) and throughout the world (Berkes, 2012; Berkes et al., 2000). However, since colonization, the expertise of Indigenous peoples has been sidelined, and the methods used by external researchers and decision-makers to solicit, appropriate, and represent IK in resource management have often been problematic, extractive, and even harmful (McGregor, 2004; Nadasdy, 2003, 1999; Smith, 1999). Recognizing this, scholars in environmental management and beyond are beginning to decolonize their research practices, seeking less extractive, more empowering ways to uphold Indigenous voices and priorities in decision-making and research (Carlson, 2016; Castleden et al., 2017; de Leeuw and Hunt, 2018; Smith, 1999; Smith et al., 2016; von der Porten et al., 2019, 2015). Further, supported by a rapidly evolving legal and regulatory context (Harris and Millerd, 2010; Kotaska, 2013; Low, 2018; von der Porten et al., 2016) and internal resurgence movements (Alfred, 2005; Asch et al., 2018; Corntassel et al., 2018; Coulthard, 2014; Simpson, 2017, 2008), Indigenous people are increasingly leading research in their own communities, based on their own knowledges and priorities (Adams et al., 2014; Castleden et al., 2017; Housty et al., 2014; Jones et al., 2016; von der Porten et al., 2019, 2016).

¹ Use of the first person form is not intended to diminish the contributions of other authors: early drafts of the paper were revised and corroborated by MM, and reviewed and edited by academic mentors (GM, BP, CD), and other key collaborators (CT, RH), who contributed significantly to the final representation of knowledge shared here.

I use the term *Indigenous knowledges* to refer to a multitude of unique knowledge systems held, used, and maintained by Indigenous peoples throughout the world. As detailed elsewhere, Indigenous knowledges escape definition; they are at once metaphysical and pragmatic, inseparable from place (lands and waters), people, practices, and language (Archibald, 2008; Battiste and Henderson, 2000; McGregor, 2009, 2004; Simpson, 2017, 2014; Wilson, 2008). I pluralize the word *knowledges* to denote the diversity of knowledge systems involved, as well as the multitude of knowledge sources included in each system (e.g. values, practices, language). According to Margaret Kovach (Kovach, 2017, 2009), each Indigenous knowledge system is made up of epistemologies and theory-principles. *Epistemologies* describe ways of knowing, including assumptions about the nature of knowledge and knowledge production, defining what kinds of knowledge are possible (Kovach, 2017). Some common tenets of Indigenous epistemologies include holism, interconnection, and flux/fluidity or circularity (Hart, 2010; Kovach, 2017; Louis, 2007), all of which imply fundamentally relational ways of knowing and being (Kovach, 2009; McGregor, 2004; Simpson, 2017; Wilson, 2008). *Theory-principles* are indigenous teachings, including philosophy and values (e.g. respect, reciprocity) and practices (e.g. laws and protocols) that guide relationships with people, land, ideas, and the cosmos (Kovach, 2017). These may include the values of reciprocity, responsibility, and respect, relationship to community, connection between mind and heart, self-awareness, and subjectivity (Artelle et al., 2018; Hart, 2010; Weber-Pillwax, 2001).

Whether or not they are acknowledged, knowledge systems and related theories inform every research methodology (Brown and Strega, 2005; Creswell, 2012; Kovach, 2009). Given the importance of using research methodologies that respectfully engage Indigenous knowledges, ethics, and priorities, Canadian funding authorities recommend using community-based participatory research methods (CBPR) for conducting research with Indigenous communities (Canadian Institutes of Health Research et al., 2014; Moore et al., 2017a). With foundations in critical and anti-oppressive theories, CBPR aims to challenge the processes of knowledge production with attention to power structures, centering marginalized voices (Israel et al., 2005, 1998; Wallerstein and Duran, 2006). Such approaches have much to contribute to research that is responsible, respectful, reciprocal, and relevant (Castleden et al., 2012; de Leeuw et al., 2012; LaVeaux and Christopher, 2009; Louis, 2007; Tobias et al., 2013). However, many suggest that without due regard to its limitations, their application can be problematic (Brunger and Wall, 2016; Moore et al., 2017b; Stiegman and Castleden, 2015). Operationalization of the tenets of CBPR is variable and open to interpretation, and there remain limits to their appropriate use in Indigenous contexts (Brunger and Wall, 2016; Castleden et al., 2012; Coombes et al., 2014; de Leeuw et al., 2012; LaVeaux and Christopher, 2009; Moore et al., 2017b; Tobias et al., 2013). Further, community-engaged work is

often achieved without challenging western epistemological frameworks or underlying assumptions about the nature of knowledge production or ownership (Brown and Strega, 2005; Kovach, 2017, 2009; Smith, 1999). Even flawless community-engaged approaches may be insufficient to capture the nuances and complexity of Indigenous knowledges and perspectives (McGregor, 2009, 2004; Nadasdy, 2003, 1999), while representing significant burdens on Indigenous communities (Brunger and Wall, 2016; Castleden et al., 2017, 2012; de Leeuw et al., 2012). In environmental management, this is evident in studies emphasizing Indigenous knowledge integration (Bohensky and Maru, 2011; Evering, 2012; Hill et al., 2012; Nadasdy, 1999) or using “parachute” research approaches (Brant Castellano, 2004; Castleden et al., 2012).

Given these realities, some scholars advocate employing *Indigenous methodologies* (IM) and related research frameworks to guide culturally-embedded research methods, protocols, and practices that are accountable to Indigenous communities and knowledge systems (Kovach, 2017, 2009; Louis, 2007; Wilson, 2008). IM are often theoretically and practically aligned with qualitative and participatory methodologies like CBPR (Creswell, 2008; Denzin et al., 2008; Easby, 2016; Kovach, 2009; LaVeaux and Christopher, 2009; Smith, 1999; Wilson, 2008). However, unlike CBPR, which are founded in western systems of knowledge (Kovach, 2017), IM explicitly employ distinct, culturally-specific knowledge systems to inform research methods and processes (Kovach, 2009; Louis, 2007; McGregor, 2004; Wilson, 2008). As such, their respectful application by non-Indigenous scholars is limited (Carlson, 2016; Smith et al., 2016). In practical terms, IM emphasize attention to diverse knowledge sources, application of local protocols and practices, and engagement with community based in respect, reciprocity, and responsibility (Battiste, 2005; Chalmers, 2017; Coombes et al., 2014; Kovach, 2017, 2009; Latulippe, 2015a; Louis, 2007). In particular, Indigenous scholars highlight that drawing on the interrelated principles of *relational accountability*, *respectful representation*, and *reflexivity* enables local knowledges and priorities to guide choices throughout the research process (Absolon and Willett, 2004; Kovach, 2017, 2009; Louis, 2007; Wilson, 2008). Based in a fundamental understanding of the world as interconnected and whole, *relational accountability* calls attention “not only to the relationships... between researchers and research subjects, but also to the networks of relations through which a researcher (and knowledge itself) is constituted and held accountable” (de Leeuw et al., 2012, p. 182). Meanwhile, *respectful representation* requires considering how the people, places, events, and phenomena being researched are represented, with attention to protocol and ownership of knowledges (Beveridge et al., 2019b; Kovach, 2009; Wilson, 2008). These values are enabled by knowledge seeking and sharing methods that are inclusive of local ways of knowing and being, including place-based protocols, experiences, and voices, enabling situated, culturally-relevant methods and outcomes (Absolon and Willett, 2004; Coombes et al., 2014; Kovach,

2017; Louis, 2007). Often, they involve an element of narrative or story, which encourage relational interpretation or witnessing (Absolon and Willett, 2004; Archibald, 2008; Kovach, 2017, 2009; Thomas, 2005).

Ultimately, choice of methodology is a political act (Brown and Strega, 2005; Kovach, 2017). Engaging IM requires a fundamental re-definition of what research is and how it is conducted, including assumptions about who produces knowledge, for whom, how, and for what purpose (Brown and Strega, 2005; Kovach, 2009). Through the example of the Nuxalk *Sputc Project*, I recount how appropriate engagement of Indigenous knowledges using IM and/or CBPR might support Indigenous goals of decolonization and resurgence in the context of environmental management, and beyond.

Project context

The *Sputc Project* was based in the remote coastal community of Bella Coola in the ancestral territory of the Nuxalk Nation. In Canada, First Nations are one of three recognized legal categories of Indigenous peoples in Canada (alongside Inuit and Metis). *Sputc* is the Nuxalk word for eulachon, a forage fish that spawns in glacier-fed rivers throughout the central coast of British Columbia, Canada. Until recently, *Nuxalkmc* (the Nuxalk people) had a thriving relationship with *sputc*. However, in 1999, eulachon failed to return to the rivers of BC's central coast and have not reappeared to the Bella Coola River in harvestable numbers since that time. Though explanations for their disappearance vary, *Nuxalkmc* know that eulachon from the region were taken as bycatch by an expanding shrimp trawling industry (Hilland, 2013; Moody, 2008). As such, *Nuxalkmc* see the federal fisheries management system as having failed in its fiduciary duty to protect eulachon and Nuxalk fishing rights, and seek to assert management authority (Hilland, 2013).

Nuxalkmc's relationship to eulachon is maintained by an ancestral system of knowledge and governance that has supported social-ecological well-being in the region for generations (Hilland, 2013; Lepofsky and Caldwell, 2013). A cultural keystone species (Garibaldi and Turner, 2004), eulachon remain vital to Nuxalk well-being, culture, and identity (Beveridge et al., 2019c; Haggan, 2010; Moody, 2008). After almost twenty years without eulachon, many *Nuxalkmc* are concerned about the loss of eulachon-related knowledges, and community members and leadership are demanding action based on local knowledges and priorities (Senkowsky, 2007). More recently, the need for local action has been stressed by the potential listing of eulachon under the Canadian federal *Species At Risk Act* (SARA), which in fact threatens Nuxalk jurisdiction over the management of future eulachon fisheries in Nuxalk territory (Beveridge et al., 2019a; Hilland, 2013). *Nuxalkmc* therefore recognize a need to document existing

knowledges about eulachon values and stewardship, and to reiterate the foundations of Nuxalk eulachon management authority.

Based on this local demand, The Nuxalk *Sputc Project* was initiated by the Nuxalk Nation's Stewardship Office in 2014 with the goals of: (1) documenting and sharing ancestral knowledge about eulachon history, values, management with *Nuxalkmc*; (2) engaging *Nuxalkmc* and moving toward community consensus on eulachon management priorities; and (3) learning about, upholding, and applying Nuxalk governance and decision-making structures and processes. From its inception, the *Sputc Project* was intended to be informed by Nuxalk ways of knowing, including cultural teachings, ancestral decision-making practices, and governance protocols. Further, the knowledge produced by the project was intended for use by *Nuxalkmc* – including managers, leaders, educators, and the community at large - and focused on documenting, interpreting, articulating, representing, and sharing Nuxalk knowledge in a manner congruent with Nuxalk knowledge systems. This process provided an excellent context for learning and capacity building in the development of a uniquely Nuxalk research methodology – the subject of this paper.

RESEARCH METHODS

Based in extensive participation, experience, observation, and reflection, this paper is informed by critical and decolonizing theories (Brown and Strega, 2005; Smith, 1999) and an interpretive, community-engaged research approach. As such, the methods used in the creation of this paper are congruent with, but not equivalent to, the Nuxalk methods of representing and relating knowledge employed by the *Sputc Project* (detailed below). As a non-Nuxalk doctoral candidate, I was invited to coordinate the *Sputc Project* by the second author (MM), Nuxalk Stewardship Office director and First Nations fisheries management leader. MM initiated and directed the project and hosted the large community events, while I coordinated its technical and practical aspects. As coordinator, I had a full-time office at the Nuxalk administration building. Other key collaborators on the project were Snxakila (CT), a Nuxalk cultural knowledge holder, Stewardship Office staff, and technical and cultural advisors who guided the project and my own thinking. As detailed below, project leadership worked closely with - and learned a great deal from - a diversity of *Nuxalkmc*, including cultural knowledge holders, elders, fishers, and eulachon grease-makers (see acknowledgements).

Detailed research agreements with the Nuxalk Stewardship Office, resolutions with Band Council, and permissions from *Statalmc* (Nuxalk hereditary leaders) were signed based on the ethical principles outlined by both community-engaged and Indigenous researchers (Adams et al., 2014; Canadian

Institutes of Health Research et al., 2014; Castleden et al., 2012; First Nations Information Governance Centre, 2014; Kirkness and Barnhardt, 1991; LaVeaux and Christopher, 2009; Louis, 2007; Schnarch, 2004). These agreements established mutual understandings related to project process and outcomes, highlighting the importance of relationship, responsibility, relevance, and reciprocity, established clear expectations and communication, and created a set of resource documents for use by other researchers. Ethics approval was also obtained through the University of Victoria's REB (protocol # 14-075, 2014 – 2019).

Over the course of the project, I recorded over 350 pages of meeting minutes and observational fieldnotes, documenting the project process from initiation to completion. These notes captured observations and insights from advisory meetings, informal conversations with community members, community events, feasts, and ceremonies, as well as reflections of participants and community members after project completion. Through the project, 12 historic recordings of elders, 230 personal photos, 94 maps and aerial photographs, and four videos (20-60 minutes) were contributed by community members. Over 90 archival photographs and dozens of white and grey literature documents were also reviewed. I was granted permission to use 12 project interviews for the purposes of this research, in addition to 12 interviews from a previous TEK study on eulachon (Winbourne, 2002). In an iterative process, I reviewed and annotated interview transcripts, research materials, and fieldnotes. Emergent themes and learnings were then developed through a series of conversations with MM to inform this paper, which tells the story of my learning through the project.

My gradual integration into the project and community were essential to the integrity of this research and its outcomes. Beginning as an outsider to the community, *reflexivity* (Absolon and Willett, 2005; Kovach, 2009; Muhammad et al., 2015; Nicholls, 2009) was an essential part of the process as my position and relationships in the community evolved. As an external researcher, I experienced a steep learning curve related to community dynamics. In particular, I had to adjust my expectations regarding levels and methods of engagement, which required building relationships one by one and creating space for low-pressure, reciprocal interactions. This meant making time for household visits, informal exchanges, and attentive listening, and demonstrating an understanding of community politics and family relationships. My community relationships were developed over time and remain a work in progress. Details related to my social location and their evolution, including details of the interplay between the theoretical ideal and practical rollout of this research, are elaborated in my dissertation (Beveridge, 2019).

THE *SPUTC PROJECT* PROCESS

The sections below provide details of the *Sputc Project* process, including: project initiation and preparation, project team constituents and internal decision-making; knowledge documentation, interpretation and representation; community engagement; and knowledge sharing. Insights related to the process, including the extent to which it constituted a distinctly Nuxalk methodology, are elaborated in the discussion.

Initiation: permissions and protocols

The *Sputc Project* was originally conceived by MM, Nuxalk stewardship director, to inform the creation of a Nuxalk eulachon management plan. Supported by RB, the Nuxalk Stewardship Office initiated and led a community-engaged process intended from its inception to be informed by Nuxalk ways of knowing and being, including ancestral decision-making practices and governance protocols. This intent served as a touchstone throughout the project, guiding research design and decisions. Importantly, project initiation coincided with the rekindling of an ancient eulachon welcoming ceremony and the raising of a carved pole (Thompson, 2014). This community event, which included stories, song, dance, and ceremony, was essential to providing the project momentum and validity in the eyes of the community. Project conception and design required respected leadership capacity, vision, and strong organizational abilities (MM), familiarity with community-engaged and Indigenous methodologies (RB), and understanding of local governance protocols and processes (CT, project advisors).

Pre-existing relationships with key political and cultural knowledge holders was key to early engagement of Nuxalk governance processes and protocols. For example, we individually visited each of 22 *Statalm̓c* (hereditary leaders) to approve project initiation and advise on project design. Given their role as family representative, this action also served to officially inform a broad spectrum of the community of the project's intents. As a result, the project had appropriate community consent from its inception, which gave us legitimacy to operate. Prioritizing time for one-on-one meetings with *Statalm̓c* demonstrated an understanding of Nuxalk community authority, the importance of family relationships, and a commitment to engage ancestral governance and decision-making processes.

The project team and decision-making

After obtaining permissions from community authorities, we sought to engage a broad cross-section of *Nuxalkm̓c* community members to direct the project. After an initial round of community bulletins and an open house event, we invited *Nuxalkm̓c* to join a technical advisory committee intended to guide project design, implementation, and outcomes. *Stalm̓c* were specifically asked to send representatives to advisory meetings, which were convened approximately bi-weekly over the first six months of the project.

A local Nuxalk co-researcher was hired to support project logistics and relationship-building, and knowledgeable cultural and language advisors were identified. After this initial engagement process, the *core project team* was comprised of project leaders, Nuxalk technical advisory committee members (4 core + 12 occasional), co-researcher, cultural and language advisors, and Stewardship Office staff. The entire team was of Nuxalk ancestry with only 2 exceptions; this strengthened the project's connection to community and was essential to the success of the project as authentically Nuxalk-led. This project team informed all major decisions related to the *Sputc Project*, including: whom to involve in the project and how to engage the community; what content to include, in what form; and how to represent and share knowledge gathered (including the design of final project outcomes). Insofar as possible, project decision-making processes were based on ancestral institutions and protocols. Advice was given through both formal meetings and informal conversations, and recognized according to local protocol through the presence of food and/or payments for participating, witnessing, and advising. Actively following the guidance of project advisors on an ongoing basis ensured that diverse Nuxalk knowledges and perspectives guided the project as it evolved, and that the project outcomes were accessible and meaningful to a broad range of *Nuxalkmc*. It also provided those involved an opportunity to learn about and apply Nuxalk knowledge systems and ancestral decision-making protocols, practices, and institutions, increasing local governance capacity and understanding.

Indeed, while essential to the project, engaging Nuxalk protocol was also a challenge; many decision-making processes were no longer being followed or known to community members, so we spent a great deal of time in conversation with knowledge-holders learning local protocol ourselves before considering implications and adapting it to the context of the project. As an external researcher, this meant developing the capacity to listen, learn, and adapt methods; without cultural connections and long-term presence in the community, applying Nuxalk protocol to this extent would have been even more difficult.

Learning and sharing about sputc: knowledge documentation, interpretation, and representation

As the project progressed, we began to gather, review, and learn from existing Nuxalk knowledge sources, including archival documents, ethnographic material, videos, reports, and academic studies. Reports and interviews from a prior eulachon TEK study (Winbourne, 2002) and recordings of deceased elder knowledge holders were also accessed for the purposes of the project. This background research ensured that we respected the work of previous researchers and were adequately prepared for in-depth conversations with knowledgeable community members (e.g. to avoid asking questions with widely known answers), such that further exchanges could be meaningful and mutually beneficial.

Alongside a Nuxalk co-researcher, I then conducted semi-structured interviews with willing knowledge-holders identified by the project team and associated community members. Eight men and four women over the age of 50 were interviewed for 1-2 hours covering topics including eulachon use and values, fishing, preservation, trade, grease-making practices, river stewardship and governance. However, many *Nuxalkmc* recognized as knowledge-holders were unwilling to commit to a recorded interview. This reticence may have initially been exacerbated by my presence as an outsider, in combination with a lack of developed relationships; in some cases, I was meeting interviewees for the first time, and the *Sputc Project* was not yet widely known. However, it was also clear that *Nuxalkmc* associated interviews with prior extractive research processes, and worried that shared knowledges would be misinterpreted or misapplied. Further, there was a tendency for older *Nuxalkmc* to minimize the value and legitimacy of their own knowledges; for example, some *Nuxalkmc* cited residential school² experiences as disqualifying them as authentic knowledge sources. We also found that the formal interview process lacked congruence with open-ended, conversational modes of knowledge sharing grounded in Nuxalk ways of knowing. This was evidenced by *Nuxalkmc*'s discomfort with interviews and confirmed by miscommunications and conflict with the Nuxalk co-researcher, who challenged my assumptions about who should be doing the talking during interviews. Given this context, we abandoned formal interviews in favor of informal exchanges, community events, and a more culturally-relevant research process based on the development of genuine, reciprocal relationships and ongoing presence in the community.

This new locally-grounded approach provided momentum to the project. Continued involvement in ceremony, cultural events, and land-based practices (e.g. grease-making) were also central to our learning. As trust and personal relationships were strengthened, several key knowledge holders became ongoing collaborators on the project, and a greater breadth and diversity of *Nuxalkmc* volunteered stories and personal accounts of their experience of eulachon, as well as related archival photo, video, and audio materials. By the end of the project, we had one-on-one conversations with sixty knowledge holders, and interacted with at least 180 of approximately 700 adult *Nuxalkmc* in the valley (through community events, workshops, elders' luncheons, and casual conversations).

To clarify past and future eulachon fishing practices and management priorities, we also convened a workshop to learn about *Nuxalkmc* perspectives on future fishing and management priorities. The workshop was attended by 21 leaders, fishers, and interested community members, which we deemed a successful turnout. After viewing images and quotes related to *Nuxalkmc* eulachon fishing, those present

² Many *Nuxalkmc* children were forced to attend religious residential schools as a result of an assimilationist federal policy (Indian Act), with grave repercussions for cultural continuity and well-being among *Nuxalkmc* and other First Nations.

sat in small groups to discuss who, what, where, and how eulachon should be fished if/when they returned in sufficient numbers. Despite political and social differences between groups, there was a great deal of agreement about future fishing and management priorities, which were largely based in Nuxalk knowledges and practices.

Focused on “getting it right”, accurate interpretation, articulation, and representation of Nuxalk knowledge was a fundamental priority of the project. In keeping with Nuxalk protocol, this was addressed through an iterative process emphasizing adaptation, active listening, and attention to detail. Throughout the process of learning about *sputc*, I took the lead in documenting knowledges shared by community members (including text, images, quotes, stories, and language), and facilitated its assessment and interpretation by the project team. Project leadership and the technical advisory committee decided on how to articulate and present emerging project material to the community and collaborators during project-related events. Soliciting further input and feedback in a cyclical process of knowledge gathering and sharing enabled reflexivity on the part of the research team, enabling us to adapt the project as our knowledge, understanding, roles, and relationships evolved.

After months of knowledge documentation and sharing, it came time to define how Nuxalk eulachon knowledges be represented, and in what form. It proved challenging for the project team to envision the format of the final product, even after clearly defining goals and desired outcomes. As described elsewhere (Beveridge et al., 2019b; Hanuse, 2010; Kramer, 2011; McIlwraith, 1992), Nuxalk knowledges are complex, oral, and family-held, with important implications for their representation and authority for their use. Many *Nuxalkmc* questioned the appropriateness of documenting and representing Nuxalk knowledges in a stagnant or written form, and suggested the project employ practical (e.g. net-making) or story-telling activities to share gathered knowledges. However, the urgency of preserving eulachon knowledges for future generations and the importance of obtaining community authority for future management planning were also well-recognized. The project team resolved to create a book that would serve as a foundation of Nuxalk eulachon knowledge and authority, supporting future knowledge transmission practices.

Over the following three years, we produced twelve iterations of the book to solicit feedback on the selection, interpretation, structure, and representation of Nuxalk eulachon knowledges. We had regular meetings and conversations with technical and cultural advisors to review and correct draft material, as well as with a broad range of community members including elder fishers and grease-makers, teachers, community leaders, and language speakers. Feedback on book drafts was further solicited at community meetings, luncheons, and cultural events, including the annual eulachon ceremony. As a support for

future Nuxalk-led projects and hands-on learning, we aimed for the book be accessible to a range of age groups and literacy levels. As it evolved, we imagined a grandmother reading the book with an 8-year old and asked ourselves if would they both be engaged and learning.

In the process of documenting and representing knowledges, we attended to their origins and context, accuracy and generalizability. For a specific element to be represented as common Nuxalk knowledge, we ensured that it was sourced from multiple people and multiple families of origin, and generally recognized by *Nuxalkmc* to be true. I drafted most of the book's summary text in collaboration with other project collaborators; otherwise, individually-held knowledges were attributed to the knowledge holder through the use of quotes. Attending to this level of detail required that we learn protocols of knowledge ownership, in order to obtain permissions and given credit as appropriate. In recognition of Nuxalk knowledge systems, we used visual, narrative and practical sources and materials to retain knowledge context, relationships and origins, engaging *Nuxalkmc* through material like family photos and quotes recognized as authentic, useful, and personal. We also highlighted Nuxalk vocabulary, ancestral (personal) names, and place names, such that *Nuxalkmc* would see themselves reflected in the materials gathered, learning about their relationships to place. In appreciation of strong Nuxalk visual traditions, a local artist illustrated the book's opening story, and a professional designer was contracted to ensure visual and design elements were appropriately mastered (based on my interpretation of project advisors' input).

Respecting place-based and relational knowledges in this way required a great deal of attention to the details of language and design, and perseverance with regards to credits, attributions, protocols and permissions. Such learning required time, dedication, and capacity development of all team members. While every attempt was made to employ a narrative mode of representation (e.g. using a story to structure the book) so doing proved difficult given the particular capacity of the core project team; while contracting a Nuxalk illustrator helped bring in a holistic element, we were lacking in storytelling expertise and connections. In the end, some fragmentation and linearization of knowledge was necessarily imposed by the book format, and I had a far heavier hand in knowledge representation than I would have preferred. This limitation is likely obvious to *Nuxalkmc*, who recognize that local knowledges may only be fully understood in context, though application and practice by *Nuxalkmc* (Beveridge et al., 2019b; Hanuse, 2010).

Community engagement and relationships

Community engagement was one of the primary mandates of the *Sputc Project*, which prioritized relationship-building and trust as it engaged Nuxalk ways of knowing. We found that the idea of working

“in a good way” (Ball and Janyst, 2008; Kovach, 2009) resonated with *Nuxalkmc*, so we used this language in the communication of our intents. From inception to completion, we kept community members abreast of our progress and invited *Nuxalkmc* to contribute to the project through mail flyers and outreach at community events, including open houses, cultural events, and elders’ luncheons. We maintained a continued presence in the community, inviting informal exchanges (e.g. at the grocery store or coffee shop). As a result, the project became familiar to many, which led to greater level of awareness and investment on the part of the community members. Prioritizing respectful relationships over anticipated timelines allowed for the seasonal ebb and flow of individual availability and energy, and respect for conflicting community priorities (e.g. funeral protocols, fish harvesting). As a result, the project took place at a pace set by the community.

However, engagement of *Nuxalkmc* beyond the project team and a core group of supporters remained a challenge throughout the project. Despite persistent efforts, attendance at project events was disappointing, and incentivizing participation across family, social, and political obstacles was difficult. Many *Nuxalkmc* were busy conducting day-to-day business; pressing needs and established relationships took precedence over a long-term, abstract project whose applications may have been difficult to envision. Even those aligned with project objectives may not have shared our enthusiasm. Indeed, capacity of all kinds is limited in small, isolated communities like Bella Coola; resources are spread thin, and there are many conflicting priorities demanding very few peoples’ time and energy. While financial incentives in the form of honoraria were provided to consistent and more knowledgeable advisors, many participants were not rewarded in this manner. Further, some *Nuxalkmc* are opposed to any project related to eulachon science (which is perceived to be killing eulachon), while others are uninclined to contribute to a project housed in the Nuxalk Administration Building, a site of continued colonial influence. While we attempted to engage the community as a whole, we also remained aware of situational factors, attentive to differences in participation and limitations to our reward structures. As such, it is certain that some *Nuxalkmc* had more involvement and influence in the project than others, depending on individual family relationships, community position, knowledge, and wealth.

Indeed, the project was necessarily situated in a network of relationships within the community. *Nuxalkmc* team members drew on established, long-standing connections with the band administration, schools, cultural workers, and family units to which they were accountable. Attention to the full network of relationships to which we were accountable helped frame and motivate the project’s process. The technical advisory committee played a key role in establishing project credibility in the eyes of the community. In particular, the annual eulachon ceremony demonstrated the Stewardship Office’s

continued commitment to and understanding of the importance of spiritual practice and community connection as it related to this work. Each of our relationships extended beyond those explicitly involved in the project, beyond family relationships, and into the spirit and animal worlds. As project team members, we listened to ancestors' voices, conducted ceremonies by the river, and sought to strengthen our relationships with the eulachon itself. Ultimately, we understood that our purpose was to serve eulachon (and by extension, the community), a commitment that continues to this day.

Knowledge sharing and outcomes

The *Sputc Project* culminated in a 172-page, full-color book called *Alhqulh ti Sputc* (Beveridge et al., 2019b; Sputc Project Team, 2017). Entirely grounded in Nuxalk ways of knowing, both ancestral and contemporary, the book was intended for use by Nuxalk leaders, educators, and community members. Before printing, 19/21 ancestral leaders approved a final draft of the book, validating it as a foundation of Nuxalk knowledge about eulachon and advocating its application in future eulachon stewardship, and demonstrating a remarkable level of support and cohesion.

Following Nuxalk protocol, a community feast was held to introduce and distribute the book, while affirming its validity in 2017 (Thompson, 2017). Despite summer vacations and forest fires, over 300 people enjoyed a traditional meal of BBQ salmon, smoked eulachon, grease, and herring eggs. An illustrated story from the book was told aloud in both Nuxalk language and English, and instruction on how to do the *sputc* ceremonial dance were given. The project team received high praise from Nuxalk *Statalmc*, who upheld the project as a model for future Nuxalk knowledge documentation and representation. Meanwhile, a standing ovation from the community at large showed that the *Sputc Project* had succeeded in engaging a broad range of *Nuxalkmc* on the topics of eulachon values, stewardship, and governance and producing an outcome that was accessible, authentically Nuxalk, and valued by *Nuxalkmc*. A copy of the book was made available to all *Nuxalkmc* over the age of twelve, as well as to community organizations and schools. Since the ceremony, over 580 copies of the book have been distributed, and it has begun to be used in high-school curriculum and local (Nuxalk-operated) radio programming. *Nuxalkmc* report that the book authentically represents local eulachon history and stewardship priorities, promoting *Nuxalkmc* pride and responsibility related to eulachon stewardship and ancestral governance (Beveridge et al., 2019b).

While some of the learning from the *Sputc Project* may be directly applied to other local projects (e.g. research protocols, decision-making processes), the scale and extent of this project should not be underappreciated. Indeed, the most valuable elements of the process – including broad community engagement, iterative, cyclical process, and local leadership – could not have been achieved without

significant resources (organization, time, space, funding), community connections, and a long-term presence in the community. Alongside one-page summaries and other related papers, this paper should support understanding and appreciation of *Alhqulh ti Sputc* when it is shared beyond the community. It also provides a detailed example of the articulation of Indigenous knowledges for those interested in applying Indigenous methodologies and/or engaging Indigenous perspectives in environmental management.

DISCUSSION

While the *Sputc Project* process shared many commonalities with community-engaged methodologies, its distinctly Nuxalk approach was key to its success. In the section above, I recounted the story of the project process from my perspective as project coordinator and academic researcher. In the following section, I elaborate on: (1) my reflections on the *Sputc Project* vs related academic work in terms of its relationship to Indigenous, decolonizing, and community-based research; (2) how and when Indigenous and community-engaged methodologies might be chosen in the context of environmental research and beyond, and the relationship of decolonizing approaches to each; and (3) how engaging Nuxalk knowledge systems required operationalizing a number of key Indigenous research principles, including relational accountability, reciprocity, responsible methods, respectful representation, and reflexivity.

Reflections on *Sputc Project* methodology versus this research

Addressing epistemological differences is a necessary challenge of doing Indigenous research, touching on the core tenets of knowledge production and purpose (Kovach, 2009). Positioning the *Sputc Project* process in relation to research methodology literatures, this work prompted me to evaluate my assumptions about who produces knowledge, for whom, how, and for what purposes (Brown and Strega, 2005; Kovach, 2009; Smith, 1999). How did the *Sputc Project* constitute a research project? Was it based in Indigenous or community-engaged methodologies? To what extent was it decolonizing? In order to illustrate the distinctions between IM and community-engaged research, and with the goal of achieving epistemological transparency, I reflect here on the differences between the process of conducting the *Sputc Project* versus the process of doing the research that informs this paper.

From its conception, the *Sputc Project* the project was fundamentally concerned with cultural and political resurgence, focused on knowledge (re)generation for and by *Nuxalkmc*, as independent eulachon management decision-makers. Initiated and led by Nuxalk people, priorities, and knowledges, the *Sputc Project* constituted a distinctly Nuxalk approach to knowledge documentation, interpretation, articulation, and representation. From inception to completion, the *Sputc Project* drew on distinct Nuxalk

knowledge systems held by Nuxalk people, including cultural teachings and values, ancestral governance protocols and decision-making practices. As such, *Nuxalkmc* project leaders and collaborators consider the project to be a Nuxalk-specific expression of IM.

However, non-Nuxalk perspectives necessarily influenced project processes and priorities, both through my biases as a non-*Nuxalkmc* coordinator and university-trained researcher, and through the influence of *Nuxalkmc* with less decolonized mindsets. Further, while the project evolved as it engaged Nuxalk epistemologies, it also employed many methods informed by non-Nuxalk research approaches. As such, we must ultimately consider the *Sputc Project* a mixed Indigenous and community-engaged methodology, informed by both Nuxalk and western knowledge systems. While certainly de-centering settler knowledge systems, decolonization was secondary to the primary goal of resurgence in this context.

Meanwhile, as a product of the knowledge gained by myself and others through the *Sputc Project* process, this paper constitutes a kind of research-on-research. Using methods of community-engaged research (Carlson, 2016; LaVeaux and Christopher, 2009; Tobias et al., 2013), it is informed by my participation in the *Sputc Project*, but clearly does not employ Indigenous methodologies. Situated at the crux of community, academic, and environmental management, this paper is intended to serve as a bridge between the practical work of Indigenous resurgence and Nation-building and decolonizing academic work related to Indigenous knowledge documentation, interpretation, and representation. As such, it is firmly decolonizing in its intent, aiming to uphold the resurgent work of the *Sputc Project* and inform others doing similar work.

Choosing Indigenous methodologies

Indigenous peoples' leadership in environmental research and practice is increasingly advocated (Adams et al., 2014; von der Porten et al., 2019, 2016), and settler scholars in a variety of disciplines are increasingly seeking ways to decolonize their research (Adams et al., 2014; Carlson, 2016; Castleden et al., 2017, 2012; Fortier, 2017). Yet, there remain few examples of the application of Indigenous methodologies (IM) in this context. Further, given the primacy of theoretical and epistemological considerations for the conduct of research, there is relatively little guidance available to researchers about the pragmatics of choosing between and applying Indigenous *versus* community-engaged research approaches (Carlson, 2016; Easby, 2016; Latulippe, 2015a), nor their respective relationships to the theories and goals of decolonization. In this section, I underline the similarities and distinctions between Indigenous methodologies (IM) and community-based participatory research (CBPR) and provide insights on choosing between (or combining) them based in my experience of the Nuxalk *Sputc Project* as a settler-researcher and Indigenous ally.

Both Indigenous and qualitative methodologies may be critical, or transformative in approach and intent, valuing reflexive, relational, and interpretative process alongside content (Kovach, 2009, 2005; LaVeaux and Christopher, 2009; Wilson, 2008). IM further overlap with community-engaged approaches in that they are iterative, situated, and responsive, valuing accountability, responsibility, and respect throughout the research process (Easby, 2016; Kovach, 2009; LaVeaux and Christopher, 2009). Yet, CBPR and IM literatures are rarely cross-referenced or are poorly distinguished (Castleden et al., 2017; Latulippe, 2015a), a reality attributed to differences in their orientations to indigeneity and related use of language (Easby, 2016). Because IM and CBPR are epistemologically, theoretically, and politically distinct, neither is universally applicable; while community-engaged methods may not be sufficient to conduct respectful research in Indigenous contexts, IM are not appropriate for use by most non-Indigenous people (Carlson, 2016; de Leeuw et al., 2012; Kovach, 2009; Latulippe, 2015a). This does not preclude settler researchers from respectfully engaging Indigenous priorities and perspectives to push the envelope of community-engaged research practice; indeed, so doing is an ethical and relational necessity (Carlson, 2016; Irlbacher-Fox, 2014). Given their theoretical and practical commonalities, mixing CBPR and IM is entirely acceptable to many Indigenous methodologists (Evans et al., 2014; Kovach, 2009). However, Margaret Kovach (2009) underlines that especially in cases of their overlap, *epistemological transparency* is necessary to avoid subsuming Indigenous methods under Western ways of knowing, and *vice versa* (Kovach, 2009). In this spirit, **Figure 1** represents community-engaged and Indigenous methodologies as complementary and potentially overlapping approaches, informed by Indigenous and/or critical theories.

In reflecting on the methodological place of the *Sputc Project* and related academic work (Beveridge et al., 2019a, 2019b, 2019c), I found it useful to consider how community-engaged vs Indigenous approaches relate to decolonization as a means to move toward epistemological transparency. While some scholars position decolonizing or anti-colonial approaches in their own methodological category (Chalmers, 2017), I suggest that decolonization is an over-arching, theory-informed practice and goal capable of informing any research methodology (Carlson, 2016; Fortier, 2017). I primarily employ the term *decolonizing* as a verb describing a sustained intent or action, rather than as a noun describing a type of methodology. CBPR and IM may or may not fall under the umbrella of decolonization (Evans et al., 2014; Kovach, 2009, p. 31). Tuck and Yang (2012) emphasize that decolonization is not metaphorical; it must be grounded in real Indigenous interests and concrete action (Tuck and Yang, 2012, p. 1). Decolonizing research therefore needs to address the specific realities of settler-colonialism, including historical context, legal rights, land issues, and colonizing practices, and aim to disrupt or subvert them “in order to push back against colonial institutions to make space for Indigenous resurgence” (Carlson, 2016, p. 9; Smith et al., 2016). Therefore, applying a generalized anti-oppressive lens, or “increasing the

self-determination and participation of research subjects and upholding values of reciprocity” in community-engaged research does not in itself constitute decolonization (Carlson, 2016, p. 6; Tuck and Yang, 2012). In fact, critical methodologies and social justice approaches that seek to challenge settler perspectives may have objectives that are “incommensurable with decolonization” in that they have the potential to be “entangled in resettlement” (Tuck and Yang, 2012, p. 1).

Meanwhile, Indigenous methodologies may be decolonizing, in that they constitute an act of resistance to external systems of knowledge production, emphasizing Indigenous peoples’ “right to tell their own histories, recover their own traditional knowledge and culturally grounded pedagogies, epistemologies and ontologies” (Coombes et al., 2014; Stewart-Harawira, 2013, p. 41). However, they are not necessarily so: IM also necessarily engage internal knowledge systems and ancestral intellectual traditions, supporting cultural and political resurgence, sometimes without engaging settler-colonial elements. A (re)emerging resurgent research is not focused on struggle against settler-colonialism, but on (re)producing knowledge for and by Indigenous people (Alfred, 2005; Asch et al., 2018; Corntassel, 2012; Corntassel et al., 2018; Coulthard, 2014; Simpson, 2017). Leanne Simpson (2008) articulates that

“...one of our most critical and immediate tasks in building an Indigenous resurgence is ensuring that the knowledge of our ancestors is taught to the coming generations. But, according to our intellectual traditions, how we do this is as important or perhaps more important than the product of our efforts... So, the first thing we must recover is our own Indigenous ways of knowing, our own Indigenous ways of protecting, sharing, and transmitting knowledge, our own Indigenous intellectual traditions. And we must begin to practice and live those traditions on our own terms” (Simpson, 2008, p. 74).

This vision echoes Linda Tuhiwai Smith’s (1999) description of decolonizing methodologies as “centering our concerns and worldviews, and coming to know... from our own perspectives and for our own purposes” (Smith, 1999, p. 39). So doing requires learning and applying IK related to cultural protocol, decision-making, and governance systems (Alfred, 2005; Chalmers, 2017; Evans et al., 2014; Simpson, 2008; Smith, 1999), as we attempted through the *Sputc Project*. Below, I elaborate on learning related to our engagement of Nuxalk knowledges in eulachon management.

Engaging Indigenous knowledges

The role of the *Sputc Project*’s engagement with Nuxalk epistemologies in accounting for the success of the project cannot be overstated. In considering how Nuxalk people and knowledge systems influenced the project process from my position as settler-researcher, four interrelated principles emerged: (1) relational accountability and reciprocity; (2) responsible, engaged methods; (3) reflexivity; and (4)

respectful representation. While these themes arose from my own reflection and those of the project team, they echo principles previously outlined by decolonizing and Indigenous methodologists to guide respectful mixed-methodology research in Indigenous contexts (Carlson, 2016; Kovach, 2017, 2009; Louis, 2007; Wilson, 2008).

Relational accountability and reciprocity

According to Margaret Kovach (2017), “relationship is how we *do* Indigenous methodology” (Kovach, 2017). Relationality may be expressed through mutual relationships of trust with community, application of ancestral protocol and ethics, and culturally-relevant methods of learning and sharing (Kovach, 2017). According to some Indigenous methodologists, relational values indicate that the purpose of knowledge (production) “is not to explain an objectified universe, but to understand one’s responsibilities and relationships and to engage in mutual reciprocity” (Latulippe, 2015b, p. 5; Legat and Barnaby, 2012; Shaw et al., 2006), strengthening the web of relationships (Wilson, 2008). Drawing on Nuxalk epistemology, the expressed intention of the *Sputc Project* was to learn and share Nuxalk eulachon knowledge “in a good way” (Ball and Janyst, 2008; Kovach, 2009; Stiegman and Castleden, 2015). This intention is reflected in the IM literature as the principle of *relational accountability* (Carlson, 2016; de Leeuw et al., 2012; Latulippe, 2015a; Louis, 2007; Wilson, 2008).

I believe that the *Sputc Project* owes much of its success to *Nuxalkmc* team members’ pre-existing relationships and positions in the community, to which each was accountable and responsible. Respectful relationships deepened the community’s level of investment in the project, the breadth and quality of knowledge shared, the accuracy of knowledge representation, and the credibility of the project as a whole. Among others, relationships with key political knowledge holders or gatekeepers (Caine et al., 2009; LaVeaux and Christopher, 2009) were key to our early engagement of local governance processes and protocols. This highlights the importance of Indigenous leadership; such relationships would have been challenging for researchers less resourced or cognizant of the local political context. As an outsider, navigating the complex social and political landscape of the community, and building comfortable relationships that promoted trust and knowledge sharing required a great deal of time and attention, and remains a work in progress. Smith (2016) also emphasizes spiritual knowledges and roles held by community members as essential to Indigenous knowledge production, an element mostly lacking in our process (Smith et al., 2016).

Enacting relational accountability also meant applying Nuxalk teachings and values, protocols and practices with attention to our responsibility to a network of relations that included extended community, ancestors, future generations, land, and spirit (Louis, 2007; Smith et al., 2016; Wilson, 2008). Given that

relational knowledges are "nested, created, and re-created within the context of relationships with other living beings" (Kovach, 2009, p. 47), our responsibilities extended beyond project participants and their relations to the river, and to eulachon itself. Like Coombes (2014), I found that emphasizing relationship to this degree, ethics became method, data became life, landscape became author, (Coombes et al., 2014, p. 850) and team members became friends (de Leeuw et al., 2012). While extended engagement with non-living beings and communities is not explicitly highlighted by community-engaged researchers interested in co-learning and mutual exchange with research participants (Adams et al., 2014; Castleden et al., 2012, 2008; LaVeaux and Christopher, 2009; Mulrennan et al., 2012; Wallerstein and Duran, 2006), it is essential to conducting IM or decolonizing research (Carlson, 2016).

Responsible, contextualised methods

Indigenous methodologists underline that conducting respectful, meaningful research requires an in-depth engagement with community authority and protocol (Carlson, 2016; Crook et al., 2016; Kovach, 2017, 2009; Lavallée, 2009; Louis, 2007; Whyte et al., 2016). Indeed, Kovach (2017) underlines that "protocols are ethics" in Indigenous research design (Kovach, 2017). Applying distinct Nuxalk cultural and political protocol meant involving ancestral leadership in decision-making and advisory processes, ensuring broad community engagement, and affirming shared knowledge through payment, feasting, gifting, and food at gatherings (Kovach, 2017; Wilson and Restoule, 2010). Informed by an ethic of relationality and interdependence, this resulted in research process that may be characterized as *iterative*, emergent, or cyclical, like many CBPR processes (Israel et al., 1998; LaVeaux and Christopher, 2009). While the *Sputc Project* initially employed methods of knowledge documentation and interpretation reminiscent of CBPR (e.g. interviews and participatory workshops), these methods were adapted as we engaged Nuxalk knowledges. Our methods became increasingly open-ended and reciprocal: interviews transformed into conversations, and workshops and meetings took the form of open talking circles. Contextualized iteration of knowledge documentation and interpretation processes revealed underlying meanings, values, and teachings that enabled us to remain responsible and accountable to *Nuxalkmc*, including project collaborators, community, future generations, lands, and ancestors.

Research employing IM necessarily seeks knowledge from "multiple and multidimensional sources" (both internal and external, including dreams, journaling, and ceremony), and implicit, "holistic, non-fragmented processes" (Kovach, 2017, p. 227), including stories and oral histories, narratives, personal accounts, conversation, and talking circles (Archibald, 2008; Coombes et al., 2014; Kovach, 2009; Louis, 2007; Smith et al., 2016). Many also emphasize the essential role of *language* in transmitting cultural knowledges (Brown et al., 2012; Simpson, 2017, 2011). Kovach (2017) suggests that to the extent that

Indigenous epistemologies are engaged, research “ought to have a strong narrative component as part of its method and presentation of findings” (Kovach, 2009, p. 35). Indeed, narrative, visual, story-based, and conversational methods similar to those used in the *Sputc Project* are often employed to bridge CBPR and Indigenous methodologies (Castleden et al., 2008; Kovach, 2010; Lavallée, 2009; Thomas, 2005). Key to both approaches is the shifted balance of power from researcher to participant, such that participants or collaborator direct content and tell their story on their own terms (Brown and Strega, 2005; Kovach, 2009). Consistent with reciprocal, relational ways of knowing, story and other “emotive, affective, and narrative practices” (Coombes et al., 2014, p. 851) highlight local ways of knowing and being, providing space for the fluidity of metaphor and symbolism, witnessing and interpretation (Kovach, 2017; Louis, 2007; Thomas, 2005). During the *Sputc Project*, we included a diversity of knowledge sources and sharing processes to encourage peoples’ interaction and interpretation of project materials. We also recognized the importance of lands-based *practice* in relational knowledge transmission (Legat and Barnaby, 2012; McGregor, 2004; Simpson, 2014; Wildcat et al., 2014), and found that partnering with ceremonial functions and lands-based activities (e.g. grease-making) was key to our learning and engagement.

Respectful representation and reciprocity

The *Sputc Project*’s iterative process and adaptive methods were essential to our goal of “getting it right”, a practice that Indigenous methodologists refer to as *respectful representation* (Absolon and Willett, 2004; Coombes et al., 2014; Kovach, 2017; Louis, 2007). While often most apparent during the stage of knowledge sharing or dissemination, respectful representation is contingent on mindful actions throughout the research process (Absolon and Willett, 2004; Coombes et al., 2014; Kovach, 2017; Louis, 2007). It was our experience that respectful articulation and representation of Nuxalk knowledges required appropriate direction, participation, and interpretation by *Nuxalkmc* throughout the project process. Emphasizing *Nuxalkmc* as the exclusive, autonomous originators and audience of project materials (First Nations Information Governance Centre, 2014; Schnarch, 2004) affected every decision point of the *Sputc Project* process.

When communicating with *Nuxalkmc* about the *Sputc Project*, we used the language of “learning” and “sharing” to make the process accessible and relatable. However, the process *between* learning and sharing – which Kovach (2009) and Archibald (2008) call *meaning making* (Archibald, 2008; Kovach, 2009), and we refer to as interpretation, articulation, and representation – may have been the most difficult part of “getting it right”. By many accounts, we are not alone in this experience (Castleden et al., 2012; Coombes et al., 2014; Kovach, 2017, 2009). While CBPR emphasizes the importance of representation and voice (Minkler, 2010; Tobias et al., 2013; Wallerstein and Duran, 2006), this may be borne of interest in accountability and power dynamics (Muhammad et al., 2015) rather than of respect

for Indigenous knowledges' sources and authority. Meanwhile, according to IM, Indigenous knowledges must remain situated in relationship to retain validity, which is established by trust in the knowledge-holder (Kovach, 2009; McGregor, 2004). Because "thematic groupings conflict with making meaning holistically" (Kovach, 2017, p. 129), analytic methods that extract or decontextualize knowledge are inconsistent with IM (Castleden et al., 2012; Coombes et al., 2014; Kovach, 2017, 2009; Wilson, 2008), particularly in the absence of a local partner entrenched in the relevant Indigenous worldview (Castleden et al., 2012; Kovach, 2017). While CBPR advocates privileging collaborative analysis, many western research conventions in the context of resource management assume analytic authority is held by the researcher (Castleden et al., 2012; Coombes et al., 2014), there are few examples of interpretation practices consistent with IM in environmental management. Indeed, many CBPR researchers successfully collaborate with Indigenous partners in research initiation, design, and data collection, but experience collaborative analysis and reporting to be a challenge (Castleden et al., 2012; Mulrennan et al., 2012). This may point to an underlying reluctance "to consider more fundamental and ontological objections to collaboration" and an "ongoing expectation of scholarly authority over research design and implementation" (Coombes et al., 2014, p. 848).

According to Leanne Simpson, the alternative to extractivism is respect, responsibility, relationship, and deep reciprocity (Klein, 2013). However, "(r)eciprocity requires time and resources" (Carlson, 2016, p. 14). Like other community-engaged Indigenous research, the *Sputc Project* required extensive capacity and resources, time and trust (Adams et al., 2014; Castleden et al., 2012, 2008; Coombes et al., 2014; de Leeuw et al., 2012; Mulrennan et al., 2012). Building community-engaged research and communications capacity within the core project team and beyond, the project was directly dependent on sufficient financial resources and time, which were fortunately supported by both academic and funding partners. Sidestepping academic and institutional pressures often experienced by CBPR researchers (i.e., expected PhD completion times, presence on campus) (Castleden et al., 2012; Coombes et al., 2014; de Leeuw et al., 2012) involved substantial (but unregretted) commitment of time and resources; dedication, perseverance, and a continued, long-term presence in the community were essential elements of this project's success.

Reflexivity

In keeping with their emphasis on relationality, both CBPR and IM underline that responsible research requires *reflexivity* (Absolon and Willett, 2005; Kovach, 2009; Muhammad et al., 2015; Nicholls, 2009). Based in critical theory, CBPR is primarily concerned with reflexivity insofar as it exposes the power relations within which knowledges are embedded, privileged, and re-created (de Leeuw et al., 2012; Muhammad et al., 2015; Wallerstein and Duran, 2006). Based in Indigenous epistemologies, IM's focus

on reflexivity is more personal, highlighting the researcher's place in – and responsibility to – a network of established relationships and knowledges (Absolon, 2011; Absolon and Willett, 2005; Kovach, 2009; Nicholls, 2009; Wilson, 2008). During the *Sputc Project*, reflexive meetings and conversations on the part of the research team enabled us to adapt the project methods and approaches based on circumstances and input as our knowledges, understanding, roles, and relationships evolved. Within and beyond the project team, explicit inclusion of prayer at the beginning of meetings, and regular retreats or lands-based activities would have facilitated a systematic, collective reflexive process (Nicholls, 2009) based in Nuxalk protocols and practices. My own reflexive process as a settler researcher in this context is elaborated elsewhere (Beveridge, 2019) based on principles of decolonizing research outlined by Elizabeth Carlson (Carlson, 2016).

CONCLUSION

As scholars in environmental management and beyond seek to strengthen and decolonize their research practices, they require methodologies capable of respectfully engaging Indigenous people, knowledges, values, and priorities. In this paper, I draw on my experience in coordinating the community-engaged *Sputc Project* to demonstrate how a particular Indigenous research approach applied Nuxalk knowledges to support the management of eulachon by *Nuxalkmc*. Initiated and led by the Nuxalk Stewardship Office in Bella Coola, B.C., the *Sputc Project* engaged *Nuxalkmc* in learning and sharing Nuxalk knowledges about eulachon history, values, and stewardship, to create a foundation for Nuxalk eulachon management authority (Sputc Project Team, 2017). Drawing on literatures in both Indigenous and community-engaged research, I showed that while the *Sputc Project* process shared many commonalities with community-engaged methodologies, its distinctly Nuxalk approach was key to its success. In particular, engaging Nuxalk knowledges required relational accountability, responsible, contextualized methods, respectful representation, and reflexivity. This supported Nuxalk-led research in a manner distinct from CBPR, increasing local research capacity and strengthening self-determined decision-making authority (Beveridge et al., 2019a). As such, this project not only sets a precedent for related projects in Nuxalk territory, but may serve as an example for others engaged in work supporting Indigenous resurgence and self-determination.

Highlighting the similarities and distinctions between IM and CBPR through the example of the *Sputc Project*, I shared theoretical and practical insights about choosing and engaging Indigenous and/or community-engaged approaches, suggesting that the relationship of each to critical, Indigenous, and decolonizing theories may be a useful means for researchers to position their own work. Appropriately applying IM has the potential to move Indigenous researchers and decision-makers toward authentically

and respectfully supporting Indigenous self-determination in the interpretation, production, and articulation of knowledges used in environmental management and beyond. Meanwhile, decolonizing approaches can adopt many of the same values and principles, including respectful engagement of Indigenous knowledges, priorities, perspectives, and people. An informed understanding by community leaders and researchers of methodological options, and selection of methods based on their preferences, is key to 'de-centering' academia in the choice of methods. I hope that this research helps Indigenous leaders and researchers, and those who support them, to consider engagement with decolonizing and Indigenous theories in their own manner and for their own purposes.

LITERATURE CITED

- Absolon, K., 2011. *Kaandossiwin: How We Come to Know*. Fernwood Books Ltd, Halifax.
- Absolon, K., Willett, C., 2005. Putting Ourselves Forward: Location in Aboriginal Research, in: Brown, L., Strega, S. (Eds.), *Research As Resistance: Critical, Indigenous, and Anti-Oppressive Approaches*. Canadian Scholars' Press, Toronto, pp. 97–126.
- Absolon, K., Willett, C., 2004. Aboriginal Research: Berry Picking and Hunting in the 21st Century 1, 13.
- Adams, M.S., Carpenter, J., Housty, J.A., Neasloss, D., Paquet, P.C., Service, C., Walkus, J., Darimont, C.T., 2014. Toward increased engagement between academic and indigenous community partners in ecological research. *Ecology and Society* 19. <https://doi.org/10.5751/ES-06569-190305>
- Alfred, T., 2005. *Wasase: Indigenous Pathways of Action and Freedom*. University of Toronto Press.
- Archibald, J.-A., 2008. *Indigenous Storywork: Educating the Heart, Mind, Body, and Spirit*. UBC Press, Vancouver.
- Artelle, K., Stephenson, J., Bragg, C., Housty, J., Housty, W., Kawharu, M., Turner, N., 2018. Values-led management: the guidance of place-based values in environmental relationships of the past, present, and future. *Ecology and Society* 23. <https://doi.org/10.5751/ES-10357-230335>
- Asch, M., Borrows, J., Tully, J. (Eds.), 2018. *Resurgence and Reconciliation: Indigenous-Settler Relations and Earth Teachings*. University of Toronto Press, Scholarly Publishing Division.
- Ball, J., Janyst, P., 2008. Enacting Research Ethics in Partnerships with Indigenous Communities in Canada: "Do it in a Good Way." *Journal of Empirical Research on Human Research Ethics: An International Journal* 3, 33–51. <https://doi.org/10.1525/jer.2008.3.2.33>
- Battiste, M., 2005. Indigenous knowledge: Foundations for First Nations. *World Indigenous Nations Higher Education Consortium-WINHEC Journal*.
- Battiste, M., Henderson, J.Y., 2000. *Protecting indigenous knowledge and heritage: a global challenge*, Purich's Aboriginal issues series. Purich Publishing Ltd, Saskatoon.

- Berkes, F., 2012. *Sacred ecology*, 3rd ed. Routledge, New York.
- Berkes, F., Colding, J., Folke, C., 2000. Rediscovery of traditional ecological knowledge as adaptive management. *Ecological applications* 10, 1251–1262.
- Beveridge, R., 2019. RACHELLE BEVERIDGE PHD DISSERTATION - IN PROGRESS (PhD, Social Dimensions of Health). University of Victoria, Victoria.
- Beveridge, R., Moody, M., Murray, G., Darimont, C.T., 2019a. Paper 4 - The Nuxalk Sputc (Eulachon) Project: strengthening Indigenous management authority from the ground up, in: RACHELLE BEVERIDGE PHD DISSERTATION - IP. University of Victoria, Victoria.
- Beveridge, R., Moody, M., Snxakila, C.T., Murray, G., Pauly, B., Darimont, C.T., 2019b. Paper 3 - Indigenous knowledges, Indigenous authority: Alhquh ti Sputc and the respectful representation Nuxalk eulachon knowledges, in: RACHELLE BEVERIDGE PHD DISSERTATION. Victoria, B.C.
- Beveridge, R., Pauly, B., Moody, M., Snxakila, C.T., Murray, G., Darimont, C.T., 2019c. Paper 1: Understanding the impacts of (de)colonised environmental management: a case study of eulachon and Nuxalk well-being, in: RACHELLE BEVERIDGE PHD DISSERTATION. Victoria, B.C.
- Bohensky, E.L., Maru, Y., 2011. Indigenous Knowledge, Science, and Resilience: What Have We Learned from a Decade of International Literature on “Integration”? *Ecology and Society* 16, 6.
- Brant Castellano, M., 2004. Ethics of Aboriginal research. *Journal of Aboriginal Health* • January 99.
- Brown, H., McPherson, G., Peterson, R., Newman, V., Cranmer, B., 2012. Our Land, Our Language: Connecting Dispossession and Health Equity in an Indigenous Context. *Canadian Journal of Nursing Research* 44, 21.
- Brown, L., Strega, S., 2005. *Research as resistance: critical, indigenous and anti-oppressive approaches*. Canadian Scholars’ Press.
- Brunger, F., Wall, D., 2016. “What Do They Really Mean by Partnerships?” Questioning the Unquestionable Good in Ethics Guidelines Promoting Community Engagement in Indigenous Health Research. *Qual Health Res* 26, 1862–1877. <https://doi.org/10.1177/1049732316649158>
- Caine, K.J., Davison, C.M., Stewart, E.J., 2009. Preliminary field-work: methodological reflections from northern Canadian research. *Qualitative Research* 9, 489–513. <https://doi.org/10.1177/1468794109337880>
- Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada, 2014. Tri-council policy statement: ethical conduct for research involving humans 2014.
- Carlson, E., 2016. Anti-colonial methodologies and practices for settler colonial studies. *Settler Colonial Studies* 7, 496–517. <https://doi.org/10.1080/2201473X.2016.1241213>

- Castleden, H., Garvin, T., First Nation, H., 2008. Modifying Photovoice for community-based participatory Indigenous research. *Social Science & Medicine* 66, 1393–1405.
- Castleden, H., Martin, D., Cunsolo, A., Harper, S., Hart, C., Sylvestre, P., Stefanelli, R., Day, L., Lauridsen, K., 2017. Implementing Indigenous and Western Knowledge Systems (Part 2): “You Have to Take a Backseat” and Abandon the Arrogance of Expertise. *International Indigenous Policy Journal* 8. <https://doi.org/10.18584/iipj.2017.8.4.8>
- Castleden, H., Sloan Morgan, V., Lamb, C., 2012. “I spent the first year drinking tea”: Exploring Canadian university researchers’ perspectives on community-based participatory research involving Indigenous peoples. *The Canadian Geographer / Le Géographe canadien* 56, 160–179. <https://doi.org/10.1111/j.1541-0064.2012.00432.x>
- Chalmers, J., 2017. The Transformation of Academic Knowledges: Understanding the Relationship between Decolonising and Indigenous Research Methodologies. *Socialist Studies/Études Socialistes* 12, 97.
- Coombes, B., Johnson, J.T., Howitt, R., 2014. Indigenous geographies III: Methodological innovation and the unsettling of participatory research. *Progress in Human Geography* 38, 845–854. <https://doi.org/10.1177/0309132513514723>
- Corntassel, J., 2012. Re-envisioning resurgence: Indigenous pathways to decolonization and sustainable self-determination. *Decolonization: indigeneity, education & society* 1.
- Corntassel, J., Alfred, T., Goodyear-Ka’opua, N., Silva, N.K., Aikau, H.K., Mucina, D. (Eds.), 2018. *Everyday Acts of Resurgence: People, Places, Practices*. Daykeeper Press.
- Coulthard, G.S., 2014. *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition*. University of Minnesota Press, Minneapolis.
- Creswell, J.W., 2012. *Qualitative inquiry and research design: Choosing among five approaches*. SAGE Publications, Incorporated.
- Creswell, J.W., 2008. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications, Incorporated.
- Crook, D.A., Douglas, M.M., King, A.J., Schnierer, S., 2016. Towards deeper collaboration: stories of Indigenous interests, aspirations, partnerships and leadership in aquatic research and management. *Rev Fish Biol Fisheries* 26, 611–615. <https://doi.org/10.1007/s11160-016-9449-7>
- de Leeuw, S., Cameron, E.S., Greenwood, M., 2012. Participatory and community-based research, Indigenous geographies, and the spaces of friendship: A critical engagement. *The Canadian Geographer / Le Géographe canadien* 56, 180–194. <https://doi.org/10.1111/j.1541-0064.2012.00434.x>

- de Leeuw, S., Hunt, S., 2018. Unsettling decolonizing geographies. *Geography Compass* 12, e12376.
<https://doi.org/10.1111/gec3.12376>
- Denzin, N.K., Lincoln, Y.S., Smith, L.T., 2008. *Handbook of Critical and Indigenous Methodologies*. SAGE.
- Easby, A., 2016. *Indigenous Research Methodologies*, UNESCO Chair in Community-based Research and Social Responsibility in Higher Education Project 'Building the Next Generation of Community-Based Researchers. University of Victoria, Victoria.
- Evans, M., Miller, A., Hutchinson, P.J., Dingwall, C., 2014. *Decolonizing Research Practice*. The Oxford Handbook of Qualitative Research. <https://doi.org/10.1093/oxfordhb/9780199811755.013.019>
- Evering, B., 2012. Relationships between knowledge(s): implications for 'knowledge integration.' *J Environ Stud Sci* 2, 357–368. <https://doi.org/10.1007/s13412-012-0093-9>
- First Nations Information Governance Centre, 2014. *Ownership, Control, Access and Possession (OCAP™): The Path to First Nations Information Governance (Paper)*. First Nations Information Governance Centre, Ottawa.
- Fortier, C., 2017. Unsettling Methodologies/Decolonizing Movements. *Journal of Indigenous Social Development* 6, 17.
- Garibaldi, A., Turner, N., 2004. Cultural Keystone Species: Implications for Ecological Conservation and Restoration. *Ecology and Society* 9. <https://doi.org/10.5751/ES-00669-090301>
- Gauvreau, A., Lepofsky, D., Rutherford, M., Reid, M., 2017. "Everything revolves around the herring": the Heiltsuk–herring relationship through time. *Ecology and Society* 22. <https://doi.org/10.5751/ES-09201-220210>
- Haggan, N., 2010. The case for including the cultural and spiritual values of eulachon in policy and decision-making (Report for Fisheries and Oceans Canada). Vancouver, B.C.
- Haggan, N., Turner, N., Carpenter, J., Jones, J.T., Menzies, C., Mackie, Q., 2006. 12,000+ years of change: Linking traditional and modern ecosystem science in the Pacific Northwest. Fisheries Centre, University of British Columbia, Vancouver, B.C.
- Hanuse, S.B., 2010. *Cry Rock*. Smayaykila Films / Moving Images Distribution.
- Harris, D., Millerd, P., 2010. Food Fish, Commercial Fish, and Fish to Support a Moderate Livelihood: Characterizing Aboriginal and Treaty Rights to Canadian Fisheries. *Arctic Review on Law and Politics*, Vol. 1, pp. 82-107, 2010.
- Hart, M.A., 2010. Indigenous worldviews, knowledge, and research: The development of an indigenous research paradigm.
- Hill, R., Grant, C., George, M., Robinson, C.J., Jackson, S., Abel, N., 2012. A Typology of Indigenous Engagement in Australian Environmental Management: Implications for Knowledge Integration

- and Social-ecological System Sustainability. *Ecology and Society* 17. <https://doi.org/10.5751/ES-04587-170123>
- Hilland, A., 2013. Extinguishment by extirpation: The Nuxalk eulachon crisis (Master of Laws). University of British Columbia, Vancouver.
- Housty, W.G., Noson, A., Scoville, G.W., Boulanger, J., Jeo, R.M., Darimont, C.T., Filardi, C.E., 2014. Grizzly bear monitoring by the Heiltsuk people as a crucible for First Nation conservation practice. *Ecology and Society* 19, 70.
- Irlbacher-Fox, S., 2014. Traditional knowledge, co-existence and co-resistance. *Decolonization: Indigeneity, Education & Society* 3, 145–158.
- Israel, B.A., Parker, E.A., Rowe, Z., Salvatore, A., Minkler, M., Lopez, J., Butz, A., Mosley, A., Coates, L., Lambert, G., Potito, P.A., Brenner, B., Rivera, M., Romero, H., Thompson, B., Coronado, G., Halstead, S., 2005. Community-Based Participatory Research: Lessons Learned from the Centers for Children’s Environmental Health and Disease Prevention Research. *Environ Health Perspect* 113, 1463–1471. <https://doi.org/10.1289/ehp.7675>
- Israel, B.A., Schulz, A.J., Parker, E.A., Becker, A.B., 1998. Review of Community-Based Research: Assessing Partnership Approaches to Improve Public Health. *Annual Review of Public Health* 19, 173–202. <https://doi.org/10.1146/annurev.publhealth.19.1.173>
- Jones, R., Rigg, C., Pinkerton, E., 2016. Strategies for assertion of conservation and local management rights: A Haida Gwaii herring story. *Marine Policy*. <https://doi.org/10.1016/j.marpol.2016.09.031>
- Kindon, S., 2008. Participatory action research approaches and methods: connecting people, participation and place. Routledge.
- Kirkness, V.J., Barnhardt, R., 1991. First Nations and Higher Education: The Four R’s—Respect, Relevance, Reciprocity, Responsibility. *Journal of American Indian Education* 30, 1–15.
- Klein, N., 2013. Dancing the World into Being: A Conversation with Idle No More’s Leanne Simpson. *YES! Magazine*.
- Kotaska, J.G., 2013. Reconciliation “at the end of the day”: Decolonizing territorial governance in British Columbia after Delgamuukw (PhD, Resource Management and Environmental Studies). University of British Columbia, Vancouver, B.C.
- Kovach, M., 2017. Doing Indigenous methodologies - A letter to a research class, in: Denzin, N.K., Lincoln, Y.S. (Eds.), *The Sage Handbook of Qualitative Research*. SAGE Publications Ltd, pp. 214–234.
- Kovach, M., 2010. Conversational Method in Indigenous Research. *First Peoples Child and Family Review* 5, 40–48.

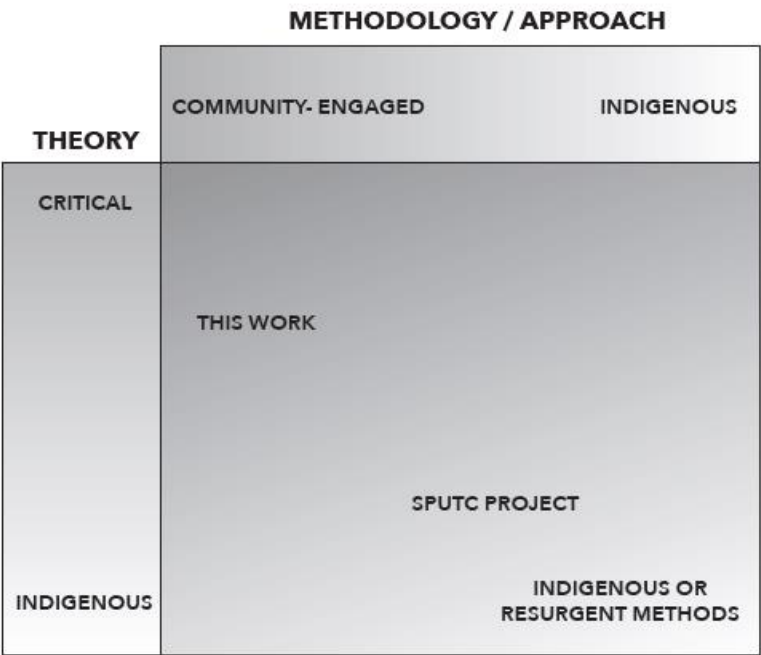
- Kovach, M., 2009. *Indigenous Methodologies: Characteristics, Conversations, and Contexts*. University of Toronto Press.
- Kovach, M., 2005. Emerging from the margins: Indigenous methodologies, in: Brown, L., Strega, S. (Eds.), *Research as Resistance: Rritical, Indigenous and Anti-Oppressive Approaches*. Canadian Scholars' Press, pp. 19–36.
- Kramer, J., 2011. *Switchbacks: Art, Ownership, and Nuxalk National Identity*. UBC Press.
- Latulippe, N., 2015a. Bridging parallel rows: Epistemic difference and relational accountability in cross-cultural research. *International Indigenous Policy Journal* 6.
- Latulippe, N., 2015b. Situating the Work: A typology of traditional knowledge literature. *AlterNative: An International Journal of Indigenous Peoples* 11, 118–131.
<https://doi.org/10.1177/117718011501100203>
- Lavallée, L.F., 2009. Practical Application of an Indigenous Research Framework and Two Qualitative Indigenous Research Methods: Sharing Circles and Anishnaabe Symbol-Based Reflection. *International Journal of Qualitative Methods* 8, 21–40.
<https://doi.org/10.1177/160940690900800103>
- LaVeaux, D., Christopher, S., 2009. Contextualizing CBPR: Key principles of CBPR meet the Indigenous research context. *Pimatisiwin* 7, 1.
- Legat, A., Barnaby, J., 2012. *Walking the Land, Feeding the Fire: Knowledge and Stewardship Among the Tlcho Dene*, 2 edition. ed. University of Arizona Press, Tucson.
- Lepofsky, D., Caldwell, M., 2013. Indigenous marine resource management on the Northwest Coast of North America. *Ecological Processes* 2, 12.
- Louis, R.P., 2007. Can You Hear Us Now? Voices from the Margin: Using Indigenous Methodologies in Geographic Research. *Geographical Research* 45, 130–139. <https://doi.org/10.1111/j.1745-5871.2007.00443.x>
- Low, M., 2018. *Practices of sovereignty: negotiated agreements, jurisdiction, and well-being for Heiltsuk Nation* (PhD, Resource Management and Environmental Studies). University of British Columbia, Vancouver, BC.
- McGregor, D., 2009. Linking traditional knowledge and environmental practice in Ontario. *Journal of Canadian Studies* 43, 69–100.
- McGregor, D., 2004. Coming Full Circle: Indigenous Knowledge, Environment, and Our Future. *The American Indian Quarterly* 28, 385–410. <https://doi.org/10.1353/aiq.2004.0101>
- McIlwraith, T.F., 1992. *The Bella Coola Indians*. University of Toronto Press, Toronto.

- Minkler, M., 2010. Linking science and policy through community-based participatory research to study and address health disparities. *Journal Information* 100.
- Moody, M., 2008. Eulachon past and present (Master of Science). University of British Columbia, Vancouver.
- Moore, C., Castleden, H., Tirone, S., Martin, D., 2017a. Implementing the Tri-Council Policy on Ethical Research Involving Indigenous Peoples in Canada: So, How's That Going in Mi'kma'ki? The *International Indigenous Policy Journal* 8. <https://doi.org/10.18584/iipj.2017.8.2.4>
- Moore, C., Castleden, H., Tirone, S., Martin, D., 2017b. Implementing the Tri-Council Policy on Ethical Research Involving Indigenous Peoples in Canada: So, How's That Going in Mi'kma'ki? *International Indigenous Policy Journal* 8. <https://doi.org/10.18584/iipj.2017.8.2.4>
- Muhammad, M., Wallerstein, N., Sussman, A.L., Avila, M., Belone, L., Duran, B., 2015. Reflections on researcher identity and power: The impact of positionality on community based participatory research (CBPR) processes and outcomes. *Critical Sociology* 41, 1045–1063.
- Mulrennan, M.E., Mark, R., Scott, C.H., 2012. Revamping community-based conservation through participatory research. *The Canadian Geographer / Le Géographe canadien* 56, 243–259. <https://doi.org/10.1111/j.1541-0064.2012.00415.x>
- Nadasdy, P., 2005. The Anti-politics of TEK: The Institutionalization of Co-management Discourse and Practice [traditional ecological knowledge]. *Anthropologica; Waterloo* 47, 215–232.
- Nadasdy, P., 2003. Reevaluating the co-management success story. *Arctic* 367–380.
- Nadasdy, P., 1999. The politics of TEK: Power and the "integration" of knowledge. *Arctic Anthropology* 1–18.
- Nicholls, R., 2009. Research and Indigenous participation: critical reflexive methods. *International Journal of Social Research Methodology* 12, 117–126. <https://doi.org/10.1080/13645570902727698>
- Schnarch, B., 2004. Ownership, control, access, and possession (OCAP) or self-determination applied to research: A critical analysis of contemporary First Nations research and some options for First Nations communities. *International Journal of Indigenous Health* 1, 80.
- Senkowsky, S., 2007. A Feast to Commemorate—and Mourn—the Eulachon. *BioScience* 57, 720–720. <https://doi.org/10.1641/B570815>
- Shaw, W.S., Herman, R.D.K., Dobbs, G.R., 2006. Encountering indigeneity: Re-imagining and decolonizing geography. *Geografiska Annaler: Series B, Human Geography* 88, 267–276.
- Simpson, L.B., 2017. *As We Have Always Done: Indigenous Freedom through Radical Resistance*, 3rd ed. edition. ed. Univ Of Minnesota Press, Minneapolis.

- Simpson, L.B., 2014. Land as pedagogy: Nishnaabeg intelligence and rebellious transformation. *Decolonization: Indigeneity, Education & Society* 3.
- Simpson, L.B., 2011. *Dancing On Our Turtle's Back: Stories of Nishnaabeg Re-Creation, Resurgence, and a New Emergence*. ARP Books, Winnipeg.
- Simpson, L.B., 2008. *Lighting the Eighth Fire - The Liberation, Resurgence, and Protection of Indigenous Nations*. ARP Books, Winnipeg.
- Smith, L.T., 1999. *Decolonizing Methodologies: Research and Indigenous Peoples*. Zed Books.
- Smith, L.T., Maxwell, T.K., Puke, H., Temara, P., 2016. Indigenous knowledge, methodology and mayhem: What is the role of methodology in producing indigenous insights? A discussion from Mātauranga Māori 4, 131–156.
- Sputc Project Team, 2017. *Alhqulh ti Sputc (The Eulachon Book)*. Nuxalk Stewardship Office, Bella Coola.
- Stewart-Harawira, M., 2013. Challenging Knowledge Capitalism: Indigenous Research in the 21st Century. *Socialist Studies/Études Socialistes* 9. <https://doi.org/10.18740/S43S3V>
- Stiegman, M., Castleden, H., 2015. Leashes and Lies: Navigating the Colonial Tensions of Institutional Ethics of Research Involving Indigenous Peoples in Canada. *International Indigenous Policy Journal* 6. <https://doi.org/10.18584/iipj.2015.6.3.2>
- Thomas, R.A., 2005. Honouring the Oral Traditions of My Ancestors Through Storytelling, in: Brown, L., Strega, S. (Eds.), *Research as Resistance: Critical, Indigenous, and Anti-Oppressive Approaches*. Canadian Scholars' Press, Toronto, pp. 237–254.
- Thompson, C., 2017. Book of Eulachon – Alhqulh Ti Sputc – presented to Nuxalkmc at community feast. *Coast Mountain News*.
- Thompson, C., 2014. Community celebrates eulachon with Sputc Ceremony. *Coast Mountain News*.
- Tobias, J.K., Richmond, C., Luginaah, I., 2013. Community-based participatory research (CBPR) with Indigenous communities: Producing respectful and reciprocal research. *Journal of Empirical Research on Human Research Ethics* 8, 129–140.
- Tuck, E., Yang, K.W., 2012. Decolonization is not a metaphor. *Decolonization: Indigeneity, Education and Society* 1, 1–40.
- Turner, N.J., Berkes, F., 2006. Coming to understanding: Developing conservation through incremental learning in the Pacific Northwest. *Human Ecology* 34, 495–513.
- von der Porten, S., Corntassel, J., Mucina, D., 2019. Indigenous nationhood and herring governance: strategies for the reassertion of Indigenous authority and inter-Indigenous solidarity regarding marine resources. *AlterNative: An International Journal of Indigenous Peoples*.

- von der Porten, S., de Loë, R., Plummer, R., 2015. Collaborative Environmental Governance and Indigenous Peoples: Recommendations for Practice. *Environmental Practice* 17, 134–144. <https://doi.org/10.1017/S146604661500006X>
- von der Porten, S., Lepofsky, D., McGregor, D., Silver, J.J., 2016. Recommendations for marine herring policy change in Canada: Aligning with Indigenous legal and inherent rights. *Marine Policy* 74, 68–76. <https://doi.org/10.1016/j.marpol.2016.09.007>
- Wallerstein, N., Duran, B., 2006. Using community-based participatory research to address health disparities. *Health Promotion Practice* 7, 312–323.
- Weber-Pillwax, C., 2001. What is indigenous research? *Canadian Journal of Native Education*; Edmonton 25, 166–174.
- Whyte, K.P., Brewer, J.P., Johnson, J.T., 2016. Weaving Indigenous science, protocols and sustainability science. *Sustain Sci* 11, 25–32. <https://doi.org/10.1007/s11625-015-0296-6>
- Wildcat, M., McDonald, M., Irlbacher-Fox, S., Coulthard, G.S., 2014. Learning from the land: Indigenous land based pedagogy and decolonization. *Decolonization: Indigeneity, Education & Society* 3, 15.
- Wilson, D.D., Restoule, J.-P., 2010. Tobacco Ties: The Relationship of the Sacred to Research. *Canadian Journal of Native Education*; Edmonton 33, 29-45,156.
- Wilson, S., 2008. *Research is Ceremony: Indigenous Research Methods*. Fernwood Publishing, Winnipeg.
- Winbourne, J., 2002. 2002 Central Coast Eulachon Project: Final Report of Traditional Ecological Knowledge Survey. WKNTC.

FIGURE 1: Indigenous and community-engaged research approaches as they relate to critical and Indigenous theory, and the respective place of this work and the Nuxalk *Sputc Project*.



PAPER 3: Indigenous knowledges, Indigenous authority: *Alhqulh ti Sputc* and the respectful representation Nuxalk eulachon knowledges

AUTHORS

Rachelle Beveridge, Megan Moody, Snxakila (Clyde Tallio), Grant Murray, Chris Darimont, Bernie Pauly.

ABSTRACT

Over the past decades, *Indigenous knowledges* (IK) have been increasingly employed in environmental management, as employed by Indigenous people or as integrated by other decision-makers. In this paper, I report on how the Nuxalk *Sputc Project* articulated and represented Nuxalk knowledges about the management of eulachon (*Thaleichthys pacificus*) for *Nuxalkmc*. I show that respectful representation of IK was supported by: (1) engaging a notion of IK consistent with Indigenous epistemologies; (2) upholding the principle of relational accountability; (3) foundations in community-driven processes and cultural practices; (4) utility to community members and leaders; and (5) resisting IK extraction or integration. I suggest replacing Indigenous people as interpreters of their own knowledges in environmental management based on a fundamental respect for Indigenous expertise and authority.

Keywords

Indigenous knowledges, Nuxalk, eulachon, environmental management, stewardship, representation.

Acknowledgements: Russ Hilland; Horace Walkus, Louise Hilland, Joanne Schooner (technical advisors); Iris Siwallace, Fiona Edgar, Angel Mack, Rhonda Dettling-Morton, Evangeline Hanuse, Nicole Kaechele, Chantelle Saunders (Nuxalk stewardship office staff/contractors and project team members); Banchi Hanuse, Spencer Siwallace, Andrea Hilland (writers and collaborators); Lori George, Karen Anderson, Dale McCreery, Lyle Mack (culture, language, and visual advisors); Nuxalk *Statalmc*; *Sputc Project* interviewees; Jeff Snow; Bruce Siwallace; Melody Schooner, Grace Hans, Arthur Pootlass, Jimmy Nelson Sr., Stanley King, Cecil Moody; Dayna Tallio; Wally Webber; Ernie Tallio and the Nuxalk Guardian Watchmen, Jason Moody and Nuxalk bear study/fisheries crew; Celia Bell (designer); all of the other *Nuxalkmc* who helped me learn what is written here, their relations, ancestors, and elders; *sputc*.

Funders of PhD research: CIHR Doctoral Award, VIU Institute of Coastal Research fellowship, Ocean Canada (SSHRC) fellowship.

Funders of Sputc Project: TNC Canada, Tides Canada, Vancouver Foundation.

Formatted for: International Indigenous Policy Journal

INTRODUCTION

Over the past decades, *Indigenous knowledges* (IK) have been playing an increasingly prominent role in environmental management, both as employed by Indigenous people (Housty et al., 2014; Jones, Rigg, & Pinkerton, 2016) and as engaged by other decision-makers (N.C. Ban et al., 2018; N.C. Ban, Picard, Vincent, & others, 2008; Bohensky & Maru, 2011; Evering, 2012; Salomon et al., 2018). Indigenous knowledge systems have supported sustainable social-ecological relationships since time immemorial (Berkes, 2012; Lepofsky & Caldwell, 2013; Trosper, 2002; Turner & Berkes, 2006). However, the use and transmission of IK by Indigenous peoples has been interrupted by settler-colonial policies and practices, exacerbated by related industrial development, ecological depletion, and climate change (Alfred, 2009; Cunsolo Willox et al., 2011; McGregor, 2004; Simpson, 2008; Turner, Berkes, Stephenson, & Dick, 2013; Turner, Gregory, Brooks, Failing, & Satterfield, 2008). Indigenous peoples and their knowledges have been excluded from environmental decision-making, while methods used by external researchers to solicit and integrate IK have been problematic, extractive, and even harmful (Bohensky, Butler, & Davies, 2013; McGregor, 2004; Nadasdy, 1999; Smith, 1999). In Canada, an evolving policy context stipulates meaningful engagement with IK (Asch, 2014; Capistrano & Charles, 2012; Harris & Millerd, 2010; Pasternak, 2017), but decision-makers often acquire IK in ways defined by external experts (e.g. scientists) for use by external audiences (e.g. academics, policymakers) without due attention to Indigenous priorities or benefits (Castleden et al., 2017; Nadasdy, 1999). Meanwhile, Indigenous people are working to articulate, revitalize, and protect local knowledge systems (Battiste & Henderson, 2000; Latulippe, 2015; McGregor, 2004; Napoleon & Friedland, 2016) in support of cultural and political resurgence (Alfred, 2005; Asch, Borrows, & Tully, 2018; Corntassel, 2012; Simpson, 2008, 2011, 2017). IK related to

environmental management are therefore increasingly represented by and for Indigenous people, both within and beyond the academy (F. Brown & Brown, 2009; Heiltsuk Nation, 2019; William & Armstrong, 2015). Processes supporting such work, including Indigenous methodologies (Kovach, 2009, 2017; Smith, 1999; Wilson, 2008) and community-engaged approaches (Adams et al., 2014; Castleden, Sloan Morgan, & Lamb, 2012; Christopher et al., 2011; Tobias, Richmond, & Luginaah, 2013) have been detailed extensively. However, the practical matters of knowledge representation, guiding decisions related to knowledge forms and content, have received less attention. Accordingly, examples of appropriate and empowered use of Indigenous knowledges by Indigenous peoples in environmental management are required.

In this paper, I report on the *Sputc Project*, a community-driven process led by the Nuxalk Stewardship Office in Bella Coola, B.C. to gather Nuxalk knowledges about the management of eulachon (*Thaleichthys pacificus*). Through this example, I share how we navigated the tension between a desire to retain IK in community with associated knowledge-holders, and a need to document and articulate it for future generations and practical application in self-determined environmental management. The paper constitutes a kind of research-on-research, written primarily from my perspective as a non-Nuxalk project coordinator and academic researcher. Underlining how long-standing tensions related to the nature of IK operate during the process of knowledge representation, this work is complemented by related papers that focus on project process (Beveridge, Moody, Pauly, et al., 2019) and community engagement and authority (Beveridge, Moody, Murray, & Darimont, 2019). Following brief background on IK, and a description of the research context and methodology, I describe how Nuxalk eulachon knowledges were represented in a book called *Alhquh ti Sputc (Book of Eulachon)* (Sputc Project Team, 2017), and how the book was distributed, received, and engaged by the community.

Without infringing on the tenets of community knowledge ownership (First Nations Information Governance Centre, 2014; Schnarch, 2004), this paper is intended to provide sufficient detail of the book's form and contents to support an informed discussion of what was required to respectfully represent Nuxalk knowledges in this context. In keeping with theory that requires both self-location and reflexivity in the analysis and reporting of research results (Absolon & Willett, 2005; L. Brown & Strega, 2005; Kovach, 2009; Nicholls, 2009), "I" refers to my position as the first author, while "we" refers to decisions and learning by the *Sputc Project* team (see authors list, methods, and acknowledgements)¹.

Background

In this paper, I employ the term *Indigenous knowledges* (pluralized) or *knowledge systems* to highlight their diverse, dynamic, and place-based nature, as well as their myriad sources. While Indigenous knowledges largely defy definition, most agree that they are not "an abstract product of the human intellect", but a set of context-specific, culturally embedded processes and institutions situated in "complex networks of social relations, values, and practices" (Nadasdy, 1999, p. 5). When referring to knowledges specific to a particular place and people (e.g. Nuxalk knowledges), I apply the term *ancestral knowledges* to highlight how associated rights, roles, and responsibilities have been accumulated and transferred from generation to generation since time immemorial (F. Brown & Brown, 2009; Turner, 2014; Turner et al., 2008; Williams & Hardison, 2013), in a manner similar to the term *traditional knowledges*. I use the term *articulation* to refer to the clarification of existing knowledges for local (Indigenous) use, and the term *representation* to refer to a particular instance of knowledge sharing, which may include outsiders.

¹ Use of the first person form is not intended to diminish the contributions of other authors: early drafts of the paper were revised and corroborated by MM, and reviewed and edited by academic mentors (GM, BP, CD), and other key collaborators (CT, RH), who contributed significantly to the final representation of knowledge shared here.

In a complex and often contentious field, LaTulippe (2015) emphasizes that it is essential to position one's working engagement with IK, and proposes a typology of four overlapping approaches: ecological, critical, relational, and collaborative (Latulippe, 2015). The version of IK employed here is most closely aligned with a *relational* conception of IK, which positions Indigenous knowledge systems as a means to empowerment and resurgence, focusing on the relationship between knowledge, people, place (land), and practice (Corntassel et al., 2018; Latulippe, 2015; McGregor, 2004). This orientation emphasizes that IK is not a noun, or a thing to be extracted or defined; it is a process - an informed action conducted by a particular person, in a particular place and time, and in relationship to other people, places, and beings (McGregor, 2004; Simpson, 2017). It also underlines that IK is derived from local ways of knowing made up of "multiple and multidimensional sources" and "holistic, non-fragmented processes" (Kovach, 2017, p. 227), which may include stories and oral histories, narratives and personal accounts, protocols, ceremony, spiritual practices, and dreams (Archibald, 2008; Battiste & Henderson, 2000; Kovach, 2009; Louis, 2007; Smith, Maxwell, Puke, & Temara, 2016; Wilson, 2008).

Informed by these perspectives, Indigenous scholars have begun to describe and apply research frameworks and theory derived from Indigenous knowledge systems, which may be conceived of as being made up of particular *epistemologies* and *theory-principles* (Kovach, 2009). Epistemologies describe "ways of knowing", including assumptions about the nature of knowledge and knowledge production, and conceptions of what kinds of knowledge are possible (Kovach, 2017). Some common tenets of Indigenous epistemologies include holism, interconnection, and flux, fluidity or circularity (Houde, 2007; Kovach, 2017; Legat & Barnaby, 2012; Louis, 2007; Simpson, 2017), all of which contribute to fundamentally relational ways of knowing and being. Interconnected with epistemologies, theory-principles include teachings,

values, and practices – including laws and protocols – that guide the relationships between people, land, ideas, and the cosmos (Coombes, Johnson, & Howitt, 2014; Kovach, 2017). These may include the values of reciprocity, responsibility, and respect, relationship to community, connection between mind and heart, self-awareness and subjectivity (Absolon, 2011; Artelle et al., 2018; Hart, 2010; Weber-Pillwax, 2001). Glen Sean Coulthard (2014) argues that what distinguishes Indigenous knowledge systems from others is the principle of *grounded normativity*, which prescribes an “ethical engagement with the world” that flows from “land-connected practices and longstanding experiential knowledge” (Coulthard, 2014, p. 13).

Engaging Indigenous knowledge systems requires attention to *respectful representation* of knowledges, people, relationships, and responsibilities. Margaret Kovach (2017) stipulates that this requires engagement with a specific (i.e., Nation-specific) Indigenous epistemology and grounding in related theory-principles. Research products or outcomes should be accessible to those they seek to represent, arising from and embodying local experiences, voices, and stories. Contextualised within the experiences of the communities involved, they should acknowledge conditions of Indigenous societies (colonialism) while promoting Indigenous strength, resistance, and resurgence (Kovach, 2017). Engaging Indigenous epistemologies and theory-principles necessarily requires recognition and application of *relational accountability* (Louis, 2007; Wilson, 2008). The principle of relational accountability implies that IK are not knowledges *about* beings or relationships (e.g. about eulachon); they are *the relationships themselves*; IK are not something that one has, they are something that one *does*, and in a situated manner (McGregor, 2004, p. 394). IK require maintaining respectful relationships, and an understanding of their interactions in place, as part of a whole system (Armstrong, 2019). In the context of environmental management, IK are held and applied by active users and processors of a resource,

and stewardship involves caring for the system as a whole based on an ethic of long-term regeneration (Armstrong, 2019). Given this understanding, articulation and representation of IK as divorced from their knowledge-holders and contexts is clearly contentious (Hanuse, 2010; McGregor, 2004; Nadasdy, 1999).

RESEARCH CONTEXT: NUXALK EULACHON AND *ALHQULH TI SPUTC*

The region currently known as the central coast of British Columbia is home to the largest coastal temperate rainforest in the world, and a diversity of marine and terrestrial life (DellaSala et al., 2011). *Nuxalkmc* (Nuxalk people) are one of four First Nations² inhabiting this region (Nuxalk Nation, 2019). Nuxalk relationships to ancestral lands and waters extend back countless generations, forming the foundation of ancestral social, cultural, political, and legal systems that have supported their sustainable use and stewardship for the benefit of all beings (Haggan et al., 2006; Lepofsky & Caldwell, 2013; Trosper, 2002; Turner et al., 2013, 2008). Once dispersed in upwards of fifty permanent villages (along with seasonal and harvesting sites) in a territory of 1,800,000 hectares (Snxakila, 2018), most *Nuxalkmc* now live near the village of *Qumk'uts* (Bella Coola), at the intersection of a steep, lush, glacier-fed river valley and a deep inlet of the Pacific Ocean (Wild, 2004). Following systematic disconnection from land, culture, and language and related disruption of social and governance structures by settler-colonialism (Alfred, 2005; H. Brown, McPherson, Peterson, Newman, & Cranmer, 2012; Kramer, 2011; Richmond & Ross, 2009), Nuxalk livelihoods continue to be supported by and connected to ancestral lands and waters through the practices of fishing, hunting, and harvesting. However, *Nuxalkmc* and other coastal Nations are increasingly reclaiming ancestral rights and

² In Canada, First Nations are one of three recognized legal categories of Indigenous peoples in Canada (alongside Inuit and Metis).

responsibilities to manage the land (Coastal First Nations, 2019; Kotaska, 2013; Noisecat, 2018; Thielmann, 2012).

Sputc is the Nuxalk word for eulachon, a forage fish that spawns in glacier-fed rivers throughout the region. Until recently, *Nuxalkmc* had a thriving relationship with *sputc*, based on ancestral systems of knowledge and governance (Hilland, 2013; Moody, 2008). Once estimated to have provided over 90 tonnes of fish in yearly catches alone, eulachon have barely been detectable since in Nuxalk territory since 1999 (Moody, 2008). Though explanations for their disappearance vary, *Nuxalkmc* experts recognise that their disappearance is associated with excessive eulachon bycatch in an expanding shrimp trawling industry in the Queen Charlotte Sound during 1996-98 (Hay, Harbo, Clarke, Parker, & McCarter, 1999; Hilland, 2013; Moody, 2008). Although the area has now been closed to shrimp trawling and bycatch reduction devices and limits have been imposed, conservation action has been slow. *Nuxalkmc* see the federal fisheries management system as having failed in its fiduciary duty to protect eulachon, and mistrust ongoing regulatory processes that have the potential to undermine Nuxalk eulachon management authority. With *de facto* stewardship of eulachon by *Nuxalkmc* uninterrupted since colonization, the Nuxalk Nation continues to assert inherent rights to manage eulachon according to ancestral knowledges and practices (Beveridge, Moody, Murray, et al., 2019; Hilland, 2013).

A cultural keystone species (Garibaldi & Turner, 2004), eulachon remain vital to Nuxalk well-being, culture, and identity. The impacts of eulachon loss extend beyond that of the fish itself, affecting related place-based practices (e.g. fishing, canoeing, cooking, grease-making), relationships (e.g. with the river, ancestors, and community), and roles, responsibilities, and identities (e.g. grease-maker, river guardian, knowledge-holder) (Beveridge, Pauly, Moody, et al., 2019; Haggan, 2010; Hilland, 2013; Moody, 2008). After almost twenty years without

eulachon, related values, benefits and knowledges have been weakening, and Nuxalk elders fear that future generations are in the process of losing their connection to this invaluable fish (Beveridge, Pauly, Moody, et al., 2019; Senkowsky, 2007). As such, Nuxalk community members, stewardship managers, and leaders have been demanding action based on local management knowledges and priorities.

The Nuxalk *Sputc Project* was initiated in 2014 to address this demand. The project's challenge was to document and represent eulachon knowledges "the Nuxalk way", *in the absence of eulachon* - which is to say, in the absence of conditions that would facilitate land- and practice-based knowledge transmission activities most appropriate to this context (Simpson, 2014; Wildcat, McDonald, Irlbacher-Fox, & Coulthard, 2014). Initiated by the Nuxalk Nation's Stewardship Office, the project aimed to: (1) consolidate and articulate existing Nuxalk knowledges about eulachon; (2) engage *Nuxalkmc* on eulachon knowledges, values, and management priorities; (3) create a foundation and consensus of knowledges upon which to build a present-day management plan; and (4) uphold and apply Nuxalk governance and decision-making structures and processes. During the *Sputc Project* we gathered, documented, interpreted, and represented Nuxalk knowledges about eulachon using an iterative, community-driven methodology that prioritized *respectful representation* and *relational accountability* (see (Beveridge, Moody, Pauly, et al., 2019) for details). The final product of the project was a full-colour, 172-page book, *Alhqulh ti Sputc*, which articulated Nuxalk eulachon values, practices, and relationships in a manner congruent with Nuxalk knowledge systems, for use and interpretation by *Nuxalkmc* (Sputc Project Team, 2017). In the sections to follow, I detail the book's form and contents, and reflect on how Nuxalk knowledges were respectfully represented.

RESEARCH METHODS

Based in extensive participation, observation, and reflection, this paper is informed by critical and decolonizing theories (L. Brown & Strega, 2005; Evans, Miller, Hutchinson, & Dingwall, 2014; Smith, 1999; Tuck & Yang, 2012) and an inductive, interpretive research approach. These methods are congruent with – but not equivalent to – the methods of representing and relating knowledge employed by the *Sputc Project* itself (Beveridge, Moody, Pauly, et al., 2019). Rather, this work is grounded in my involvement and eventual integration in the *Sputc Project* process. As a doctoral candidate without prior ties to the community, I was invited to contribute my capacity and service to coordinate the project by the second author (MM), daughter of Qwatsinas³, Nuxalk Stewardship Office director and First Nations fisheries management leader. MM initiated and directed the project, while I coordinated its practical aspects. Other key collaborators on the project were Nuxalk cultural knowledge holders who provided cultural advice and teaching⁴, and a committed group of technical advisors⁵. Alongside these core team members, I worked closely with - and learned a great deal from - a diversity of *Nuxalkmc* community members and leaders, including elders, fishers, and eulachon grease-makers⁶.

Before the outset of the project and associated research, detailed agreements (with Stewardship Office), resolutions (with Band Council), and permissions from *Stataltmc* (hereditary leaders)⁷, were signed based on ethical principles (and their limitations) outlined by both community-engaged and Indigenous researchers (Ball & Janyst, 2008; Brant Castellano, 2004; Brunger & Wall, 2016; Canadian Institutes of Health Research, Natural Sciences and Engineering Research

³ *Staltmc* Edward Moody (b.1947 – d.2010), a respected leader and international advocate for Nuxalk land rights.

⁴ Snxakila (Clyde Tallio), Nunanta (Iris Siwallace), and Nuximlaycana (Fiona Edgar). CT also played a key role in summarizing and representing Nuxalk knowledge.

⁵ Horace Walkus, Louise and Russ Hilland, Joanne Schooner, Cecil Moody.

⁶ See acknowledgements for list of contributors and collaborators.

⁷ The roles of *Stataltmc* are complex and evolving, and include household representation and community decision-making.

Council of Canada, & Social Sciences and Humanities Research Council of Canada, 2014; Castleden et al., 2012; Christopher et al., 2011; First Nations Information Governance Centre, 2014; Kirkness & Barnhardt, 1991; Louis, 2007; Schnarch, 2004; Tobias et al., 2013). Explicitly reviewing these foundations established mutual expectations and understandings of research responsibilities, rights, and benefits, highlighting the importance of relationship, responsibility, relevance, and reciprocity, and created a set of resource documents for use by other researchers. Research Ethics approval⁸ from the University of Victoria was also in operation throughout the study process.

Over the course of four years, I recorded over 350 pages of individual meeting minutes and observational fieldnotes. These notes captured observations and insights from committee meetings, informal conversations, and community events, as well as responses and reflections of key participants and community members after project completion. After reviewing and annotating my interviews and fieldnotes and other research materials in NVivo10, I summarized and developed emergent themes through a series of conversations with MM to inform this paper, which tells the story of my learning through the project. Through my involvement in the *Sputc Project*, I came to know its collaborators and contents intimately. My gradual integration into the project and community were essential to the integrity of this research and its outcomes.

Beginning as an outsider to the community, *reflexivity* (Absolon & Willett, 2005; L. Brown & Strega, 2005; Kovach, 2009; Nicholls, 2009) was an essential part of the research process as my position and relationships in the community developed. Details related to evolution of my personal and social location from external academic researcher to Nuxalk ally and community member are elaborated in my PhD dissertation (Beveridge, 2019).

⁸ Protocol # 14-075 (2014-2019).

RESULTS

This section reports on the knowledge forms and substantive content of *Alhqulh ti Sputc*, and details my evaluation of the book's distribution, reception, and use by *Nuxalkmc*. Intended to replace external access to the book itself or to deepen engagement with its contents, this material should provide sufficient detail to inform the following discussion of what made the book and associated process successful.

Knowledge forms

The *Sputc Project* intended to engage Nuxalk ways of knowing and being by respectfully articulating and representing Nuxalk eulachon values and management practices. However, we quickly realized that stewardship knowledges could not be extracted from broader cultural and legal systems and their respective knowledge holders. Throughout the project, *Nuxalkmc* clearly and consistently expressed that ancestral eulachon knowledge is complex, implicit, and family-held, emphasizing the importance of experiential and place-based knowledge transfer methods. Advisors and elders underlined the importance of learning the Nuxalk way ("look, listen, love"), and questioned the suitability of documenting Nuxalk knowledge in written form (Hanuse, 2010). However, this well-grounded resistance to knowledge fossilization was balanced by a strong will to gather and protect remaining eulachon knowledges, including those related to fishing, grease-making, and stewardship.

In its final form, *Alhqulh ti Sputc* presented a complex system of *Nuxalkmc* knowledges, and detailed how they inform sophisticated, sustainable methods of eulachon management. We strove for respectful knowledge representation by employing diverse sources and forms of knowledge, centering Nuxalk voices, experiences, practices, and values through the integration of text, quotes, stories, songs, maps, photographs, illustrations, and language. Employing multiple,

complementary knowledge forms was intended to reflect Nuxalk modes of knowledge transmission similar to those used during winter feasts or potlatches, which integrate song, story, dance, education, governance, politics, culture, and entertainment (Snxakila, 2014). Below, I highlight the main elements of the work, while the following section summarises its content.

Alhqulh ti Sputc is structured by a thread of informative summary **text**, which shares common, community-held knowledges about eulachon. Meanwhile, individual Nuxalk voices are highlighted through **quotes** of Nuxalk elders and knowledge-holders. Transcribed from archival recordings and shared in Nuxalk language, *smsma* (**stories**) and *smayusta* (origin stories) highlight *Nuxalkmc* relationships to eulachon, honouring the role of narrative in the transmission of ancestral knowledges, rights and responsibilities from generation to generation. Stories and quotes also provide community members an opportunity hear the voices of Nuxalk ancestors and knowledge-holders speaking directly to them. In recognition of its fundamental role in communicating nuanced cultural knowledges, Nuxalk **language** is integrated throughout the book, with vocabulary summarized in a glossary of over one hundred eulachon-related words. Nuxalk language is consistently used to refer to significant **places**, including historic villages and eulachon spawning rivers, which are included in associated **maps**. Further, over 100 personal Nuxalk **names** are referenced in the book, linking present-day *Nuxalkmc* to their ancestors, origins, and territories. In recognition and appreciation of strong visual traditions employed by *Nuxalkmc* over generations to encode and transmit cultural knowledges (Kramer, 2011), textual content is supported by over 170 archival, historic, and contemporary **photographs**. Provided by community members through the *Sputc Project* process, photos of familiar locations and people serve to engage *Nuxalkmc*, aiding recognition of the relevance of material and personal

relationships to the people and places portrayed. **Illustrations** produced by a local artist⁹ exhibit his cultural research and knowledge about eulachon, portraying particular places of cultural, spiritual, and ecological significance. Finally, the book includes results from Nuxalk-led assessments and *science* to be integrated, interpreted and applied in Nuxalk ways.

The result is a multi-media book accessible to a broad audience, including elders, youth, and those with limited literacy. It can be read cover-to-cover, consulted as a reference, or skimmed for content of interest. While not as fluid or relational as ancestral modes of learning and sharing, the combination of knowledge forms used in *Alhqulh ti Sputc* was intended to enable a degree of interpretation of the material that might support the reproduction of Nuxalk ways of learning and knowing, by enabling meaning-making by *Nuxalkmc* through interaction with the material presented. The integration of different knowledge elements on each page of the book reflected the holistic nature of Nuxalk knowledges, indicating the interrelationship of knowledge forms and content. However, some fragmentation and linearization of knowledge was necessarily imposed by the book format and the project team's own limitations; while we made every effort to centre *Nuxalkmc* knowledge interpretations, the final product retained elements reminiscent of a reductive analytic style, including distinct book sections and headings, and summary text. This was in part a reflection of the intent of project leadership for it to be used as a foundation for management planning.

Recognising that Nuxalk knowledges are necessarily situated, relational, and attributed to particular knowledge holders, we devoted great resources to attending to the origins and relationships, authenticity and generalizability of the knowledges represented. For a specific detail to be considered as common or community-held, we ensured that it was sourced from

⁹ Wiaqa7ay (Lyle Mack)

multiple people and multiple families of origin, and generally recognised by *Nuxalkmc* to be true. Otherwise, individually-held knowledges were attributed to the knowledge-holder, representing individual Nuxalk voices underlining the diversity of perspectives and priorities held within the community. This required a great deal of attention to language and design as well as patience and perseverance in terms of image, quote, story credits and related permissions and protocols.

Content

The *Sputc Project* upheld Nuxalk ways of knowing and being without reference to or validation from Canadian settler knowledge or western science, with the exception of results from scientific studies led by *Nuxalkmc*, which were considered to constitute a form of Nuxalk knowledge. In keeping with Nuxalk ways of knowing, past, present, and future were interwoven through nine sections of *Alhqulh ti Sputc*. Below, the substantive contents of each section are summarized.

Alhqulh ti Sputc opens with a declaration of support by ancestral leaders for the book's application by *Nuxalkmc* and outlines its purpose and process. Contents are presented in a circle, with the final section, *Standing up for sputc*, leading back to the first sections on eulachon origins and Nuxalk law. The book continues with a *story* of how eulachon first arrived in Nuxalk territory, transcribed from an archival recording of a respected elder¹⁰, and written in both English and Nuxalk. The story demonstrates that *Nuxalkmc*'s relationship with eulachon has existed since the beginning of time, establishing the basis of Nuxalk authority and responsibility for eulachon in Nuxalk history and law. *Nuxalkmc*'s connection to eulachon is further reinforced in a summary of the foundations of *Nuxalk law and eulachon origins*, which describes ancestral governance and decision-making systems as they relate to eulachon, including the role of stories,

¹⁰ Axtsikayc (Agnes Edgar Sr.)

songs, names, and dances. This section also establishes that there is a historical and cultural precedent for Nuxalk management, conservation, and restoration of eulachon.

Following the introduction, the book turns to eulachon's place in the Nuxalk social-ecological system, including practical uses and values. Nuxalk knowledges about eulachon's arrival in the river is described in a section about *sputcm* (eulachon time), including details related to: spawning habitat, timing and composition; historical abundance, distribution, geography, and variability (including genetic diversity); and eulachon's interrelationship with other aquatic and terrestrial species. While providing practical information relevant to eulachon management, this section retains the social and emotional context of loss for those cultural and ecological elements of knowledge that might otherwise be recognized by some as "traditional knowledge" to be extracted and integrated into standard management planning. The following section of the book summarises the *uses and values* of eulachon, including their use in food, medicine, ceremony, trade, and grease - a highly refined, valuable nutritious oil made from fermented eulachon. This section establishes the importance of eulachon in daily life to *Nuxalkmc* well-being by detailing cultural practices like recipes, preservation techniques, and trade routes. It is complemented by a section that provides step-by-step summary of the *grease-making* process, as well as some procedural differences between families or regions of origin. Documenting this process was a high priority for *Nuxalkmc*, who have not been able to make grease in almost twenty years. Attending a concurrent, hands-on grease-making project was instrumental to completing this section, and to demonstrating the importance of practical intergenerational learning. For example, a number of Nuxalk words that had been almost completely forgotten due to lack of use resurfaced during grease-making (McCreery, 2016), and were documented in the book.

The next section details ancestral and contemporary eulachon *fishing practices*, including fishing technologies and their construction, and related techniques and vessels. This informs the following section on *river guardianship and fishing rules*, which begins with a description of the river guardian's role and authority, supported by a story of the establishment of river management protocols on the Bella Coola River. It then outlines specific cultural and ecological practices related to river stewardship, and details rules specific to eulachon time, including those related to respect and disturbance. Finally, the section asserts Nuxalk authority to manage eulachon in Nuxalk territory, and outlines specific eulachon fishing guidelines. Based on ancestral practices agreed upon during a community workshop, and upheld by community leadership, these general rules establish how, when, where, and how much *Nuxalkmc* intend to fish if and when eulachon return to Nuxalk rivers, and how a limited supply of fish should be distributed among community members. Because relationship entails responsibility, *Alhqulh ti Sputc* highlights *Nuxalkmc*'s eulachon-related responsibilities, both in terms of specific roles (e.g. river guardian, family representative) and in terms of general responsibilities to *sputc* (e.g. not disturbing spawning grounds) and to each other (e.g. ensuring everyone gets a feed, distributing fish to elders and vulnerable people). While the book includes some specific rules and protocols (called *sxayaxw*) related to eulachon fishing and management, much of what historically supported *Nuxalkmc*'s relationship with eulachon was part of Nuxalk *stl'cw*: the ethics, practices, and behaviours that constitute “being Nuxalk”, but are rarely formally taught or explicitly stated. By communicating both *sxayaxw* (rules, protocols, and practices) and *stl'cw*: (ethics and ways of being) in diverse forms, the book retains the integrity of Nuxalk knowledges.

Upholding Nuxalk knowledges and resilience, the final sections are the first to engage the present reality of eulachon loss. The section called *What happened?* details the probable causes of

eulachon loss. Contrasting recent changes with long-standing Nuxalk knowledge about a healthy and abundant eulachon environment, the section ends with a timeline of management practices, fishing practices, and environmental impacts. This section outlines how eulachon loss infringes on Nuxalk Aboriginal rights (as defined in Canada's constitution), and summarises past and present actions *Nuxalkmc* have taken on behalf of eulachon. These include re-establishing an ancestral welcoming ceremony and spiritual practice, hosting a series of meetings addressing the crisis of eulachon loss, cultural knowledge exchanges with other eulachon Nations, and development of capacity and expertise in eulachon science and monitoring. Finally, the *Standing up for sputc* section highlights Nuxalk stewardship priorities and future actions (Beveridge, Moody, Murray, et al., 2019).

Distribution, reception, and use

Following Nuxalk protocol, a community feast was held to introduce, validate, and distribute the book to *Nuxalkmc* (2017)(Thompson, 2017a). Over 300 people enjoyed a traditional meal, a story from the book was told aloud in both Nuxalk language and English, and instruction on how to do the *sputc* ceremonial dance were given. During the book launch feast, *Stataltmc*¹¹ spoke of strong memories stirred by *Alhqulh ti Sputc*, of feelings of connection to ancestors, elders, and the river, as well as of sadness and anger at the loss of eulachon. That the book elicited such emotive reactions speaks of its capacity to represent not abstracted facts but whole meanings. A standing ovation from the community at large showed that the *Sputc Project* had engaged a broad range of *Nuxalkmc*. Having examined the book, *Nuxalkmc* are often eager to share personal stories of time spent fishing and grease-making by the river, of special moments and favourite recipes. In particular, *Nuxalkmc* appreciate its emphasis on language and stories as learning tools

¹¹ In particular: Conrad Clellamin, Peter Siwallace, James Mack, Larry Moody, Deborah Nelson, Rhonda Sandoval, Cecil Moody, Wally Webber, Richard Hall, Peter Tallio.

that will strengthen cultural knowledge and identity, supporting the community's youth to learn about the value of eulachon in a Nuxalk way. The book was made available to all *Nuxalkmc* over the age of twelve; since then, over 580 copies have been distributed. Promoting Nuxalk knowledges as values, teachings, and practices conducted by specific Nuxalk people in specific places, *Alhqulh ti Sputc* is becoming an object of connection and pride, proudly displayed.

The *Sputc Project* process and product has served as a learning tool for knowledge articulation and representation in other Nuxalk-led processes. As part of a continuing process of community learning, future practice- or lands-based knowledge-transmission activities based on the book could include net making, grease-making, food preserving, river cleaning, river canoeing, and eulachon restoration. Already, the book is being used as a resource for locally-relevant, culturally-appropriate curriculum development in the local schools and college, and content is regularly read and aired on the local radio station (Nuxalk Radio, 2019). Because *Alhqulh ti Sputc* was intended to support *Nuxalkmc* eulachon management authority, 19/21 ancestral leaders approved the book before printing, validating it as a foundation of Nuxalk knowledge for application in future eulachon management planning and action. Since then, the book has been referenced during community discussions about local eulachon fishing limits and regulation. However, while it is aired on the radio and used in curriculum development, there remains a gap in its incorporation into *Nuxalkmc*'s daily practices.

While only available beyond the Nuxalk community as a limited edition fundraiser, several non-*Nuxalkmc* have indicated that the book provides a rich insight into *Nuxalkmc* values and perspectives. A respected Nuu-Chah-Nulth leader, upholds the book as a significant contribution to *Nuxalkmc* literature, and an "outstanding example of new First Nations scholarship" celebrating Indigenous intelligence (Hamilton, 2017). However, while it may eventually provide

non-*Nuxalkmc* a chance to learn about Nuxalk eulachon values and priorities, readers of the book are not entitled to use or share the knowledge it contains. *Alhqulh ti Sputc* is not intended to be used by external decision-makers, who risk extracting or misinterpreting its contents. The nature of the knowledge presented in the book requires that it be interpreted by *Nuxalkmc*; indeed, some of *Nuxalkmc*'s greatest concerns related to the book are the consequences of its co-option by non-*Nuxalkmc*. As such, ownership of *Alhqulh ti Sputc* remains with the Nuxalk Stewardship Office, and contents of the book may not be used or shared without permission.

DISCUSSION

Indigenous knowledges (IK) are increasingly sought, documented, interpreted, and represented by Indigenous peoples and others, resulting in academic, traditional, and hybrid literatures for and by Indigenous people (Alfred, 2014). Just recently, several works similar to *Alhqulh ti Sputc* have been completed in BC alone, emphasizing stories, images, laws, maps, and participatory process in the representation of particular Indigenous knowledges, histories, and perspectives (F. Brown & Brown, 2009; Carlson, 2001; Heiltsuk Nation, 2019; James & Alexis, 2018; William & Armstrong, 2015). Given the inherent tensions that come with documenting IK in non-traditional and even colonial formats (e.g. books), I recognise both the difficulty and necessity of articulating and representing IK, particularly in the absence of the fundamental sources of that knowledge (i.e. access to land, ecological abundance) (Simpson, 2014; Wildcat et al., 2014). Through my experience of the Nuxalk *Sputc Project*, I sought in the results above to show how we addressed some of the contentious issues related to IK representation in environmental management.

Focused on “getting it right”, authentic interpretation, articulation, and representation of Nuxalk knowledges was a fundamental priority of the *Sputc Project*. I believe that this process allowed

us to address the elements of respectful representation outlined by Margaret Kovach (2017), including that research outcomes: be grounded in specific Indigenous epistemologies and related theory-principles; be accessible to those they seek to represent; arise from and embody local experiences, voices, and stories; and be contextualised within the experiences of the communities involved, while promoting Indigenous strength, resistance, and resurgence (Kovach, 2017, p. 123). Below, I detail how this involved: (1) engaging a notion of IK consistent with Nuxalk knowledge systems and epistemologies; (2) upholding the principle of relational accountability; (3) foundations in an iterative, community-driven process and cultural practices; (4) utility to community members and leaders; and (5) challenging extractive conceptions of IK.

In the field of environmental management and beyond, IK are defined in myriad ways (Houde, 2007; Latulippe, 2015; McGregor, 2004), with important implications for their engagement (von der Porten & de Loë, 2014; von der Porten, de Loë, & Plummer, 2015). From its inception, the Nuxalk *Sputc Project* engaged Nuxalk ways of being and knowing which were consistent with relational, situated notions of IK (Latulippe, 2015). Relational knowledges are “embedded in cultural frameworks that are rooted in the land” and “expressed in songs, stories, dance, inscription, drawing, place names, and ceremony that contain knowledge about the landscape and connect communities to the environment from generation to generation” (Alfred, 2005; Corntassel et al., 2018; Latulippe, 2015, p. 123; Legat & Barnaby, 2012; Shaw, Herman, & Dobbs, 2006; Simpson, 2017). Involving distinct, localized ways of knowing and being (Battiste & Henderson, 2000), relational notions of IK include systems of governance (McGregor, 2004; Whyte, 2013), comprising explicit roles, responsibilities, rules, and laws and related practices and strategies (e.g. Nuxalk *sxayaxw*) (McGregor, 2014; Napoleon & Friedland, 2016; Napoleon & Overstall, 2007). Relational knowledges also include implicit principles, values, and ethics (e.g.

Nuxalk *stl'cw*) to guide conduct, including resource use and distribution, and inform relationships (Kovach, 2009; Latulippe, 2015; Napoleon & Friedland, 2016; Napoleon & Overstall, 2007; Simpson, 2008). Because Nuxalk eulachon knowledges could not be abstracted from their relationship with Nuxalk people, places, practices and responsibilities (Legat & Barnaby, 2012; McGregor, 2004; Simpson, 2017), *Alhqulh ti Sputc* integrated practical knowledges including fishing techniques and technologies, food preparation practices and recipes, and stewardship practices. This underlined the role of everyday practices in conveying cultural values, spiritual teachings, and governance systems (Corntassel, 2012; Corntassel et al., 2018), demonstrating how *Nuxalkmc* embody and enact Nuxalk ways of being.

Respectful engagement of Nuxalk knowledges required attention to *relational accountability*, prioritizing the “networks of relations” through which knowledges and knowledge-holders are “constituted and held accountable” (de Leeuw, Cameron, & Greenwood, 2012, p. 189), including relationships with ancestral territories and the spirit world (Kovach, 2017; Louis, 2007; Smith et al., 2016; Wilson, 2008). Throughout the project, *Nuxalkmc* emphasized that it was essential to maintain ancestral relationships with eulachon, despite the fishes’ absence; upholding spiritual connections and cultural practices was the best way to preserve eulachon knowledges.

Recognising that knowledges are (re)generated through interaction with “sentient, genealogied landscapes” (Coombes et al., 2014, p. 850; Legat & Barnaby, 2012; Simpson, 2014), *Alhqulh ti Sputc* emphasized *Nuxalkmc* relationships with community, land, spirit, and eulachon by employing Nuxalk names, place names, images, and maps. So doing illustrated personal ties to ancestral territories, upheld relationships with ancestors, and connected project material to specific places known to community members, making it more relatable and relevant. As highlighted by other community-engaged researchers (Adams et al., 2014; Brunger & Wall,

2016; Castleden et al., 2017, 2012; Mulrennan, Mark, & Scott, 2012), relationships built over the course of the process contributed enormously to positive reception and appropriate knowledge representation in *Alhqulh ti Sputc*.

Indigenous scholars highlight that “emotive, affective, and narrative practices” (Coombes et al., 2014, p. 851), including stories, language, and images, are key to respectful representation of IK (Archibald, 2008; Kovach, 2009; Thomas, 2005; Wilson, 2008). Driven by locally-determined priorities and values, the *Sputc Project* process ensured that the contents of *Alhqulh ti Sputc* arose from the experiences and voices of *Nuxalkmc*. “Getting it right” was achieved through iteration and adaptation, careful attention to detail, and broad engagement with the community (Beveridge, Moody, Pauly, et al., 2019). Employing varied forms of knowledge allowed us to engage *Nuxalkmc* in active learning and interpretation or meaning-making throughout the project process, communicating culturally-embedded information and emphasizing the reciprocal, relational nature of Nuxalk knowledges. However, non-Nuxalk epistemological influences permeated the work, both as a result of my involvement as an outsider, and of its format as a book. Despite my theoretical understanding of stories as sources of law and knowledge (Archibald, 2008; Napoleon & Friedland, 2016; Napoleon & Overstall, 2007), my western academic training led me to continue to find “facts” within and consistencies between stories, rather than learning from them as a whole. Like many other researchers, I also had a tendency to disregard stories that I perceived to be quotidian (everyday stories, *smsma*), prioritizing attention to and representation of older creation stories (*smayusta*). Looking back, this demonstrated a lack of understanding of Nuxalk ways of knowing, and likely cost the project as a whole in richness and in accuracy of knowledge representation. Non-Nuxalk epistemological influence in the project was also evident in a lack of characteristic Nuxalk humour, as well as in limited

engagement of ceremonial and spiritual sources and forms of knowledge, including spiritual practices (Brant Castellano, 2015; Smith et al., 2016). In this regard, Linda Tuhiwai Smith (2016) emphasizes:

... it is important to recognize the depth of expertise of our own community based knowledge keepers to conduct those extraordinary, metaphysical tasks, such as... binding ancient genealogies with contemporary realities, sustaining relationships while healing collective grief, seeking visions and teachings from our ancestors... The knowledge that sits behind these roles and responsibilities is often not recognised, understood or valued by non-indigenous colleagues or institutions, likened more - as it often is - to religious rituals, dogma and ceremonies than to forms of knowledge production. (Smith et al., 2016, p. 132).

While respectful IK representation may be most evident at the end of a project, it is necessarily the result of an intentional process, including engagement in cultural practice. In this sense, *Alhqulh ti Sputc* owes its success to the *Sputc Project* as a whole (Caine, Davison, & Stewart, 2009), and to the Nuxalk Stewardship Office's broad engagement in hands-on learning and practice related to eulachon. In particular, our association with the renewal of an annual *Sputc Ceremony* bolstered the project's visibility and credibility in the eyes of the community. An uplifting and empowering community event, the ceremony features prayer, song, dance, and feasting intended to celebrate the return of eulachon in early spring (Thompson, 2014). Also key to the project's grounding in community was our participation in lands-based practices, including eulachon-related knowledge exchanges with neighbouring Nations, and the recent revival of Nuxalk grease-making camps (Thompson, 2017b).

The relational conception of IK engaged by the *Sputc Project*, and elaborated here, emphasizes that “IK requires proficiency in traditional protocols and Indigenous methods of observation and interpretation”, such that “non-Indigenous partners are called to appreciate IK as a stand-alone system, not in relation to or through the interpretive lens of Western science” (Latulippe, 2015, p. 123). While not entirely incongruent with ecological or adaptive management IK frameworks, (e.g. knowledge-practice-belief model (Berkes, 2012)), adopting this notion of IK implies that knowledges may not be extracted from their context in the lives of Indigenous people. As such, while appreciative of work aiming to underline the importance of underlying values (Artelle et al., 2018; Murray, D’Anna, & MacDonald, 2016), I am critical of approaches to management that seek to integrate IK into existing management frameworks without challenging the systems and institutions that employ them. Through this work, I advocate a notion of IK that re-places Indigenous people as decision-makers and interpreters of their own knowledges (Jones et al., 2016; Latulippe, 2015; McGregor, 2004; von der Porten, Corntassel, & Mucina, 2019; von der Porten, Lepofsky, McGregor, & Silver, 2016).

By occupying an appropriate space in the larger realm of Nuxalk relationships and knowledges, *Alhqulh ti Sputc* upholds past, present, and future Nuxalk knowledge keepers as the true sources and interpreters of Nuxalk knowledge, and promotes the (re)generation of eulachon knowledge for and by future generations. Indeed, reflecting a form of grounded normativity (Coulthard, 2014) or relational accountability (Wilson, 2008), Nuxalk knowledges must be continually (re)enacted and applied. Recognizing that Nuxalk knowledges are fluid, culturally-embedded and enacted through each person’s relationships (to land, community, and spirit), the book does not itself constitute ancestral knowledge. Studying *Alhqulh ti Sputc* does not make the reader an expert in Nuxalk eulachon knowledges or values; this requires hands-on, experiential interaction

with the land and river, and with the fish themselves. As *Alhqulh ti Sputc* comes to be integrated as a community resource, it is essential that it not be seen as a stagnant collection of information; rather, the book needs to be used and interpreted in a Nuxalk way – through relationship and interaction with elders and knowledge holders, lands and waters. By highlighting Nuxalk ways of knowing and practical expertise in diverse forms (stories, images, language), the book should contain sufficient information and context for *Nuxalkmc* to engage in their own interpretations and processes of meaning-making (Archibald, 2008; Kovach, 2009), even in the absence of eulachon.

While this paper focuses on IK representation, it ultimately seeks to show that documentation is not akin to protection or ownership; rather, “the survival of IK requires the protection of Indigenous peoples and ways of life” (Latulippe, 2015, p. 123), including self-determined decision-making in environmental management (McGregor, 2004; von der Porten et al., 2019). In the face of historical and contemporary dispossession and marginalization, articulating Indigenous knowledges is a recognised challenge to enacting management authority (Bowie, 2013; Jones et al., 2016; Kirby, 2017; Napoleon & Overstall, 2007; Thielmann, 2012; von der Porten et al., 2019, 2016). Articulating cohesive eulachon management priorities informed by Nuxalk knowledges and approved by both hereditary and elected leadership, the *Sputc Project* was located in a larger project of cultural resurgence and political self-determination. *Alhqulh ti Sputc* provides Nuxalk leadership with the knowledge and authority to speak strongly on behalf of eulachon, with the support of *Nuxalkmc*. In this complex policy context, *Alhqulh ti Sputc* must therefore be considered both as a place-holder for Nuxalk engagement with living knowledges (in the absence of eulachon and in support of ongoing practices), and as an authoritative reference in support of future eulachon management planning and restoration by *Nuxalkmc* leadership and

professionals. By interpreting and applying the knowledges represented in *Alhqulh ti Sputc*, *Nuxalkmc* have an opportunity to bolster local management institutions, such as to engage other decision-makers from a place of strength (Beveridge, Moody, Murray, et al., 2019). The relational notion of IK illustrated by the *Sputc Project* requires increased involvement of Indigenous peoples in environmental management beyond inclusion or participation in current decision-making processes, which necessarily presuppose Western epistemologies and priorities. Ultimately, this involves increased access to lands and resources paired with sustained knowledge revitalization initiatives (Bowie, 2013; de Leeuw et al., 2012; Latulippe, 2015; McGregor, 2004; Simpson, 2014; Tuck & Yang, 2012; Wildcat et al., 2014; Williams & Hardison, 2013), and evolving Nation to Nation relationships based on a fundamental respect for Indigenous knowledges, expertise, authorities, and governance (Bowie, 2013; Castleden et al., 2017; McGregor, 2014; von der Porten et al., 2019; Whyte, 2013).

CONCLUSION

In the face of priorities that continue to degrade Indigenous lands and waters and marginalize the place of Indigenous people in their management, Indigenous knowledges (IK) related to environmental management are increasingly being documented and represented by Indigenous peoples and others in academic, traditional, and hybrid forms. In a complex and rapidly evolving policy context, different conceptions of IK have important implications for how knowledges are interpreted, articulated, and represented. In this paper, I described a project that sought to respectfully engage a knowledge system that has successfully driven sustainable environmental decision-making for generations. I began by describing how the Nuxalk *Sputc Project* and a resulting book articulated and represented knowledges about the management of eulachon for use by Nuxalk community and leadership. Through this example, I attributed respectful

representation of IK in this context to: (1) engaging a relational notion of IK consistent with Indigenous knowledge systems and epistemologies; (2) upholding the principle of relational accountability; (3) foundations in iterative, community-driven processes and cultural practices; (4) utility to community members and leaders; and (5) challenging dominant conceptions of IK and its engagement. Aligned with critical Indigenous scholars and methodologists, I suggest that engaging a relational notion of IK implies that knowledges may not be extracted from their context in the lives of Indigenous people, re-placing Indigenous people as decision-makers and interpreters of their own knowledges. This requires increased involvement of Indigenous peoples in environmental management, based on a fundamental respect for Indigenous knowledges, expertise, and authority, and prescribes active Indigenous involvement in policy and legislation, planning and decision-making. Because articulating and applying Indigenous knowledges is a recognized challenge to asserting internal and external management authority, increased involvement of Indigenous people in environmental management will require sustained access to lands and resources and evolution of new Nation to Nation relationships and hybrid forms of collaborative governance based on a fundamental respect for Indigenous knowledges, expertise, and authority.

REFERENCES

- Absolon, K. (2011). *Kaandossiwin: How We Come to Know*. Halifax: Fernwood Books Ltd.
- Absolon, K., & Willett, C. (2005). Putting Ourselves Forward: Location in Aboriginal Research. In L. Brown & S. Strega (Eds.), *Research As Resistance: Critical, Indigenous, and Anti-oppressive Approaches* (pp. 97–126). Toronto: Canadian Scholars' Press.
- Adams, M. S., Carpenter, J., Housty, J. A., Neasloss, D., Paquet, P. C., Service, C., ... Darimont, C. T. (2014). Toward increased engagement between academic and indigenous community partners in ecological research. *Ecology and Society*, 19(3). <https://doi.org/10.5751/ES-06569-190305>
- Alfred, T. (2005). *Wasase: Indigenous Pathways of Action and Freedom*. University of Toronto Press.
- Alfred, T. (2009). Colonialism and State Dependency. *Journal of Aboriginal Health*, (November), 42–60.
- Alfred, T. (2014). Foreword. In *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition* (p. ix). Minneapolis: University of Minnesota Press.
- Archibald, J.-A. (2008). *Indigenous Storywork: Educating the Heart, Mind, Body, and Spirit*. Vancouver: UBC Press.
- Armstrong, J. (2019, February). *Indigenous Traditional Ecological Knowledge*. Presented at the AAROM, Kelowna, BC.
- Artelle, K., Stephenson, J., Bragg, C., Housty, J., Housty, W., Kawharu, M., & Turner, N. (2018). Values-led management: the guidance of place-based values in environmental relationships of the past, present, and future. *Ecology and Society*, 23(3). <https://doi.org/10.5751/ES-10357-230335>
- Asch, M. (2014). *On Being Here to Stay: Treaties and Aboriginal Rights in Canada*. University of Toronto Press.

- Asch, M., Borrows, J., & Tully, J. (Eds.). (2018). *Resurgence and Reconciliation: Indigenous-Settler Relations and Earth Teachings*. University of Toronto Press, Scholarly Publishing Division.
- Ball, J., & Janyst, P. (2008). Enacting Research Ethics in Partnerships with Indigenous Communities in Canada: “Do it in a Good Way.” *Journal of Empirical Research on Human Research Ethics: An International Journal*, 3(2), 33–51. <https://doi.org/10.1525/jer.2008.3.2.33>
- Ban, N. C., Frid, A., Reid, M., Edgar, B., Shaw, D., & Siwallace, P. (2018). Incorporate Indigenous perspectives for impactful research and effective management. *Nature Ecology & Evolution*, 2(11), 1680. <https://doi.org/10.1038/s41559-018-0706-0>
- Ban, N. C., Picard, C., Vincent, A. C. J., & others. (2008). Moving toward spatial solutions in marine conservation with indigenous communities. *Ecology and Society*, 13(1), 32.
- Battiste, M., & Henderson, J. Y. (2000). *Protecting indigenous knowledge and heritage: a global challenge*. Saskatoon: Purich Publishing Ltd.
- Berkes, F. (2012). *Sacred ecology* (3rd ed.). New York: Routledge.
- Beveridge, R. (2019). *RACHELLE BEVERIDGE PHD DISSERTATION - IN PROGRESS* (PhD, Social Dimensions of Health). University of Victoria, Victoria.
- Beveridge, R., Moody, M., Murray, G., & Darimont, C. T. (2019). Paper 4 - The Nuxalk Sputc (Eulachon) Project: strengthening Indigenous management authority from the ground up. In *RACHELLE BEVERIDGE PHD DISSERTATION - IP*. Victoria: University of Victoria.
- Beveridge, R., Moody, M., Pauly, B., Snxakila, C. T., Murray, G., & Darimont, C. T. (2019). Paper 2 - The Nuxalk Sputc Project process: applying an Indigenous methodology in support of local eulachon management authority. In *RACHELLE BEVERIDGE PHD DISSERTATION - IP*. Victoria: University of Victoria.
- Beveridge, R., Pauly, B., Moody, M., Snxakila, C. T., Murray, G., & Darimont, C. T. (2019). Paper 1: Understanding the impacts of (de)colonised environmental management: a case study of

- eulachon and Nuxalk well-being. In *RACHELLE BEVERIDGE PHD DISSERTATION*.
Victoria, B.C.
- Bohensky, E. L., Butler, J. R. A., & Davies, J. (2013). Integrating Indigenous Ecological Knowledge and Science in Natural Resource Management: Perspectives from Australia. *Ecology and Society*, 18(3). <https://doi.org/10.5751/ES-05846-180320>
- Bohensky, E. L., & Maru, Y. (2011). Indigenous Knowledge, Science, and Resilience: What Have We Learned from a Decade of International Literature on “Integration”? *Ecology and Society*, 16(4), 6.
- Bowie, R. (2013). Indigenous self-governance and the deployment of knowledge in collaborative environmental management in Canada. *Journal of Canadian Studies/Revue d'études Canadiennes*, 47(1), 91–121.
- Brant Castellano, M. (2004). Ethics of Aboriginal research. *Journal of Aboriginal Health*• January, 99.
- Brant Castellano, M. (2015). The Spiritual Dimension of Holistic Health: A Reflection. In M. Greenwood, S. de Leeuw, N. M. Lindsay, & C. Loppie Reading (Eds.), *Determinants of Indigenous Peoples' Health in Canada: Beyond the Social* (pp. 33–38). Toronto: Canadian Scholars' Press.
- Brown, F., & Brown, Y. K. (2009). *Staying the Course, Staying Alive: Coastal First Nations Fundamental Truths: Biodiversity, Stewardship and Sustainability*. Biodiversity BC.
- Brown, H., McPherson, G., Peterson, R., Newman, V., & Cranmer, B. (2012). Our Land, Our Language: Connecting Dispossession and Health Equity in an Indigenous Context. *Canadian Journal of Nursing Research*, 44(2), 21.
- Brown, L., & Strega, S. (2005). *Research as resistance: critical, indigenous and anti-oppressive approaches*. Canadian Scholars' Press.

- Brunger, F., & Wall, D. (2016). “What Do They Really Mean by Partnerships?” Questioning the Unquestionable Good in Ethics Guidelines Promoting Community Engagement in Indigenous Health Research. *Qualitative Health Research*, 26(13), 1862–1877.
<https://doi.org/10.1177/1049732316649158>
- Caine, K. J., Davison, C. M., & Stewart, E. J. (2009). Preliminary field-work: methodological reflections from northern Canadian research. *Qualitative Research*, 9(4), 489–513.
<https://doi.org/10.1177/1468794109337880>
- Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Research Council of Canada. (2014). *Tri-council policy statement: ethical conduct for research involving humans 2014*.
- Capistrano, R. C. G., & Charles, A. T. (2012). Indigenous Rights and Coastal Fisheries: A Framework of Livelihoods, Rights and Equity. *Ocean & Coastal Management*.
- Carlson, K. T. (2001). *A Sto:Lo Coast Salish Historical Atlas*. Vancouver: Douglas & McIntyre.
- Castleden, H., Martin, D., Cunsolo, A., Harper, S., Hart, C., Sylvestre, P., ... Lauridsen, K. (2017). Implementing Indigenous and Western Knowledge Systems (Part 2): “You Have to Take a Backseat” and Abandon the Arrogance of Expertise. *International Indigenous Policy Journal*, 8(4). <https://doi.org/10.18584/iipj.2017.8.4.8>
- Castleden, H., Sloan Morgan, V., & Lamb, C. (2012). “I spent the first year drinking tea”: Exploring Canadian university researchers’ perspectives on community-based participatory research involving Indigenous peoples. *The Canadian Geographer / Le Géographe Canadien*, 56(2), 160–179. <https://doi.org/10.1111/j.1541-0064.2012.00432.x>
- Christopher, S., Saha, R., Lachapelle, P., Jennings, D., Colclough, Y., Cooper, C., ... Webster, L. (2011). Applying Indigenous Community-Based Participatory Research Principles to Partnership Development in Health Disparities Research: *Family & Community Health*, 34(3), 246–255. <https://doi.org/10.1097/FCH.0b013e318219606f>

- Coastal First Nations. (2019). Coastal Stewardship Network. Retrieved January 19, 2019, from <https://coastalfirstnations.ca/our-environment/coastal-stewardship-network/>
- Coombes, B., Johnson, J. T., & Howitt, R. (2014). Indigenous geographies III: Methodological innovation and the unsettling of participatory research. *Progress in Human Geography*, 38(6), 845–854. <https://doi.org/10.1177/0309132513514723>
- Cornthassel, J. (2012). Re-envisioning resurgence: Indigenous pathways to decolonization and sustainable self-determination. *Decolonization: Indigeneity, Education & Society*, 1(1).
- Cornthassel, J., Alfred, T., Goodyear-Ka'opua, N., Silva, N. K., Aikau, H. K., & Mucina, D. (Eds.). (2018). *Everyday Acts of Resurgence: People, Places, Practices*. Daykeeper Press.
- Coulthard, G. S. (2014). *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition*. Minneapolis: University of Minnesota Press.
- Cunsolo Willox, A., Harper, S. L., Edge, V. L., Landman, K., Houle, K., & Ford, J. D. (2011). 'The land enriches the soul:' On climatic and environmental change, affect, and emotional health and well-being in Rigolet, Nunatsiavut, Canada. *Emotion, Space and Society*.
- de Leeuw, S., Cameron, E. S., & Greenwood, M. (2012). Participatory and community-based research, Indigenous geographies, and the spaces of friendship: A critical engagement. *The Canadian Geographer / Le Géographe Canadien*, 56(2), 180–194. <https://doi.org/10.1111/j.1541-0064.2012.00434.x>
- DellaSala, D. A., Moola, F., Alaback, P., Paquet, P. C., Schoen, J. W., & Noss, R. F. (2011). Temperate and Boreal Rainforests of the Pacific Coast. In D. A. DellaSala (Ed.), *Temperate and Boreal Rainforests of the World: Ecology and Conservation* (pp. 42–80). Washington: Island Press.
- Evans, M., Miller, A., Hutchinson, P. J., & Dingwall, C. (2014). Decolonizing Research Practice. *The Oxford Handbook of Qualitative Research*. <https://doi.org/10.1093/oxfordhb/9780199811755.013.019>

- Evering, B. (2012). Relationships between knowledge(s): implications for 'knowledge integration.' *Journal of Environmental Studies and Sciences*, 2(4), 357–368.
<https://doi.org/10.1007/s13412-012-0093-9>
- First Nations Information Governance Centre. (2014). *Ownership, Control, Access and Possession (OCAPTM): The Path to First Nations Information Governance (Paper)*. Ottawa: First Nations Information Governance Centre.
- Garibaldi, A., & Turner, N. (2004). Cultural Keystone Species: Implications for Ecological Conservation and Restoration. *Ecology and Society*, 9(3). <https://doi.org/10.5751/ES-00669-090301>
- Haggan, N. (2010). *The case for including the cultural and spiritual values of eulachon in policy and decision-making* (Report for Fisheries and Oceans Canada) (p. 44). Vancouver, B.C.
- Haggan, N., Turner, N., Carpenter, J., Jones, J. T., Menzies, C., & Mackie, Q. (2006). *12,000+ years of change: Linking traditional and modern ecosystem science in the Pacific Northwest*. Vancouver, B.C.: Fisheries Centre, University of British Columbia.
- Hamilton, R. (2017, April). personal correspondence - permission pending.
- Hanuse, S. B. (2010). *Cry Rock*. Smayaykila Films / Moving Images Distribution. Retrieved from <https://smayaykila.com/films/cry-rock>
- Harris, D., & Millerd, P. (2010). Food Fish, Commercial Fish, and Fish to Support a Moderate Livelihood: Characterizing Aboriginal and Treaty Rights to Canadian Fisheries. *Arctic Review on Law and Politics*, Vol. 1, Pp. 82-107, 2010.
- Hart, M. (2010). Indigenous Worldviews, Knowledge, and Research: The Development of an Indigenous Research Paradigm.
- Hay, D. E., Harbo, K., Clarke, J. R., Parker, G., & McCarter, P. B. (1999). *Catch composition of British Columbia shrimp trawls and preliminary estimate of bycatch - with emphasis on*

- eulachons* (Canadian Stock Assessment Secretariat No. Research Document 99/26) (p. 45).
Fisheries and Oceans Canada.
- Heiltsuk Nation. (2019). Hauyat. Retrieved from <http://www.hauyat.ca/home.html>
- Hilland, A. (2013). *Extinguishment by extirpation: The Nuxalk eulachon crisis* (Master of Laws).
University of British Columbia, Vancouver.
- Houde, N. (2007). The six faces of traditional ecological knowledge: challenges and opportunities for
Canadian co-management arrangements. *Ecology and Society*, 12(2).
- Housty, W. G., Noson, A., Scoville, G. W., Boulanger, J., Jeo, R. M., Darimont, C. T., & Filardi, C.
E. (2014). Grizzly bear monitoring by the Heiltsuk people as a crucible for First Nation
conservation practice. *Ecology and Society*, 19(2), 70.
- James, M., & Alexis, T. (2018). *Not Extinct: Keeping the Sinixt Way*. Nelson: MAA Press.
- Jones, R., Rigg, C., & Pinkerton, E. (2016). Strategies for assertion of conservation and local
management rights: A Haida Gwaii herring story. *Marine Policy*.
<https://doi.org/10.1016/j.marpol.2016.09.031>
- Kirby, A. (2017). *Building Indigenous Enforcement Authority Over Marine Territories* (p. 39).
Coastal First Nations / Coastal Stewardship Network / West Coast Environmental Law.
- Kirkness, V. J., & Barnhardt, R. (1991). First Nations and Higher Education: The Four R's—Respect,
Relevance, Reciprocity, Responsibility. *Journal of American Indian Education*, 30(3), 1–15.
- Kotaska, J. G. (2013). *Reconciliation “at the end of the day”: Decolonizing territorial governance in
British Columbia after Delgamuukw* (PhD, Resource Management and Environmental
Studies). University of British Columbia, Vancouver, B.C.
- Kovach, M. (2009). *Indigenous Methodologies: Characteristics, Conversations, and Contexts*.
University of Toronto Press.

- Kovach, M. (2017). Doing Indigenous methodologies - A letter to a research class. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage Handbook of Qualitative Research* (5th ed., pp. 214–234). SAGE Publications Ltd.
- Kramer, J. (2011). *Switchbacks: Art, Ownership, and Nuxalk National Identity*. UBC Press.
- Latulippe, N. (2015). Situating the Work: A typology of traditional knowledge literature. *AlterNative: An International Journal of Indigenous Peoples*, 11(2), 118–131.
<https://doi.org/10.1177/117718011501100203>
- Legat, A., & Barnaby, J. (2012). *Walking the Land, Feeding the Fire: Knowledge and Stewardship Among the Tlicho Dene* (2 edition). Tucson: University of Arizona Press.
- Lepofsky, D., & Caldwell, M. (2013). Indigenous marine resource management on the Northwest Coast of North America. *Ecological Processes*, 2(1), 12.
- Louis, R. P. (2007). Can You Hear Us Now? Voices from the Margin: Using Indigenous Methodologies in Geographic Research. *Geographical Research*, 45(2), 130–139.
<https://doi.org/10.1111/j.1745-5871.2007.00443.x>
- McCreery, D. (2016, April). personal correspondence [Conversation].
- McGregor, D. (2004). Coming Full Circle: Indigenous Knowledge, Environment, and Our Future. *The American Indian Quarterly*, 28(3), 385–410. <https://doi.org/10.1353/aiq.2004.0101>
- McGregor, D. (2014). Lessons for collaboration involving traditional knowledge and environmental governance in Ontario, Canada. *AlterNative: An International Journal of Indigenous Peoples*, 10(4), 340–353.
- Moody, M. (2008). *Eulachon past and present* (Master of Science). University of British Columbia, Vancouver.
- Mulrennan, M. E., Mark, R., & Scott, C. H. (2012). Revamping community-based conservation through participatory research. *The Canadian Geographer / Le Géographe Canadien*, 56(2), 243–259. <https://doi.org/10.1111/j.1541-0064.2012.00415.x>

- Murray, G., D'Anna, L., & MacDonald, P. (2016). Measuring what we value: The utility of mixed methods approaches for incorporating values into marine social-ecological system management. *Marine Policy*, 73, 61–68. <https://doi.org/10.1016/j.marpol.2016.07.008>
- Nadasdy, P. (1999). The Politics of Tek: Power and the “Integration” of Knowledge. *Arctic Anthropology*, 36(1/2), 1–18.
- Napoleon, V., & Friedland, H. (2016). An inside job: engaging with indigenous legal traditions through stories. *McGill Law Journal*, 61(4), 725–754.
- Napoleon, V., & Overstall, R. (2007). *Indigenous Laws: Some Issues, Considerations and Experiences* (Aboriginal Policy Research Consortium International (APRCi) No. 281) (p. 19).
- Nicholls, R. (2009). Research and Indigenous participation: critical reflexive methods. *International Journal of Social Research Methodology*, 12(2), 117–126.
<https://doi.org/10.1080/13645570902727698>
- Noisecat, J. B. (2018). The resurgence of the Nuxalk. *Canadian Geographic*, (Sept/Oct). Retrieved from <https://www.canadiangeographic.ca/article/resurgence-nuxalk>
- Nuxalk Nation. (2019). Nuxalk Territory Maps. Retrieved January 18, 2019, from <http://www.nuxalk.net/html/maps.htm>
- Nuxalk Radio. (2019). Nuxalk Radio [Live]. Bella Coola: Nuxalk Radio 91.1.
- Pasternak, S. (2017). *Grounded Authority: The Algonquins of Barriere Lake against the State*. U of Minnesota Press.
- Richmond, C., & Ross, N. A. (2009). The determinants of First Nation and Inuit health: A critical population health approach. *Health & Place*, 15(2), 403–411.
<https://doi.org/10.1016/j.healthplace.2008.07.004>
- Salomon, A., Lertzman, K., Brown, K., Wilson, Kii'iljuus Barbara, Secord, D., & McKechnie, I. (2018). Democratizing conservation science and practice. *Ecology and Society*, 23(1).
<https://doi.org/10.5751/ES-09980-230144>

- Schnarch, B. (2004). Ownership, control, access, and possession (OCAP) or self-determination applied to research: A critical analysis of contemporary First Nations research and some options for First Nations communities. *International Journal of Indigenous Health*, 1(1), 80.
- Senkowsky, S. (2007). A Feast to Commemorate—and Mourn—the Eulachon. *BioScience*, 57(8), 720–720. <https://doi.org/10.1641/B570815>
- Shaw, W. S., Herman, R. D. K., & Dobbs, G. R. (2006). Encountering indigeneity: Re-imagining and decolonizing geography. *Geografiska Annaler: Series B, Human Geography*, 88(3), 267–276.
- Simpson, L. B. (2008). *Lighting the Eighth Fire - The Liberation, Resurgence, and Protection of Indigenous Nations*. Winnipeg: ARP Books.
- Simpson, L. B. (2011). *Dancing On Our Turtle's Back: Stories of Nishnaabeg Re-Creation, Resurgence, and a New Emergence*. Winnipeg: ARP Books.
- Simpson, L. B. (2014). Land as pedagogy: Nishnaabeg intelligence and rebellious transformation. *Decolonization: Indigeneity, Education & Society*, 3(3).
- Simpson, L. B. (2017). *As We Have Always Done: Indigenous Freedom through Radical Resistance* (3rd ed. edition). Minneapolis: Univ Of Minnesota Press.
- Smith, L. T. (1999). *Decolonizing Methodologies: Research and Indigenous Peoples*. Zed Books.
- Smith, L. T., Maxwell, T. K., Puke, H., & Temara, P. (2016). Indigenous knowledge, methodology and mayhem: What is the role of methodology in producing indigenous insights? A discussion from Mātauranga Māori, 4(3), 131–156.
- Snxakila, (Clyde Tallio). (2014). personal correspondence.
- Snxakila, (Clyde Tallio). (2018). personal correspondence.
- Sputc Project Team. (2017). *Alhqulh ti Sputc (The Eulachon Book)*. Bella Coola: Nuxalk Stewardship Office.
- Thielmann, T. (2012). *Enhancing the Environmental Stewardship Authority of Indigenous Peoples* (p. 36). Coastal First Nations / UVic Environmental Law Centre / West Coast Environmental

- Law. Retrieved from <https://www.indigenousguardianstoolkit.ca/community-resource/enhancing-environmental-stewardship-authority-indigenous-peoples-coastal>
- Thomas, R. A. (2005). Honouring the Oral Traditions of My Ancestors Through Storytelling. In L. Brown & S. Strega (Eds.), *Research as Resistance: Critical, Indigenous, and Anti-oppressive approaches* (pp. 237–254). Toronto: Canadian Scholars' Press.
- Thompson, C. (2014, April 7). Community celebrates eulachon with Sputc Ceremony. *Coast Mountain News*. Retrieved from <https://www.coastmountainnews.com/news/community-celebrates-eulachon-with-sputc-ceremony/>
- Thompson, C. (2017a, April 4). Book of Eulachon – Alhqulh Ti Sputc – presented to Nuxalkmc at community feast. *Coast Mountain News*. Retrieved from <https://www.coastmountainnews.com/community/book-of-eulachon-alhqulh-ti-sputc-presented-to-nuxalkmc-at-community-feast/>
- Thompson, C. (2017b, April 5). Ooligan grease making camp returns to the banks of the Bella Coola River. *Coast Mountain News*. Retrieved from <https://www.coastmountainnews.com/news/ooligan-grease-making-camp-returns-to-the-banks-of-the-bella-coola-river/>
- Tobias, J. K., Richmond, C., & Luginaah, I. (2013). Community-based participatory research (CBPR) with Indigenous communities: Producing respectful and reciprocal research. *Journal of Empirical Research on Human Research Ethics*, 8(2), 129–140.
- Trosper, R. L. (2002). Northwest coast indigenous institutions that supported resilience and sustainability. *Ecological Economics*, 41(2), 329–344.
- Tuck, E., & Yang, K. W. (2012). Decolonization is not a metaphor. *Decolonization: Indigeneity, Education and Society*, 1(1), 1–40.

- Turner, N. J. (2014). *Ancient pathways, ancestral knowledge: ethnobotany and ecological wisdom of Indigenous peoples of northwestern North America*. Montreal ; Ithaca: McGill-Queen's University Press.
- Turner, N. J., & Berkes, F. (2006). Coming to Understanding: Developing Conservation through Incremental Learning in the Pacific Northwest. *Human Ecology*, 34(4), 495–513. <https://doi.org/10.1007/s10745-006-9042-0>
- Turner, N. J., Berkes, F., Stephenson, J., & Dick, J. (2013). Blundering Intruders: Extraneous Impacts on Two Indigenous Food Systems. *Human Ecology*. <https://doi.org/10.1007/s10745-013-9591-y>
- Turner, N. J., Gregory, R., Brooks, C., Failing, L., & Satterfield, T. (2008). From invisibility to transparency: identifying the implications. *Ecology and Society*, 13(2), 7.
- von der Porten, S., Corntassel, J., & Mucina, D. (2019). Indigenous nationhood and herring governance: strategies for the reassertion of Indigenous authority and inter-Indigenous solidarity regarding marine resources. *AlterNative: An International Journal of Indigenous Peoples*.
- von der Porten, S., & de Loë, R. C. (2014). How Collaborative Approaches to Environmental Problem Solving View Indigenous Peoples: A Systematic Review. *Society & Natural Resources*, 27(10), 1040–1056. <https://doi.org/10.1080/08941920.2014.918232>
- von der Porten, S., de Loë, R., & Plummer, R. (2015). Collaborative Environmental Governance and Indigenous Peoples: Recommendations for Practice. *Environmental Practice*, 17(02), 134–144. <https://doi.org/10.1017/S146604661500006X>
- von der Porten, S., Lepofsky, D., McGregor, D., & Silver, J. J. (2016). Recommendations for marine herring policy change in Canada: Aligning with Indigenous legal and inherent rights. *Marine Policy*, 74, 68–76. <https://doi.org/10.1016/j.marpol.2016.09.007>

- Weber-Pillwax, C. (2001). What is indigenous research? *Canadian Journal of Native Education*; *Edmonton*, 25(2), 166–174.
- Whyte, K. P. (2013). On the role of traditional ecological knowledge as a collaborative concept: a philosophical study. *Ecological Processes*, 2(1), 1.
- Wild, P. (2004). *One River, Two Cultures: A History of the Bella Coola Valley*. Madeira Park, BC: Harbour Publishing. Retrieved from <http://www.harbourpublishing.com/title/OneRiverTwoCulturesH>
- Wildcat, M., McDonald, M., Irlbacher-Fox, S., & Coulthard, G. S. (2014). Learning from the land: Indigenous land based pedagogy and decolonization. *Decolonization: Indigeneity, Education & Society*, 3(3), 15.
- William, G., & Armstrong, J. (Eds.). (2015). *River of Salmon Peoples*. Theytus Books.
- Williams, T., & Hardison, P. (2013). Culture, law, risk and governance: contexts of traditional knowledge in climate change adaptation. *Climatic Change*, 120(3), 531–544. <https://doi.org/10.1007/s10584-013-0850-0>
- Wilson, S. (2008). *Research is Ceremony: Indigenous Research Methods*. Winnipeg: Fernwood Publishing.

PAPER 4: The Nuxalk *Sputc (Eulachon) Project*: strengthening Indigenous management authority from the ground up

AUTHORS

Rachelle Beveridge, Megan Moody, Grant Murray, Chris Darimont, Bernie Pauly.

ABSTRACT

Indigenous peoples and their leadership remain steadfast in their commitment to continue to manage and protect ancestral lands and waters throughout the world. In this regard, the landscape currently known as the central coast of British Columbia, Canada represents a complex and dynamic site of collaboration, negotiation, and conflict, as Indigenous leaders assert inherent rights, responsibilities, and authority to manage ancestral territories. However, while many scholars and practitioners advocate for Indigenous involvement in today's complex environmental management domain, there are few detailed examples of how Indigenous management authority is established and practiced at the community level. In this paper, we apply a decolonizing lens to examine how Indigenous authority may be advanced (or contested) from the ground up. We begin with an argument for the Nuxalk Nation's jurisdiction in the management of eulachon (*Thaleichthys pacificus*) throughout Nuxalk ancestral territory a cultural keystone species functionally extirpated in the region. We show how the community-engaged *Sputc Project* strengthened the Nation's inherent authority to manage eulachon by articulating and representing Nuxalk knowledges, broadly engaging community, and strengthening local systems of governance. Articulating key priorities for eulachon management, we suggest that, the case of eulachon presents the Canadian state with an opportunity to align with inherent Indigenous rights and responsibilities and embrace collaborative, Nation-to-Nation management approaches. As such, this case study provides a practical example to inform those working toward Indigenous resurgence and self-determination, and those who wish to understand and respect these processes.

ACKNOWLEDGEMENTS

Stutwiniitscw (thank you) to key *Nuxalkmc* collaborators whose perspectives informed this work: Snxakila (Clyde Tallio), Iris Siwallace, Spencer Siwallace, Andrea Hilland, Banchi Hanuse, and Jason Moody; *Sputc Project* advisors Louise Hilland, Russ Hilland, Horace Walkus, and Joanne Schooner; and other *Sputc Project* colleagues and collaborators. Thanks also to others who helped me work through ideas here, including Marianne Nicolson, Dale McCreery, and Nicole Kaechele.

FUNDING

I acknowledge the funders of my research (CIHR, Vancouver Island University Institute of Coastal Research, OceanCanada (SSHRC)) and the *Sputc Project* (Tides Canada, TNC Canada (Nature United), Vancouver Foundation).

KEY WORDS: Indigenous, First Nations, eulachon, management, authority, jurisdiction, fisheries, conservation, governance.

FORMATTED FOR: Marine Policy / People and Nature

INTRODUCTION

For thousands of years, Indigenous peoples around the world, including Canada's coastal First Nations¹ (FN), have been sustainably managing ancestral lands and waters based on rights and responsibilities that predate colonization [1–5]. Now, Indigenous leaders and decision-makers are re-asserting these rights and responsibilities, and seeking to strengthen local management authority, including that related to marine management [6–12]. With increasing calls for Indigenous involvement in environmental management, an emerging literature details how Indigenous management authority is supported or strengthened [6,7,9,11,13,14]. In this paper, we explore Nuxalk eulachon (*Thaleichthys pacificus*) as a case of contested jurisdiction in environmental management, examining how a community-engaged project strengthened Indigenous authority from the ground up, and exploring its implications for the management of this endangered fish.

Given our affiliations, locations, and experiences in relation to this work, we primarily ascribe to *decolonising* perspectives on environmental management, which emphasize Indigenous self-determination, robust if not radical resurgence [15–19] and transformative reconciliation [17]. These perspectives put into relief the processes of dispossession and resource extraction by settler-colonial states [14,20–25]. This may be contrasted with *adaptive* perspectives commonly referenced in the environmental and resource management literatures, which focus on Indigenous participation in environmental management and integration of Indigenous knowledges into existing western processes, taking interest in social learning, collaboration, and transformation of existing institutional landscapes [26–29]. This distinction has important implications for how we conceive of Indigenous peoples' management authority, and related assumptions about the use and interpretation of Indigenous knowledges, the nature of sovereignty, the legitimacy of Indigenous legal systems, and the role of Indigenous Nations in decision-making processes involving the state [6,8,9,20,30].

Taking interest in how management authority is strengthened, we start by articulating some key concepts. **Governance** includes “the mechanisms and processes by which power and decision making are allocated among different actors”[31]. Meanwhile, we define environmental **management** as the purposeful protection of social-ecological systems for present and future generations; this includes species and habitat conservation, planning, stewardship, and restoration, as well as enforcement of norms and laws related to harvesting, access, and distribution/allocation. **Authority** is created and held by defining, communicating, and enforcing norms, rules, and laws [32–35] through governance

¹ First Nations are one of three categories of Indigenous peoples according to Canadian law (alongside Inuit and Metis).

institutions that form a continuum “from the conscious to the unconscious, from the legally enforced to the taken for granted” [36]. While the state presupposes absolute sovereignty over Canadian lands and subjects, many argue that the basis of its authority (i.e. its legitimacy) is muddled, complex, and contestable [14,17,37]. Jeremy Webber (2016) details four claims related to sovereignty, one of which suggests that multiple assertions of sovereignty might exist “in a continual, unresolved – perhaps never resolved – tension” [32]. Beyond state (e.g. Canadian) law², Indigenous peoples’ authority can be sourced from inherent rights, responsibilities and relationships embedded in ancestral governance systems [32,33,38,39]. These may be derived from formalised laws or implicit norms encoded by oral histories, place names, kinship systems, and cultural practices and upheld by collective, interactive processes [33,35,40]. In this context, “law... originates in social interaction and activities on the land” [33] and may not be distinguished from other forms of Indigenous knowledge.

Following Pasternak (2017), we suggest that jurisdiction is where the ‘rubber meets the road’ when it comes to management authority; where multiple authorities might exist, it is at the scale of jurisdiction that possible authorities are confirmed or contested, as determined by the legitimacy of related institutions and local peoples’ actions on the ground [13,14,33]. As such, **jurisdiction** - “the power to speak the law” [14] - is essential to understanding how Indigenous authority is advanced, providing a means by which to question the state’s assertion of exclusive sovereignty and interrogate the processes and institutions that have served to dispossess Indigenous peoples. It is through this reality of incomplete and potentially ungrounded jurisdiction that the potential for Indigenous authority and self-determination emerges, rather than (or in addition to) through negotiation within the mechanisms of the state. Enacted through jurisdiction, **legitimacy** is derived from collective recognition and understanding, as well as from the application and enforcement of related rules and norms [13,33–35]. For example, it is widely recognised that if legitimacy is contested or unrecognised by local resource users, then authority is undermined, and related conservation efforts are inefficiently enacted [13,41–43]. As individuals struggle to parse local priorities (e.g. food security, cultural values) and global realities (e.g. fish scarcity, climate change) that affect access [44], their reactions to larger-scale injustices (e.g. commercial fisheries’ priority) have the potential to compromise local conservation action unless “the protection of valued resources is viewed as a shared responsibility rather than an obligation imposed from external powers”

² In Canada, Aboriginal and treaty rights are recognised and affirmed by section 35(1) of the Canadian constitution (1982); supported by subsequent decisions of the Supreme Court, these rights include use and management of ancestral lands and waters (e.g. Calder (1973), Sparrow (1990), VanDerPeet (1996), Delgamuukw (1997); Tsilhqot’in (2014)).

[12]. Authority matters because it determines peoples' behaviours in relation to the environment [13,41], with social and ecological implications on the ground.

These definitions situate the governance dynamics in a region currently known as Canada's central coast, which represents a complex landscape of Indigenous leadership, contested authority, and mixed jurisdiction in environmental management [7,9–11,42,45]. In this context, there is a long history of First Nations' dispossession from ancestral lands and waters, which has undermined knowledge systems and compromised social-ecological well-being [3,46–50]. Practically speaking, the Canadian state's obligation to consult with First Nations regarding activities conducted on their territories is often poorly or symbolically executed; state institutions' biases and bureaucracies continue to replicate and reinforce colonial relationships, while management processes systematically sideline First Nations priorities and involvement in related decision-making [6,8,20,30,51,52]. However, resources for centralized environmental management are eroding [53,54], and a rapidly evolving legal and policy context is increasingly supporting First Nations' management authority [6,9,10,45]. For example, the Supreme Court's *Tsilhq'otin* decision (2014) includes both "the right to decide how the land will be used" and "the right to pro-actively use and manage the land" [55]. Meanwhile, reconciliation agreements or frameworks with state (provincial, federal) actors support Nation to Nation relationships [45,56,57].

This dynamic and somewhat ambiguous governance context is creating renewed opportunity for First Nations leadership and self-determined initiatives in environmental management [9,11,58,59].

Challenging federal management authority, First Nations are taking their places as legitimate stewards of ancestral waters by upholding and formalising traditional forms of management, implementing locally-derived management priorities and practices, and exercising inherent and constitutional rights to fish and manage marine resources [7,9–11,42,45,58,60–63]. For example, Haida, Heiltsuk, and Nuuchahnulth Nations have been successful in closing highly exploitative commercial herring fisheries using court injunctions [9–11], while nearby Nations have closed crab and sea cucumber fisheries by demanding voluntary compliance with local laws by commercial fishers [42,60]. In practical terms, these examples of successful contestation of state jurisdiction represent a movement toward *de facto* legal pluralism [64,65] that recognize multiple management authorities [7,32,45]. This reality may demand substantial increases in capacity on the part of both state and Indigenous decision-makers. However, while there are increasing recommendations for negotiating authority between Indigenous Nations and the state [8,9,11], there are few examples in the scholarly literature of the practicalities of strengthening Indigenous management authority from the ground up.

Here, we present the case of Nuxalk eulachon as an example of contested authority and resurgent Indigenous management. In this case, state management has failed to prevent local eulachon extirpation in the marine environment, while *de facto* management authority has been uninterrupted in areas where *Nuxalkmc* (Nuxalk people) claim continued jurisdiction [66,67]. As such, this represents a salient case through which to explore the assertion and limits of Indigenous authority. This work is based in over four years of observation, participation, and leadership in the Nuxalk *Sputc (Eulachon) Project*, a community-engaged process that documented and articulated Nuxalk knowledges about the values and management of eulachon [68]. Sharing learnings and reflections from our positions as a non-Nuxalk researcher / coordinator (RB) and First Nations leader and Nuxalk director of stewardship (MM), this paper constitutes a kind of ‘research-on-research’ with several objectives: (1) to present the case of contested jurisdiction in the management of eulachon in Nuxalk territory (outlined in study context); (2) to describe how Nuxalk management authority was bolstered by the *Sputc Project*; (3) to detail the practical management priorities that arose through the project process; and (4) to share insights about (a) what is required to assert Indigenous management authority from the ground up; and (b) how to strengthen inter-jurisdictional engagement of Indigenous authorities. In so doing, we address questions raised by Coastal First Nations leadership, including those related to how Indigenous communities are rebuilding and revitalizing their own self-governance capacities [6,12]. In so doing, this work has the potential to inform others working toward (or interfacing with) Indigenous self-determination, resurgence, and transformative reconciliation within and beyond state structures.

METHODS

This paper is grounded in the lead authors’ involvement in the *Sputc Project*, which was initiated and led by the Nuxalk Nation’s Stewardship Office after being identified as a need by the community (see study context). The project employed an iterative, community-engaged methodology informed by Nuxalk ways of knowing and being [68]. The final product of the project was a full colour, 172-page book called *Alhqulh ti Sputc (The Eulachon Book)* [69]. Divided into nine sections, the book situates Nuxalk eulachon management knowledges in the context of a complex, holistic system of governance, detailing the origins of eulachon and their relationship to Nuxalk management authority, eulachon uses and values, fishing technologies, stewardship practices, cultural histories, science, and contemporary management priorities. The book details how Nuxalk knowledges inform sophisticated, sustainable methods of eulachon management, including their relevance to present and future management practices. While useful as a reference document and educational resource for Nuxalk people, the contents of *Alhqulh ti Sputc* also

provides a material foundation for asserting Nuxalk management authority [69,70]. The *Sputc Project* and its product thus comprise an important foundation of this paper.

Before the outset of the project and associated research, detailed agreements (with the Stewardship Office), resolutions (with Band Council), and permissions (from *Staltmc*, the Nuxalk hereditary leaders) were signed based on ethical principles outlined by both community-engaged and Indigenous researchers [71–80]. Explicitly reviewing and re-visiting these foundations and their limitations established mutual expectations and understandings of research responsibilities, rights, and benefits, highlighting the importance of relationship, responsibility, relevance, and reciprocity, and provided a set of resource documents for use by future researchers. Ethics approval was also obtained through the University of Victoria's REB (protocol # 14-075, 2014 – 2019).

Based in extensive participation, observation, and reflection, this paper is informed by critical and decolonizing theories [25,81–83] and an inductive, interpretive approach to knowledge documentation, assessment, and sharing. These methods are congruent with – but not equivalent to – Indigenous methods of representing and relating knowledge [84–86] employed by the *Sputc Project* itself (see [70]). As a doctoral candidate without prior relationships with the community, the first author (RB) was invited to contribute her capacity and service to coordinate the project by the co-(lead) author (MM), Nuxalk daughter of Qwatsinas³, director of the Nuxalk Stewardship Office and First Nations fisheries management leader. MM initiated and directed the project, while RB coordinated its technical and practical aspects. A third key collaborator on the project was Snxakila (CT), a Nuxalk knowledge holder who provided cultural advice on ancestral governance history and teaching to guide the project and related thinking.

Through her involvement in the *Sputc Project*, RB came to know its collaborators and contents intimately. Her gradual integration into the project and community were essential to the integrity of this research and its outcomes. Informed by relationships formed during the project, this paper therefore draws on knowledges shared by a diversity of *Nuxalkmc* community members and leaders, including cultural knowledge holders, Elders, fishers, and eulachon grease-makers (see acknowledgements). Beginning as an outsider to the community, *reflexivity* [79,84,87–89] and *relational accountability* [75,79,86,90] were an essential to RB's research process as her position and relationships in the community evolved. Over the course of nearly four years, she recorded over 350 meeting synopses and observational fieldnote

³ *Staltmc* Edward Moody (b.1947 – d.2010), a respected leader and international advocate for Nuxalk land rights.

pages, documenting the project process from initiation to completion. These notes captured observations and insights from committee meetings, informal conversations, and community events, as well as responses and reflections of key participants and community members after project completion. Several dozen regulatory documents and related grey literature were also consulted. Fieldnotes (recorded in Evernote, imported into NVivo10) were reviewed by RB, extracting key reflections related to Nuxalk management practices and authority. Emergent themes and learnings were then summarized and developed through a series of conversations between the two lead authors.

STUDY CONTEXT: EULACHON MANAGEMENT IN NUXALK TERRITORY

The region currently known as the central coast of British Columbia is home to the largest coastal temperate rainforest in the world, and a diversity of marine and terrestrial life [91]. *Nuxalkmc* (Nuxalk people) have inhabited this region for thousands of years, and once occupied over thirty villages in a territory of 1,800,000 hectares [92,93]. After the decimation of Nuxalk communities by smallpox in 1862, survivors moved to *Q'umk'uts* (Bella Coola); most *Nuxalkmc* there remain, at the intersection of a steep, glacier-fed river valley and the North Bentinck Arm of the Pacific Ocean [92,94]. Prior to colonial contact, *Nuxalkmc* had a thriving relationship with eulachon, or *sputc*, a smelt that spawns in glacial-fed rivers in each of the four regions that constitute Nuxalk territory. A cultural keystone species [95], eulachon remain vital to Nuxalk well-being, culture, and identity [67,96,97], supporting ancestral systems of knowledge and governance [66,92,96]. Eulachon's anadromous biology means that this fish occupies two distinct bodies of water, living its adult life in largely unknown areas of the Pacific Ocean, and returning to spawn in glacier-fed rivers along the coast [67,98,99]. The remainder of this section outlines the case for Nuxalk jurisdiction in the management of eulachon in Nuxalk territory.

Because *de facto* eulachon management by *Nuxalkmc* has been uninterrupted since colonization, *Nuxalkmc* assert authority to manage eulachon in the inlets and rivers of Nuxalk territory, where eulachon return to spawn each year [66,69]. While the marine environment outside of Nuxalk territory (i.e. Queen Charlotte Sound) remains an area of state jurisdiction and responsibility, a lack of commercial interest or state involvement in management of the species means that it remains, in the eyes of many, an "Indigenous" fish. Ambiguity related to jurisdictional responsibility was highlighted by a sudden regional extirpation of eulachon. Following a gradual decline in returns attributed to changes in environmental conditions and fishing technologies [67,98], eulachon failed to return to simultaneously to all rivers of the in Nuxalk territory in 1999. While some rivers in neighboring territories of the Central Coast have since experienced small returns of eulachon, the Bella Coola River remained functionally

empty of eulachon until 2014, when a small fraction (kgs, not tonnes of spawners) of the original run was observed to return. While the reasons for eulachon extirpation may be characterized as complex [99], *Nuxalkmc* experts recognize that its timing coincided with eulachon bycatch associated with an expansion of the shrimp trawl fishery into the Queen Charlotte Sound during the mid-1990s [66,67]. Although acting too late, the federal Department of Fisheries and Oceans (DFO) subsequently closed the area to shrimp trawling, mandatory bycatch reduction devices, and imposed additional bycatch limits [99] in Southern offshore areas. Further conservation action has been slow, and much-needed research on eulachon in the marine environment is not forthcoming. As such, *Nuxalkmc* see the federal fisheries management system as having failed to protect eulachon in the marine environment, impacting management rights, resource access, and related benefits [66,100].

Further, considering the differential impacts of eulachon loss, coastal First Nations' involvement in state eulachon management and conservation processes has been insufficient, and input into decision-making has gone unheeded. For example, *Nuxalkmc* recognize that there is a high level of morphological diversity between eulachon stocks within Nuxalk territory [69]; a lack of consideration of input related to this diversity has resulted in the application of ecologically and culturally inappropriate management units, with significant implications for future conservation action or assessment. Involvement in conservation planning has been limited to tokenistic consultation without meaningful consent-based engagement in the development of foundational documents. As such, *Nuxalkmc* have been reduced to participating in state management processes as one of many stakeholders, rather than (co-)leading a collaborative process based on a Nation-to-Nation relationship. Further, although *Nuxalkmc* have advocated a precautionary approach to shrimp trawling, advising on area closures, action on this advice is perceived by many FN as being compromised by commercial interests.

Contested jurisdiction in the management of Nuxalk eulachon was further underlined by official assessment of central coast eulachon as endangered in 2011 under COSEWIC [101], which legally triggered their consideration for listing under the Canadian *Species At Risk Act (SARA, 2002)*. *Nuxalkmc* leadership is concerned about *SARA*'s potential to infringe on existing (*de facto*) Nuxalk jurisdiction. Listing under *SARA* would explicitly bring Nuxalk eulachon under federal regulation for the first time, such that any fishing, management, or monitoring activities by *Nuxalkmc* would require permits and permissions. *Nuxalkmc* are committed to avoiding being in the position of the Fraser River Nations, whose eulachon fishing allocation⁴ is determined by the federal government (DFO) with little local

⁴ much less of an allowance than that of the shrimp trawl industry bycatch limits.

influence dictated through the IFMP process [102]. These concerns have not been explicitly addressed through the *SARA* consultation process. After years of inaction and uncertainty, federal decision-makers appear to be stalling on a listing decision and unwilling to consider alternative models that would recognize First Nations jurisdiction. The state's lack of capacity and/or will to consider and engage *Nuxalkmc* expertise, in combination with the jurisdictional challenge imposed by a potential *SARA* listing underlines the relevance of a case for Nuxalk jurisdiction in the management of in-river eulachon.

Since the disappearance of eulachon, Nuxalk community members and leadership have been demanding action based on Nuxalk management priorities and authority. Beginning shortly after eulachon's collapse, *Nuxalkmc* hosted emergency meetings (2000, 2007) to garner wide-ranging support and attention for eulachon [103]. Complementing abundant ancestral knowledges generated and refined over generations, *Nuxalkmc* have become experts in eulachon science and monitoring, leading independent studies on eulachon abundance and biology in Nuxalk territory since 2001 [67]. Eulachon's possible return or restoration, paired with a widespread concern about the potential loss of eulachon-related knowledges and authorities [96,103], has highlighted the need for *Nuxalkmc* to document and articulate remaining knowledges, including laws, values, and practices, to establish local eulachon management authority. As detailed above, it is in this context that the *Sputc Project*, the context of this work, was born.

RESULTS

Having presented the context of contested eulachon management authority above, in this section we address the second and third goals of this paper. First, we detail how the *Sputc Project* process strengthened Nuxalk management authority. Then, we describe the substantive nature of the knowledge and priorities documented through the *Sputc Project*, including recommendations for eulachon management in Nuxalk territory and beyond.

Strengthening Nuxalk eulachon management authority

Our experience and reflections suggest that the *Sputc Project* strengthened inherent Nuxalk eulachon management authority by: (1) enhancing local capacity for appropriate, respectful knowledge documentation, articulation, and representation; (2) upholding Nuxalk governance processes and decision-making practices; and (3) engaging *Nuxalkmc* community members. This process offered Nuxalk leadership the knowledge, background, and tools to speak strongly on behalf of eulachon, with the full support of *Nuxalkmc* and the authority of Nuxalk law. As a result, the project has been upheld by community leaders as a model for future projects, including and beyond those related to environmental

management. Below, we detail each of these elements, while their relevance to the broader context of management of valued species (e.g. bears, salmon) in coastal areas and beyond is elaborated in the Discussion.

Respectful knowledge articulation and representation

During interviews, meetings, and informal conversations, it was often expressed that eulachon are central to “being Nuxalk”; the fish comprise an essential aspect of Nuxalk economics, governance, social networks, cultural values, well-being, and spirituality (see [96]). Through the *Sputc Project*, we documented and shared ancestral and contemporary Nuxalk laws, practices, relationships, norms and values, roles and responsibilities related to eulachon by purposefully engaging Nuxalk ways of knowing. In this spirit, *Alhqulh ti Sputc (The Eulachon Book)* interwove past, present and future using stories, quotes, photographs, illustrations, language, place and personal names. Contents were presented in a circular format, such that the final chapter, *Standing up for sputc*, lead back to the first chapters on Nuxalk law, eulachon origins, and story as a foundation for action. Throughout the project, we were committed to respecting Nuxalk knowledges’ integrity, and strove to represent and articulate them without compromising their social-cultural context (see [70]). *Alhqulh ti Sputc* was produced without referencing external knowledge systems or corroboration from Western science, and knowledge sources and context were retained through the use of images, names, and stories in Nuxalk language, enabling direct interpretation of materials by Nuxalk knowledge holders. We aimed to promote project materials’ application by *Nuxalkmc* community members and leaders, generating community-level consensus and authority to take position and act on locally-derived management priorities. Over the course of the project, skills and capacity for documentation, interpretation, and representation of Indigenous knowledges and laws were built within the core project team and beyond (see[68]).

Ancestral governance and decision-making capacity

From its inception, the *Sputc Project* was intended to support a broader agenda of ancestral governance revitalization, cultural strengthening, and political resurgence. Indeed, in order to articulate Nuxalk ways of knowing and managing eulachon, it was necessary to engage the ancestral governance system as a whole. Because of the deep value of eulachon to *Nuxalkmc* and a relatively unified interest in the fish within the community, the project provided an accessible, motivating context in which to deepen this learning. Over the course of the project, we purposefully applied ancestral decision-making protocols and practices. We learned that decision-making was historically made by family representatives (*Statalmc*) and their family leads, including relevant spiritual and technical experts and advisors, in an

adaptive, decentralized and often consensus-based process. Management decisions were not made by one expert but by a collective, and were enacted and upheld by community members, as well as specially appointed guardians. In recognition of this distributed, collective system, the *Sputc Project* engaged over twenty *Statalmc* in their leadership roles and engaged the community at large, including cultural and technical knowledge-holders, as decision-makers. Community consent was obtained by asking *Statalmc* to represent their families in the initiation of the project, and review and approval of the project outcomes, while cultural and technical experts provided advice throughout the project.

By deliberately engaging Nuxalk governance systems and decision-making processes, we intended for the *Sputc Project* to build self-governance capacity within Nuxalk leadership and beyond. However, after a long history of colonial imposition, many community members' and leaders' knowledge of the practical application and relevance of ancestral governance systems was limited by the whole. As such, the project required a great deal of time, patience, resources, and human capacity (on the part of leaders, coordinator, and advisors) to learn, apply, and adapt local protocols and processes in a research context. While imperfect and ongoing, this learning is being adapted by core project team members to inform other projects (e.g. ancestral governance) and has been upheld by community members as an example of appropriate Nuxalk research methodology. By providing a platform for strengthening *Nuxalkmc* capacity and engagement in the application of Nuxalk law, we hope that the *Sputc Project* also contributed to supporting a collective understanding of Nuxalk management authority in other management contexts (e.g. salmon, wildlife, forestry).

Broad community engagement and collective responsibility

Consensus and understanding around a shared *Nuxalkmc* responsibility to protect eulachon constitutes the foundation of Nuxalk management authority. According to Nuxalk law, management knowledges, values, and practices need to be broadly owned by the community, including family representatives and other recognized leaders, in order for management decisions (e.g. local regulation of fishing) to be recognized, supported, or implemented. For Nuxalk authority to be relevant at the local level, it is essential for the community to own a collective responsibility to eulachon, as enabled by broad community engagement in *Sputc Project*. Alternatively, conflicting priorities and external activities impacting eulachon (e.g. commercial bycatch, federal regulation) could be perceived as unfair impediments to traditional harvesting, compromising local regulation of future fishing that might infringe on important cultural identities (e.g. fisher, river guardian).

With this in mind, the *Sputc Project* gathered and shared Nuxalk eulachon knowledges and laws in a participatory, iterative, and consensus-based process that facilitated extensive, long-term community engagement as adaptation of the Nuxalk governance system (see [68]). This increased project recognition and buy-in from a diversity of community members and allowed a broad range of Nuxalk knowledges and perspectives to guide the project. As a result, *Alhqulh ti Sputc* was accessible and meaningful to a broad range of *Nuxalkmc*, and there were very few disagreements on its main messages and priorities (detailed below). The final book was supported in writing by 19/21 *Statalmc* – an unprecedented level of agreement among hereditary leadership. As such, we are hopeful that the project will serve to increase the legitimacy of future eulachon management actions by *Nuxalkmc*, increasing local management authority. Already, community consensus around eulachon management priorities were evidenced by several *Statalmc* stating that there would be no fishing of a small eulachon return in 2018, while reference to the book were also made on local radio and community announcements. We hope that this process will continue guide Nuxalk leadership on eulachon management into the future, particularly –and critically – when harvestable numbers ever return. Following the *Sputc Project*, a standing committee has been assigned by the *Statalmc*, responsibility to follow through on the priorities identified in *Alhqulh ti Sputc*, including management planning and restoration, celebration and ceremony.

Nuxalk eulachon management knowledges, priorities, and recommendations

The previous section outlined how the *Sputc Project* process affirmed Nuxalk management authority from the ground up. This section articulates how this authority might be practically expressed, sharing Nuxalk eulachon management knowledges and priorities within and beyond Nuxalk territory based on the substantive content of *Alhqulh ti Sputc*.

During the *Sputc Project*, *Nuxalkmc* emphasized their inherent rights and responsibilities to protect and manage eulachon according to Nuxalk laws and ways, based in a long, uninterrupted history of sustainably managing the local eulachon fishery for the benefit of all beings. While *Nuxalkmc* have been deeply impacted by eulachon loss, place-based eulachon knowledges have been maintained and transmitted though everyday practices, norms, relationships, and ways of knowing and being [69,70]. We found that some specific rules and protocols (called *sxayaxw*) related to eulachon management exist, including those related to fishing commencement and allocation, and limitations on harvest techniques and technologies. However, much of what historically supported *Nuxalkmc*'s relationship with eulachon was part of *stl'cw* – the ethics, practices, and behaviours that are part of “being Nuxalk” but are rarely

formally taught or explicitly stated (i.e. as in Western education). These include management practices (e.g. let the first run of fish spawn uninterrupted by harvest), conservation values (e.g. not disturbing spawning habitat, respecting non-human life), appropriate fishing technologies (e.g. nets do not harm spawning habitat), cultural protocols (e.g. ensuring equitable distribution to vulnerable community members, minimizing waste), roles and responsibilities (e.g. river guardians), and values (e.g. *putl'alt* – for those not yet born).

By communicating both *sxayaxw* and *stl'cw*, the *Sputc Project* supported the legitimacy of Nuxalk knowledges and institutions on their own merit, emphasizing that the articulation of ancestral laws for external audiences is not necessary for their application by *Nuxalkmc*. *Alhqulh ti Sputc* was not intended for use by external decision-makers without the cultural knowledge to interpret it, nor was it intended to be extracted, simplified, or otherwise decoded. Indeed, access to the book is limited primarily to community members and does not appear online. Rather, it is intended to affirm *Nuxalkmc* as self-determined decision-makers in their own right. Having independently monitored eulachon abundance since 2001, *Nuxalkmc* are also supported by Nuxalk technical and scientific presence and expertise that exceeds that of federal managers. In keeping with these strong foundations of knowledge, and supported by inherent and constitutional rights, *Nuxalkmc* consider Nuxalk jurisdiction in local eulachon management to be non-negotiable. In-river eulachon management, conservation, and restoration in Nuxalk ancestral territories should be conducted by *Nuxalkmc* according to the consensus and knowledges set out in *Alhqulh ti Sputc* and enacted by local leaders.

Because of the importance of eulachon to *Nuxalkmc*, what happens to eulachon in the open ocean is also deeply relevant to Nuxalk interests. However, Nuxalk eulachon management authority is complicated by the fact that the greatest impacts on Nuxalk eulachon, including commercial shrimp trawling and climate change, are occurring beyond Nuxalk territory. *Nuxalkmc* leadership therefore recognizes that conservation action in marine environments must be conducted collaboratively with other actors, including provincial and federal governments, other Nations, regional bridging organisations, and industry. Many of the insights and priorities that arose during the *Sputc Project* may be instructive in this collaboration. While the project was focused on documenting eulachon knowledges for application by *Nuxalkmc*, it enabled clear articulation of Nuxalk priorities for other actors as well. Specific management priorities beyond Nuxalk territory identified during the *Sputc Project* included: (1) support for proactive reduction of shrimp trawl bycatch in all offshore areas outside of Nuxalk territory; (2) closing all areas in Nuxalk territory, including inlets, to shrimp trawling; (3) monitoring the impacts of new bycatch

technologies on marine eulachon mortality; (4) revising management areas and assessments to reflect current and historic eulachon morphological and genetic diversity; (5) increasing resources to support research about eulachon's marine range, critical habitat, and genetic diversity.

However, as detailed in the study context section, Nuxalk expertise in eulachon management (both within and beyond Nuxalk territory) is often unrecognized, and financial resources for eulachon protection and management by *Nuxalkmc* are scarce. Our experience suggests that engaging Nuxalk expertise in eulachon management will require an increase in capacity, and a shift in perspective, on the part of the Canadian state toward a Nation to Nation relationship (see discussion). Among others, Nuxalk leadership could affect the representation of conservation priorities and goals; for example, outcomes like fish returns might be quantified based on cultural values like fish available to eat and make eulachon grease in addition to biomass in the ocean and spawners on the grounds. Greater involvement, if not leadership, in management involving eulachon in the marine environment would enable *Nuxalkmc* to provide real input based on a wealth of knowledge, balancing the disproportionately powerful influence of commercial and non-Indigenous interests over decision-making that affects Nuxalk well-being.

DISCUSSION

In a complex and rapidly evolving institutional landscape, Indigenous leaders and decision-makers on Canada's central coast and beyond are asserting inherent rights and responsibilities to manage ancestral lands and waters based in their own knowledges and expertise [6,8,9,60,62,71,104]. Management authority and jurisdiction are key to decolonizing and resurgent perspectives in that they are explicitly centered the control of lands and waters, moving beyond theoretical debates to the practicalities of what is happening on the ground [14,15,18,25,83]. Jurisdiction "differentiates and organizes the "what" of governance - and, more importantly because of its relative invisibility, the "how" of governance" [14,105]. Ultimately, jurisdiction is determined by who has established legitimacy on the ground [13,41]. In the case of eulachon, a species used almost exclusively by Indigenous people, trust in federal management processes is largely eroded, and any related regulation is unlikely to hold sway among community members. As such, it is imperative to establish Indigenous management authority if returning eulachon are to be protected; exclusive management authority of the state must be contested.

In the past decade, other coastal Nations have asserted management authority using the tools and strategies of confrontation, negotiation, litigation, collaboration, and celebration [9,11,42,60]. Based in our experience of the *Sputc Project*, we now explore how Indigenous jurisdiction might be advanced in the context of eulachon management, both in terms of internal authority (legitimacy) and external

authority (accepted jurisdiction). Above, we detailed how a community-driven project strengthened Nuxalk management authority by supporting internal governance capacity and broadly engaging the community in the articulation of local priorities and outlined the eulachon management knowledges and priorities generated by the project. Below, we discuss our insights related to: (1) what processes, relationships, and capacities are required to assert and strengthen Indigenous management authority from the ground up; and (2) implications of this work for inter-jurisdictional engagement of Indigenous leadership and knowledge.

Strengthening internal management authority (legitimacy)

Our learning underlined that strengthening Nuxalk management authority required engaging local governance institutions, roles and responsibilities, and related decision-making processes, in order to enable community-engaged articulation of related knowledges and priorities. While First Nations' rights and responsibilities to manage ancestral lands and waters are indisputable, the systems supporting them have been undermined by generations of settler-colonialism; as such, it cannot simply be assumed that related knowledges are intact and ready to be applied [106]. Indigenous legal scholars suggest that First Nations need to research and re-articulate their particular intellectual processes and ways of knowing, and how these inform both formal and informal management systems, including formal and informal decision-making processes, cultural practices and ethics, roles and responsibilities, relationships and kinship networks [33–35,106]. This is, in part, what the *Sputc Project* set out to accomplish. Our experience confirmed that articulating and sharing Nuxalk knowledges required extensive internal capacities often restricted by limited human, financial, and educational resources [6,8,13]. Working through these issues required significant resources. However, leveraging these initial investments and the momentum they fostered, and continuing to engage in similar work has the potential to enhance the development and retention of local capacity, and to support appropriate engagement with decision-makers within and beyond Nuxalk territory.

Through this work, we also confirmed that enacting Indigenous governance institutions, decision-making protocols, and knowledge sharing practices required engagement with both political and cultural bases of authority [6,12,14,18,34,107]. Others have similarly noted that in Indigenous legal systems characterized by decentralized institutions, distributed organization, and interactive processes, collective understanding and consensus are necessary to maintain legitimacy and authority, which “result from the continual exercise of individual and collective agency and collaboration” [33]. During the *Sputc Project*, articulating Nuxalk knowledges in an accessible and relevant manner was integral to regenerating community-level

consensus and responsibility around management priorities. Indeed, given the distributed nature of Nuxalk governance structures and decision-making processes [66,92], community engagement processes and collective ownership of *Sputc Project* knowledges and outcomes were key protecting eulachon prior to colonization, and remain central to upholding local management legitimacy. Recognising that Indigenous knowledges should not be separated from knowledge holders [20,23,24,108,109], *Alhqulh ti Sputc* was designed to be accessible, meaningful, and relevant to a wide range of community members and leaders, such that they could participate in local management processes as the rightful interpreters and users of that knowledge [6,26,109–111]. This underlined the importance of collective deliberation and interpretation of Indigenous knowledges in the process of environmental management, recognizing that “without community research participation and ownership in management processes... the ability to interpret local knowledges is fundamentally compromised” [110]. Rather than soliciting knowledge from an elite minority of community members - as often occurs when external researchers conduct “participatory” research [72,112] - the project was set up to derive authority from a range of recognised knowledge-holders, engaging complex cultural protocol and ancestral leadership. While resource-intensive, this process provided foundation of legitimacy in the eyes of the community that will enable unified, cohesive action on identified priorities, bolstering *Nuxalkmc* capacity to engage with both community constituents and interjurisdictional management processes. Community-derived authority will help pre-empt challenges to future fishing regulation by the Nation, which may otherwise go unheeded if perceived to be externally-imposed limits on harvesting rights and meaningful access [44].

Inter-jurisdictional relationships and engagement of Indigenous leadership and knowledge

As detailed above, the case for Nuxalk eulachon management authority is complicated by the fact that the most important impacts occur in the marine environment, beyond Nuxalk control [67,98,99]. Addressing Nuxalk eulachon management priorities therefore also requires collaboration with actors at other levels of jurisdiction. The importance of relationships with non-state actors, including industry, NGOs and supportive public, and other Nations is recognised as key to strengthening management authority [6,9–11,113]. While negotiating directly with industry (e.g. shrimp trawlers) is a geographic and political challenge in this case, increasing exposure via social media and public advocacy could be helpful [9]. The *Sputc Project* and other concurrent activities (annual *Sputc Ceremony*, grease-making, knowledge exchanges) strengthened Nuxalk relationships with other coastal eulachon Nations, which constitute a broader alliance than those already existing. Inter-Indigenous collaboration and solidarity between eulachon Nations could support further Indigenous eulachon authority in the region, and might benefit from the example of herring management on the outer coast [9–11].

However, given the current governance structure, the state's actions, relationships, and capacities remain of central concern when it comes to Nuxalk eulachon. Despite legal precedents and rhetorical attention to collaborative decision-making institutions and reconciliation, there remain significant limitations in the state's apparent willingness and capacity for Nation-to-Nation engagement [6,15,34,42,114,115]. Indeed, many have underlined how current management institutions and associated bureaucracies, biases, and funding structures reinforce colonial relationships and maintain inequitable decision-making authority and power sharing [6,8,8,20,23,24,30,112]. In addition to failing to protect eulachon from commercial shrimp trawling harms, Nuxalk priorities related to ocean management and research (e.g. further area closures, ocean range research, consideration of genetic diversity) have been largely ignored by the state management apparatus; as in other contexts [10], research is promised but not delivered, and extractive commercial interests predominate. As described above, the repercussions of these biases for eulachon ecology are experienced daily by *Nuxalkmc*.

For First Nations, interacting with state management institutions and neoliberal interests requires development of different capacities and resources than those required for local management [12,34,116], creating a semblance of low capacity beyond the local scale. Without attending to their underlying reason or source (i.e. systemic racism, settler-colonialism), it seems that these limitations are used to justify the state's continued disengagement with Indigenous governance systems. We maintain that some Nations' limited capacity to engage external systems does not limit the state's and other actors' responsibility to interact responsibly [79,88]. Indeed, while funding constraints and internal capacity may play a role in First Nations' collaborative potential, power dynamics and institutional biases are also essential factors [6,24,117]. Alongside others [6,118,119], we suggest that the focus of collaboration should at least equally be on increasing external actors' capacity to engage Indigenous leadership of management processes. In a political and legal context that aspires to reconciliation and holds an increasing expectation of First Nations' collaboration in environmental management [6], it is the responsibility of the state to "level the playing field" to engage and mediate respectful and responsible relationships [8,10]; a lack of understanding and systemic biases should not be a burden on First Nations.

On the part of the state, addressing institutional weaknesses involves recognizing that engaging First Nations "is not sufficient if it is not connected in real terms to decision-making" [6,24,26]. We are not the first to identify policy issues related to scale of management, incongruence of DFO and Indigenous laws, and a lack of recognition of Indigenous rights [10], and integration of Indigenous knowledges [6,8,20,30,120,121]. To this end, critical scholars have detailed necessary conditions for appropriate state

engagement with First Nations, including retaining Indigenous knowledges with knowledge-holders, a commitment to cross-cultural dialogue and relationship-building, and institutional changes that enable Indigenous decision-making authority [6,8,27,109,110,118,119,122]. This entails a shift in emphasis from technical approaches to consistent, trusting relationships [6], and involves working with Indigenous people (leadership, decision-makers, and knowledge holders) rather than extracting Indigenous knowledges [24,109]. In the context of coastal management, several have detailed what this kind of change might look like on the ground in terms of systemic and relational change [3,6,8,9,31,100,120]. Among others, Nancy Turner (2008) suggests six processes to develop “a more positive and equitable basis for decision-making” around land and resources: focusing on what matters to the people affected; describing what matters in meaningful ways; making a place for these concerns in decision-making; evaluating future losses and gains from a historical baseline; recognizing culturally derived values as relevant; creating better alternatives for decision-making [3]. Suzanne von der Porten and colleagues suggest that state actors “find ways to support Indigenous nations in their own continued environmental decision making and self-determination” and “identify and engage with existing or intended environmental governance processes and assertions of self-determination by Indigenous nations” [8], creating policy that empowers Indigenous managers “to implement their own Indigenous policies” [10].

The context of eulachon management poses some unique constraints and opportunities when it comes to advocating Indigenous management authority. That many impacts on eulachon occur outside of Nuxalk territory reduces Nuxalk leverage. However, low commercial stakes, in combination with diffuse state authority on the ground [6,7,34], and legal grounds for contesting state authority [66] provide a strong rationale for Nuxalk eulachon jurisdiction. The case of Nuxalk eulachon could provide a low-stakes opportunity for the Canadian state to practice aligning with inherent Indigenous rights and responsibilities, interfacing with Indigenous authorities in a forward-thinking manner that recognizes the efficacy of local management [31,41]. Learning from recent experiences with herring [9–11,45], DFO could appropriately engage First Nations as self-determining Nations, rather than so-called ‘stakeholders’ or actors with equal standing to other groups [30,121,123]. There is room for a shift in jurisdiction in current regulatory and legal domains of eulachon management. If the Canadian state is truly interested in reconciliation with First Nations, then the shifts in authority and jurisdiction suggested here are not unreasonable; indeed, they are increasingly supported by court decisions (e.g. Delgamuukw, Tsilhq’otin) [7,55], international agreements (e.g. UNDRIP), and reconciliation agreements and frameworks [45,56,57]. For the state, recognizing Nuxalk jurisdiction could resolve issues related to litigation and

capacity, uncertainty and frustration [10]. Given increasing legitimacy on the ground, Nuxalk authority is also likely to be more effective in conserving and regulating local actions.

Ultimately, from a decolonizing perspective, engaging Indigenous decision-making authority begins with an understanding of Indigenous processes and priorities. In turn, this requires revision of outdated structural and institutional frameworks, including assumptions about the exclusivity of the state's sovereignty and jurisdiction [6,8,9,21,32,109,124]. According to Leanne Simpson, the alternative to extractivism is responsibility, relationship, and deep reciprocity [125]. However, "[r]eciprocity requires time and resources" [79]. Respectful engagement of Indigenous leadership in eulachon management will require substantial capacity and resourcing, in order to be able to consider and heed, for example, Nuxalk priorities related to marine conservation and research, while supporting Nuxalk-led science, monitoring, conservation, and restoration activities in areas of Nuxalk jurisdiction. Employing the case of eulachon, state capacity could be improved by learning from a forward-thinking institutional arrangement that prioritizes Indigenous leadership and recognizes the possibility and potential of mixed jurisdiction with First Nations.

CONCLUSION

British Columbia's coastal landscape represents a rapidly evolving site of collaboration, negotiation, and conflict related to environmental management authority. In the face of ongoing frustration with management processes and dissatisfaction with related outcomes, BC First Nations are asserting inherent and constitutional rights to manage territorial lands and waters by articulating and applying ancestral laws, responsibilities, and practices. However, while many scholars and practitioners advocate for Indigenous involvement in environmental management, there are few detailed examples of how Indigenous management authority is established and practiced at the community level, or what might be required to support Indigenous leadership. In this paper, we explored the case of eulachon as a site of potential conflict or collaboration in environmental management. We showed how a community-engaged research project (the *Sputc Project*) supported the Nuxalk Nation's management authority by articulating Nuxalk knowledges and management priorities, ensuring broad community participation, and upholding local governance and decision-making processes. In particular, this work demonstrated that broad engagement of Indigenous community members and their knowledges and establishing the cultural and political bases of authority are necessary steps to building management legitimacy within the community. Upholding *Nuxalkmc* as the rightful eulachon management authorities in Nuxalk territory, we contest exclusive state jurisdiction. Rather, in light of a political and legal context that aspires to

reconciliation and holds an increasing expectation of First Nations' collaboration in environmental management, we suggest that the case of eulachon presents the Canadian state with an opportunity to recognize Nuxalk's inherent Indigenous rights and responsibilities related to eulachon in Nuxalk territory and embrace respectful, collaborative, Nation to Nation management approaches to eulachon in offshore areas. As such, this case study provides a practical example to inform those working toward or supporting Indigenous resurgence and self-determination.

LITERATURE CITED

1. Trosper, R.L. Northwest coast indigenous institutions that supported resilience and sustainability. *Ecological Economics* **2002**, *41*, 329–344.
2. Haggan, N.; Turner, N.; Carpenter, J.; Jones, J.T.; Menzies, C.; Mackie, Q. *12,000+ years of change: Linking traditional and modern ecosystem science in the Pacific Northwest*; Fisheries Centre, University of British Columbia: Vancouver, B.C., 2006;
3. Turner, N.J.; Gregory, R.; Brooks, C.; Failing, L.; Satterfield, T. From invisibility to transparency: identifying the implications. *Ecology and society* **2008**, *13*.
4. Turner, N.J.; Berkes, F. Coming to understanding: Developing conservation through incremental learning in the Pacific Northwest. *Human Ecology* **2006**, *34*, 495–513.
5. Lepofsky, D.; Caldwell, M. Indigenous marine resource management on the Northwest Coast of North America. *Ecological Processes* **2013**, *2*, 12.
6. Bowie, R. Indigenous self-governance and the deployment of knowledge in collaborative environmental management in Canada. *Journal of Canadian Studies/Revue d'études canadiennes* **2013**, *47*, 91–121.
7. Kotaska, J.G. Reconciliation “at the end of the day”: Decolonizing territorial governance in British Columbia after Delgamuukw. PhD, Resource Management and Environmental Studies, University of British Columbia: Vancouver, B.C., 2013.
8. von der Porten, S.; de Loë, R.; Plummer, R. Collaborative Environmental Governance and Indigenous Peoples: Recommendations for Practice. *Environmental Practice* **2015**, *17*, 134–144.
9. von der Porten, S.; Corntassel, J.; Mucina, D. Indigenous nationhood and herring governance: strategies for the reassertion of Indigenous authority and inter-Indigenous solidarity regarding marine resources. *AlterNative: An International Journal of Indigenous Peoples* **2019**.
10. von der Porten, S.; Lepofsky, D.; McGregor, D.; Silver, J.J. Recommendations for marine herring policy change in Canada: Aligning with Indigenous legal and inherent rights. *Marine Policy* **2016**, *74*, 68–76.
11. Jones, R.; Rigg, C.; Pinkerton, E. Strategies for assertion of conservation and local management rights: A Haida Gwaii herring story. *Marine Policy* **2016**.
12. Thielmann, T. *Enhancing the Environmental Stewardship Authority of Indigenous Peoples*; Coastal First Nations / UVic Environmental Law Centre / West Coast Environmental Law, 2012; p. 36;.
13. Pinkerton, E.; John, L. Creating local management legitimacy. *Marine Policy* **2008**, *32*, 680–691.

14. Pasternak, S. *Grounded Authority: The Algonquins of Barriere Lake against the State*; U of Minnesota Press, 2017; ISBN 978-1-4529-5469-1.
15. Simpson, L.B. *As We Have Always Done: Indigenous Freedom through Radical Resistance*; 3rd ed. edition.; Univ Of Minnesota Press: Minneapolis, 2017; ISBN 978-1-5179-0386-2.
16. Coulthard, G.S. *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition*; University of Minnesota Press: Minneapolis, 2014; ISBN 978-1-4529-4242-1.
17. *Resurgence and Reconciliation: Indigenous-Settler Relations and Earth Teachings*; Asch, M., Borrows, J., Tully, J., Eds.; University of Toronto Press, Scholarly Publishing Division, 2018; ISBN 978-1-4875-2327-5.
18. Alfred, T. *Wasase: Indigenous Pathways of Action and Freedom*; University of Toronto Press, 2005; ISBN 978-1-4426-0670-8.
19. Simpson, L.B. *Dancing On Our Turtle's Back: Stories of Nishnaabeg Re-Creation, Resurgence, and a New Emergence*; ARP Books: Winnipeg, 2011;
20. Nadasdy, P. The politics of TEK: Power and the "integration" of knowledge. *Arctic Anthropology* **1999**, 1–18.
21. Takeda, L.; Røpke, I. Power and contestation in collaborative ecosystem-based management: The case of Haida Gwaii. *Ecological Economics* **2010**, *70*, 178–188.
22. Latulippe, N. *Belonging to Lake Nipissing: Knowledge, Governance, and Human-Fish Relations*. PhD Thesis, 2017.
23. Nadasdy, P. Reevaluating the co-management success story. *Arctic* **2003**, 367–380.
24. Stevenson, M.G. The Possibility of Difference: Rethinking Co-management. *Human Organization* **2006**, *65*, 167–180.
25. Wildcat, M.; McDonald, M.; Irlbacher-Fox, S.; Coulthard, G.S. Learning from the land: Indigenous land based pedagogy and decolonization. *Decolonization: Indigeneity, Education & Society* **2014**, *3*, 15.
26. O'Flaherty, R.M.; Davidson-Hunt, I.J.; Manseau, M. Indigenous knowledge and values in planning for sustainable forestry: Pikangikum First Nation and the Whitefeather Forest Initiative. *Ecology and Society* **2008**, *13*.
27. Berkes, F. Evolution of co-management: role of knowledge generation, bridging organizations and social learning. *Journal of environmental management* **2009**, *90*, 1692–1702.
28. Berkes, F. *Sacred ecology*; 3rd ed.; Routledge: New York, 2012;

29. Armitage, D.; Plummer, R. Adapting and Transforming: Governance for Navigating Change. *Adaptive Capacity and Environmental Governance* **2010**, 287–302.
30. Castleden, H.; Martin, D.; Cunsolo, A.; Harper, S.; Hart, C.; Sylvestre, P.; Stefanelli, R.; Day, L.; Lauridsen, K. Implementing Indigenous and Western Knowledge Systems (Part 2): “You Have to Take a Backseat” and Abandon the Arrogance of Expertise. *International Indigenous Policy Journal* **2017**, 8.
31. Kearney, J.; Berkes, F.; Charles, A.; Pinkerton, E.; Wiber, M. The role of participatory governance and community-based management in integrated coastal and ocean management in Canada. *Coastal Management* **2007**, 35, 79–104.
32. Webber, J.H.A. We are still in the age of encounter: Section 25 and a Canada beyond sovereignty. In *From Recognition to Reconciliation: Essays on the Constitutional Entrenchment of Aboriginal and Treaty Rights*; Macklem, P., Sanderson, D., Eds.; University of Toronto Press: Toronto, 2016; pp. 63–99 ISBN 978-1-4426-2885-4.
33. Napoleon, V.; Overstall, R. *Indigenous Laws: Some Issues, Considerations and Experiences*; Aboriginal Policy Research Consortium International (APRCi); 2007; p. 19;.
34. Kirby, A. *Building Indigenous Enforcement Authority Over Marine Territories*; Coastal First Nations / Coastal Stewardship Network / West Coast Environmental Law, 2017; p. 39;.
35. Napoleon, V.; Friedland, H. An inside job: engaging with indigenous legal traditions through stories. *McGill Law Journal* **2016**, 61, 725–754.
36. de la Torre-Castro, M.; Lindström, L. Fishing institutions: Addressing regulative, normative and cultural-cognitive elements to enhance fisheries management. *Marine Policy* **2010**, 34, 77–84.
37. Manuel, A.; Derrickson, G.C.R. *Unsettling Canada: A National Wake-Up Call*; Between the Lines: Toronto, 2015; ISBN 978-1-77113-177-3.
38. Napoleon, V. *Thinking About Legal Orders*; National Centre for First Nations Governance, 2007;
39. Borrows, J. Sovereignty’s Alchemy: An Analysis of *Delgamuukw v. British Columbia*. *Osgoode Hall Law Journal* **1999**, 537–596.
40. Brown, F.; Brown, Y.K. *Staying the Course, Staying Alive: Coastal First Nations Fundamental Truths: Biodiversity, Stewardship and Sustainability*; Biodiversity BC, 2009;
41. Gutiérrez, N.L.; Hilborn, R.; Defeo, O. Leadership, social capital and incentives promote successful fisheries. *Nature* **2011**, 470, 386–389.
42. Klain, S.; Beveridge, R.; Bennett, N. Ecologically sustainable but unjust? Negotiating equity and authority in common-pool marine resource management. *Ecology and Society* **2014**, 19.

43. Jentoft, S. Fisheries co-management as empowerment. *Marine policy* **2005**, 29, 1–7.
44. Bennett, N.J.; Kaplan-Hallam, M.; Augustine, G.; Ban, N.C.; Belhabib, D.; Brueckner-Irwin, I.; Charles, A.; Couture, J.; Eger, S.; Fanning, L.; et al. Coastal and Indigenous community access to marine resources and the ocean: A policy imperative for Canada. *Marine Policy* **2018**, 87, 186–193.
45. Low, M. Practices of sovereignty: negotiated agreements, jurisdiction, and well-being for Heiltsuk Nation. PhD, Resource Management and Environmental Studies, University of British Columbia: Vancouver, BC, 2018.
46. Ommer, R.E. *Coasts Under Stress: Restructuring and Social-Ecological Health*; McGill-Queen's University Press: Montreal and Kingston, 2007; ISBN 978-0-7735-7601-8.
47. Harris, D. *Fish, law, and colonialism: The legal capture of salmon in British Columbia*; University of Toronto Press: Toronto, 2001;
48. Harris, D. *Landing native fisheries: Indian reserves and fishing rights in British Columbia, 1849-1925*; Law and society series; UBC Press: Vancouver, 2008; ISBN 978-0-7748-1419-5.
49. Harris, C. Making Native Space: Colonialism. *Resistance and Reserves in British Columbia (Victoria: University of British Columbia Press, 2003)* **2002**.
50. Newell, D. *Tangled Webs of History: Indians and the Law in Canada's Pacific Coast Fisheries*; University of Toronto Press: Toronto ; Buffalo, 1993; ISBN 978-0-8020-7746-2.
51. Harris, D.; Millerd, P. Food Fish, Commercial Fish, and Fish to Support a Moderate Livelihood: Characterizing Aboriginal and Treaty Rights to Canadian Fisheries. *Arctic Review on Law and Politics, Vol. 1, pp. 82-107, 2010* **2010**.
52. McMillan, L.J.; Prosper, K. Remobilizing netukulimk: indigenous cultural and spiritual connections with resource stewardship and fisheries management in Atlantic Canada. *Rev Fish Biol Fisheries* **2016**, 26, 629–647.
53. Favaro, B.; Reynolds, J.D.; Côté, I.M. Canada's Weakening Aquatic Protection. *Science* **2012**, 337, 154–154.
54. Reynolds, J.D.; Côté, I.M.; Favaro, B. Canada: A bleak day for the environment. *Nature* **2012**, 487, 171.
55. Hoehn, F. Back to the Future - Reconciliation and Indigenous Sovereignty after Tsilhqot'in. *U.N.B.L.J.* **2016**, 67, 109.
56. McGee, G.; Cullen, A.; Gunton, T. A new model for sustainable development: a case study of The Great Bear Rainforest regional plan. *Environ Dev Sustain* **2010**, 12, 745–762.

57. Coastal First Nations; Government of British Columbia Coastal First Nations Reconciliation Protocol Amending Agreement 2016.
58. Pinkerton, E.; Silver, J.J. Cadastralizing or coordinating the clam commons: Can competing community and government visions of wild and farmed fisheries be reconciled? *Marine Policy* **2011**, *35*, 63–72.
59. Price, K.; Roburn, A.; MacKinnon, A. Ecosystem-based management in the Great Bear Rainforest. *Forest Ecology and Management* **2009**, *258*, 495–503.
60. Frid, A.; McGreer, M.; Stevenson, A. Rapid recovery of Dungeness crab within spatial fishery closures declared under indigenous law in British Columbia. *Global Ecology and Conservation* **2016**, *6*, 48–57.
61. Claxton, N.X.; Simpson, L.B. ISTA SCIANEW, ISTA SXOLE “To Fish As Formerly”: The Douglas Treaties and the WSANCEC Reef-Net Fisheries. In *Lighting the Eighth Fire: The Liberation, Resurgence, and Protection of Indigenous Nations*; ARP Books: Winnipeg, 2008; pp. 47–58.
62. Gauvreau, A.; Lepofsky, D.; Rutherford, M.; Reid, M. “Everything revolves around the herring”: the Heiltsuk–herring relationship through time. *Ecology and Society* **2017**, *22*.
63. Murray, G.; King, L. First Nations Values in Protected Area Governance: Tla-o-qui-aht Tribal Parks and Pacific Rim National Park Reserve. *Human Ecology* **2012**, 1–11.
64. Bavinck, M.; Gupta, J. Legal pluralism in aquatic regimes: a challenge for governance. *Current Opinion in Environmental Sustainability* **2014**, *11*, 78–85.
65. Jentoft, S.; Bavinck, M.; Johnson, D.S.; Thomson, K.T. Fisheries co-management and legal pluralism: how an analytical problem becomes an institutional one. *Human Organization* **2009**, *68*, 27–38.
66. Hilland, A. Extinguishment by extirpation: The Nuxalk eulachon crisis. Master of Laws, University of British Columbia: Vancouver, 2013.
67. Moody, M. Eulachon past and present. Master of Science, University of British Columbia: Vancouver, 2008.
68. Beveridge, R.; Moody, M.; Pauly, B.; Snxakila, C.T.; Murray, G.; Darimont, C.T. Paper 2 - The Nuxalk Sputc Project process: applying an Indigenous methodology in support of local eulachon management authority. In *RACHELLE BEVERIDGE PHD DISSERTATION - IP*; University of Victoria: Victoria, 2019.
69. Sputc Project Team *Alhqulh ti Sputc (The Eulachon Book)*; Nuxalk Stewardship Office: Bella Coola, 2017;

70. Beveridge, R.; Moody, M.; Snxakila, C.T.; Murray, G.; Pauly, B.; Darimont, C.T. Paper 3 - Indigenous knowledges, Indigenous authority: Alhquh ti Sputc and the respectful representation Nuxalk eulachon knowledges. In *RACHELLE BEVERIDGE PHD DISSERTATION*; Victoria, B.C., 2019.
71. Adams, M.S.; Carpenter, J.; Housty, J.A.; Neasloss, D.; Paquet, P.C.; Service, C.; Walkus, J.; Darimont, C.T. Toward increased engagement between academic and indigenous community partners in ecological research. *Ecology and Society* **2014**, *19*.
72. Castleden, H.; Sloan Morgan, V.; Lamb, C. "I spent the first year drinking tea": Exploring Canadian university researchers' perspectives on community-based participatory research involving Indigenous peoples. *The Canadian Geographer / Le Géographe canadien* **2012**, *56*, 160–179.
73. Canadian Institutes of Health Research; Natural Sciences and Engineering Research Council of Canada; Social Sciences and Humanities Research Council of Canada *Tri-council policy statement: ethical conduct for research involving humans* 2014; 2014; ISBN 978-1-100-25473-9.
74. Schnarch, B. Ownership, control, access, and possession (OCAP) or self-determination applied to research: A critical analysis of contemporary First Nations research and some options for First Nations communities. *International Journal of Indigenous Health* **2004**, *1*, 80.
75. Louis, R.P. Can You Hear Us Now? Voices from the Margin: Using Indigenous Methodologies in Geographic Research. *Geographical Research* **2007**, *45*, 130–139.
76. Kirkness, V.J.; Barnhardt, R. First Nations and Higher Education: The Four R's—Respect, Relevance, Reciprocity, Responsibility. *Journal of American Indian Education* **1991**, *30*, 1–15.
77. Tobias, J.K.; Richmond, C.; Luginaah, I. Community-based participatory research (CBPR) with Indigenous communities: Producing respectful and reciprocal research. *Journal of Empirical Research on Human Research Ethics* **2013**, *8*, 129–140.
78. Christopher, S.; Saha, R.; Lachapelle, P.; Jennings, D.; Colclough, Y.; Cooper, C.; Cummins, C.; Eggers, M.J.; FourStar, K.; Harris, K.; et al. Applying Indigenous Community-Based Participatory Research Principles to Partnership Development in Health Disparities Research: *Family & Community Health* **2011**, *34*, 246–255.
79. Carlson, E. Anti-colonial methodologies and practices for settler colonial studies. *Settler Colonial Studies* **2016**, *7*, 496–517.
80. First Nations Information Governance Centre *Ownership, Control, Access and Possession (OCAP™): The Path to First Nations Information Governance (Paper)*; First Nations Information Governance Centre: Ottawa, 2014; ISBN 978-0-9879882-8-7.

81. Smith, L.T. *Decolonizing Methodologies: Research and Indigenous Peoples*; Zed Books, 1999; ISBN 978-1-85649-624-7.
82. Brown, L.; Strega, S. *Research as resistance: critical, indigenous and anti-oppressive approaches*; Canadian Scholars' Press, 2005; ISBN 978-1-55130-275-1.
83. Tuck, E.; Yang, K.W. Decolonization is not a metaphor. *Decolonization: Indigeneity, Education and Society* **2012**, 1, 1–40.
84. Kovach, M. *Indigenous Methodologies: Characteristics, Conversations, and Contexts*; University of Toronto Press, 2009; ISBN 978-1-4426-9712-6.
85. Kovach, M. Doing Indigenous methodologies - A letter to a research class. In *The Sage Handbook of Qualitative Research*; Denzin, N.K., Lincoln, Y.S., Eds.; SAGE Publications Ltd, 2017; pp. 214–234.
86. Wilson, S. *Research is Ceremony: Indigenous Research Methods*; Fernwood Publishing: Winnipeg, 2008; ISBN 978-1-55266-281-6.
87. Absolon, K.; Willett, C. Putting Ourselves Forward: Location in Aboriginal Research. In *Research As Resistance: Critical, Indigenous, and Anti-oppressive Approaches*; Brown, L., Strega, S., Eds.; Canadian Scholars' Press: Toronto, 2005; pp. 97–126.
88. Irlbacher-Fox, S. Traditional knowledge, co-existence and co-resistance. *Decolonization: Indigeneity, Education & Society* **2014**, 3, 145–158.
89. Nicholls, R. Research and Indigenous participation: critical reflexive methods. *International Journal of Social Research Methodology* **2009**, 12, 117–126.
90. Latulippe, N. Bridging parallel rows: Epistemic difference and relational accountability in cross-cultural research. *International Indigenous Policy Journal* **2015**, 6.
91. DellaSala, D.A.; Moola, F.; Alaback, P.; Paquet, P.C.; Schoen, J.W.; Noss, R.F. Temperate and Boreal Rainforests of the Pacific Coast. In *Temperate and Boreal Rainforests of the World: Ecology and Conservation*; DellaSala, D.A., Ed.; Island Press: Washington, 2011; pp. 42–80 ISBN 978-1-59726-676-5.
92. McIlwraith, T.F. *The Bella Coola Indians*; University of Toronto Press: Toronto, 1992; ISBN 978-0-8020-2820-4.
93. Kennedy, D.; Bouchard, R.T. Northern Coast Salish. In *Handbook of North American Indians*; Smithsonian Institution: Washington, 1990; Vol. 7, pp. 441–452.
94. Wild, P. *One River, Two Cultures: A History of the Bella Coola Valley*; Harbour Publishing: Madeira Park, BC, 2004;

95. Garibaldi, A.; Turner, N. Cultural Keystone Species: Implications for Ecological Conservation and Restoration. *Ecology and Society* **2004**, *9*.
96. Beveridge, R.; Pauly, B.; Moody, M.; Snxakila, C.T.; Murray, G.; Darimont, C.T. Paper 1: Understanding the impacts of (de)colonised environmental management: a case study of eulachon and Nuxalk well-being. In *RACHELLE BEVERIDGE PHD DISSERTATION*; Victoria, B.C., 2019.
97. Haggan, N. *The case for including the cultural and spiritual values of eulachon in policy and decision-making*; Vancouver, B.C., 2010; p. 44;.
98. Levesque, C.A.; Therriault, T.W. *Information in Support of a Recovery Potential Assessment of Eulachon (Thaleichthys pacificus) in Canada*; Research Document 2011/101; Fisheries and Oceans Canada, 2011; p. 79;.
99. Schweigert, J.; Wood, C.; Hay, D.; McAllister, M.; Boldt, J.; McCarter, B.; Therriault, T.W.; Brekke, H. *Recovery Potential Assessment of Eulachon (Thaleichthys pacificus) in Canada*; Fisheries and Oceans Canada, 2012; p. 121;.
100. Turner, N.J.; Berkes, F.; Stephenson, J.; Dick, J. Blundering Intruders: Extraneous Impacts on Two Indigenous Food Systems. *Human Ecology* **2013**.
101. Committee on the Status of Endangered Wildlife in Canada *COSEWIC Assessment and Status Report on the Eulachon (Thaleichthys pacificus), Nass - Skeena Rivers population, Central Pacific Coast population, Fraser River population in Canada.*; COSEWIC: Ottawa, 2011; ISBN 978-1-100-18708-2.
102. *Eulachon Integrated Fisheries Management Plan Summary: Fraser River 2019*; Fisheries and Oceans Canada, 2019;
103. Senkowsky, S. A Feast to Commemorate—and Mourn—the Eulachon. *BioScience* **2007**, *57*, 720–720.
104. Housty, W.G.; Noson, A.; Scoville, G.W.; Boulanger, J.; Jeo, R.M.; Darimont, C.T.; Filardi, C.E. Grizzly bear monitoring by the Heiltsuk people as a crucible for First Nation conservation practice. *Ecology and Society* **2014**, *19*, 70.
105. Valverde, M. Jurisdiction and Scale: Legal ‘Technicalities’ as Resources for Theory. *Social & Legal Studies* **2009**, *18*, 139–157.
106. Friedland, H.; Napoleon, V. Gathering the threads: developing a methodology for researching and rebuilding indigenous legal traditions. *Lakehead Law Journal* **2015**, *1*, 29.
107. von der Porten, S. Canadian indigenous governance literature: A review. *AlterNative: An International Journal of Indigenous Peoples* **2012**, *8*, 1–14.

108. McGregor, D. Coming Full Circle: Indigenous Knowledge, Environment, and Our Future. *The American Indian Quarterly* **2004**, *28*, 385–410.
109. McGregor, D. Linking traditional knowledge and environmental practice in Ontario. *Journal of Canadian Studies* **2009**, *43*, 69–100.
110. Kendrick, A.; Manseau, M. Representing Traditional Knowledge: Resource Management and Inuit Knowledge of Barren-Ground Caribou. *Society & Natural Resources* **2008**, *21*, 404–418.
111. Gadamus, L.; Raymond-Yakoubian, J.; Ashenfelter, R.; Ahmasuk, A.; Metcalf, V.; Noongwook, G. Building an indigenous evidence-base for tribally-led habitat conservation policies. *Marine Policy* **2015**, *62*, 116–124.
112. Mulrennan, M.E.; Mark, R.; Scott, C.H. Revamping community-based conservation through participatory research. *The Canadian Geographer / Le Géographe canadien* **2012**, *56*, 243–259.
113. Pinkerton, E.; Angel, E.; Ladell, N.; Williams, P.; Nicolson, M.; Thorkelson, J.; Clifton, H. Local and regional strategies for rebuilding fisheries management institutions in coastal British Columbia: what components of comanagement are most critical? *Ecology and Society* **2014**, *19*.
114. Simpson, L.B. *Lighting the Eighth Fire - The Liberation, Resurgence, and Protection of Indigenous Nations*; ARP Books: Winnipeg, 2008;
115. Purvis, T. Sovereign Authority and the Limits of Constitutional Democracy: The Case of Indigenous Peoples in Canada. *Oñati Socio-legal Series* **2019**, *27*.
116. Nadasdy, P. *Hunters and bureaucrats: power, knowledge, and aboriginal-state relations in the southwest Yukon*; UBC Press, 2004;
117. Spak, S. The position of indigenous knowledge in Canadian co-management organizations. *Anthropologica* **2005**, 233–246.
118. Capistrano, R.C.G.; Charles, A.T. Indigenous Rights and Coastal Fisheries: A Framework of Livelihoods, Rights and Equity. *Ocean & Coastal Management* **2012**.
119. Davidson-Hunt, I.J.; Michael O’Flaherty, R. Researchers, Indigenous Peoples, and Place-Based Learning Communities. *Society & Natural Resources* **2007**, *20*, 291–305.
120. Von Der Porten, S.; De Loë, R.C.; McGregor, D. Incorporating Indigenous Knowledge Systems into Collaborative Governance for Water: Challenges and Opportunities. *Journal of Canadian Studies* **2016**, *50*, 214–243.
121. von der Porten, S.; de Loë, R.C. How Collaborative Approaches to Environmental Problem Solving View Indigenous Peoples: A Systematic Review. *Society & Natural Resources* **2014**, *27*, 1040–1056.

122. Armitage, D.; Plummer, R.; Berkes, F.; Arthur, R.I.; Charles, A.T.; Davidson-Hunt, I.J.; Diduck, A.P.; Doubleday, N.C.; Johnson, D.S.; Marschke, M.; et al. Adaptive co-management for social–ecological complexity. *Frontiers in Ecology and the Environment* **2008**, *7*, 95–102.
123. Singleton, S. Native People and Planning for Marine Protected Areas: How “Stakeholder” Processes Fail to Address Conflicts in Complex, Real-World Environments. *Coastal Management* **2009**, *37*, 421–440.
124. Jones, R.; Rigg, C.; Lee, L. Haida Marine Planning: First Nations as a partner in marine conservation. *Ecology and Society* **2010**, *15*, 12.
125. Simpson, L.B. Nishnaabeg anticapitalism. In *As we Have Always Done: Indigenous Freedom Through Radical Resistance*; University of Minnesota Press: Minneapolis, 2017; pp. 71–82.

PART D: CONCLUSION

This conclusion is comprised of two Chapters. In **Chapter 9 (Contributions and conclusions)**, I revisit what I set out to do in this work, for whom, and provide a brief summary of each of the preceding papers. I then speak to my contributions and conclusions in terms of decolonising health equity and health assessment frameworks, engagement and representation of Indigenous knowledges, and environmental management policy and practice. In **Chapter 10 (Limitations and Learnings)**, I adapt Elizabeth Carlson's anti-colonial research framework (E. Carlson, 2016) to structure a reflection on methodological (and personal) limitations and learnings.

9. Contributions and conclusions

Revisiting the big picture: what did I set out to do?

The coastal landscape currently known as British Columbia, Canada represents a complex and rapidly evolving site of collaboration, negotiation, and conflict in environmental management. In the face of ongoing frustration with management processes and dissatisfaction with related outcomes, BC First Nations are asserting inherent and constitutional rights to manage ancestral lands and waters by articulating and applying related laws, responsibilities, and practices both within and beyond state institutions (Kirby, 2017; Kotaska, 2013; Low, 2018; Thielmann, 2012; von der Porten et al., 2015). Through a case study of Nuxalk *sputc* or eulachon (*Thaleichthys pacificus*), I positioned settler-colonialism and its remedies, resurgence and self-determination, as the fundamental determinants of Indigenous health and well-being (see **Figure 2**).

Highlighting Indigenous peoples' enduring knowledges and unceded authorities in environmental management as a mediator of this relationship, I aimed to uphold situated, community-held Indigenous knowledge systems, and related management rights and

responsibilities. Focusing on the Nuxalk *Sputc Project*, I took particular interest in how a resurgent research process re-centred Nuxalk voices, priorities, knowledges, methodologies, and leadership - and its implications for Nuxalk management authority, health and well-being.

As a focal point for this work, Nuxalk eulachon served as a representative of Indigenous lands and waters, while the *Sputc Project* served as an example of resurgent Indigenous environmental management and contested jurisdiction. In this case, state management in the marine environment failed to prevent functional eulachon extirpation in Nuxalk territory (Moody, 2008). As detailed in **Paper 1**, the disappearance of *sputc* symbolizes a broken way of life for many *Nuxalkmc*, connected to the experience and embodiment of settler-colonialism. Before their loss, *sputc* were still a Nuxalk fish, untouched by state regulation or enclosure; as detailed in **Paper 4**, *de facto* management authority has therefore been uninterrupted in areas where *Nuxalkmc* (Nuxalk people) claim continued jurisdiction. Just as protection of coastal First Nations' herring is "tantamount with Indigenous resurgence" (von der Porten et al., 2019, p. 8), assertion of eulachon jurisdiction is an expression of cultural survival, resurgence, self-determination, wealth, and well-being. These relationships are depicted in **Figure 4**, which shows how *sputc* mediate the interactions between Indigenous health, resurgence, management, and knowledge systems, and how dispossession or decolonization/reconnection mediate the relationships between the land and *Nuxalkmc* responsibilities, roles, cultural practices, and identities, including those related to *sputc*.

In reflecting on the contributions of this work, I return to the image of a tree described in **Figure 2** and the decolonising health equity model elaborated in **Chapter 2**, in which I proposed that processes and institutions of governance, both settler-colonial and Indigenous, constitute the *roots* of the tree, while (human) health and well-being constitute the *leaves*. In this work, I

focused on how the roots exert influence through the *core* or trunk of (de)colonized environmental management, the *branches* of disconnection, dispossession, social-ecological impacts, and resurgence, and the *stems* of the relationships between people, places, and practices, which constitute identity and culture. Informed by Indigenous resurgence scholars, I posited that supporting Indigenous health and well-being requires re-placing and regenerating *knowledges*, *relationships*, and *practices*, both through everyday acts of decolonization and resurgence, and through broad systemic and relational changes.

Applying a community-engaged approach informed by Indigenous perspectives, this work related experiences, relationships, and learnings over four years of observation, participation, and leadership in the Nuxalk *Sputc Project*. In practical terms, I was conducting academic research within (and indeed, at times, “on”) an Indigenous research project. Initiated to gather, document, articulate, and share Nuxalk knowledges about eulachon values and practices, the *Sputc Project* provided an apt and potent context to deepen my research questions and relationships, which were concerned with: (1) characterising Nuxalk understandings of how eulachon and their management support past and present well-being; (2) describing the *Sputc Project* process; (3) specifying the challenges of documenting Indigenous knowledge systems; (4) describing Nuxalk stewardship institutions; and (5) situating the *Sputc Project* in the larger social-ecological and governance context. Reflecting these objectives (represented by four whole circles in **Figure 1**), I provide a summary of the papers’ main conclusions below. In the following section, I elaborate on their overlap and broader contributions as they relate to (a) decolonising health equity models, (b) health outcomes assessments, and Indigenous peoples’ and knowledges’ role in (c) environmental research and (d) environmental management.

Conclusions (papers summary)

As illustrated in **Figure 1**, the *Sputc Project* served as a focal point for each of the four papers presented herein, enabling interrogation of the relationships between Indigenous health and well-being, research methodologies, knowledges, and management authority. Written from my particular position as a non-Nuxalk researcher and project coordinator (see **Chapter 7 – Research methods**), the four focal papers were developed and written in partnership with Nuxalk stewardship director, Megan Moody. Each draws on different segments of inter-related theories and literatures, pulling on a particular thread of the larger web of knowledge generated through this work.

In **Paper 1**, I sought to establish the connection of eulachon and their management to Nuxalk health and well-being in this case study. Addressing *research objective 1*, I demonstrated how eulachon support every aspect of *Nuxalkmc* well-being, detailing three stages of *Nuxalkmc*'s relationship to eulachon (abundance, collapse, and renewal). In so doing, I showed how the effects of dispossession or reconnection are mediated by cultural knowledges, practices, relationships, values, and roles, responsibilities, and identities, and pointed to the role of Indigenous leadership and self-determination in environmental management in promoting Indigenous well-being.

Turning to research methodology in **Paper 2**, I sought to address *research objective 2* by examining how explicitly engaging Nuxalk knowledge systems informed the *Sputc Project* process. Interrogating the role of critical, decolonising, Indigenous theories in the elaboration of particular Indigenous research methods in environmental management and beyond, I suggested that research approaches that re-center Indigenous people as knowledge-holders, decision-makers, and experts is key to their respectful engagement.

In *Paper 3*, I summarized the form and content of *Alhqulh ti Sputc* (The Eulachon Book) (Sputc Project Team, 2017). Addressing *research objective 3*, I considered how the project respectfully articulated and represented Nuxalk knowledges in order to retain relational accountability and strengthen Nuxalk management authority. I emphasized a relational notion of IK that resists integration and requires interpretation by Indigenous knowledge-holders, suggesting that Indigenous people (vs. abstracted knowledges) should be involved in decision-making.

In *Paper 4*, I presented Nuxalk eulachon as a case of contested jurisdiction in environmental management, seeking to show how the *Sputc Project* strengthened Nuxalk management authority by upholding ancestral knowledges, protocols, and practices, including community-based authorities. Addressing *research objective 4*, I detailed the practical management priorities that arose through the project process. Addressing *research objective 5*, I suggested that eulachon present an opportunity for the state to engage in forward-thinking management policy that enables Indigenous-led decision-making, and that so doing has the potential to support Indigenous health and well-being in myriad ways.

Contributions

As a submission to the interdisciplinary *Social Dimensions of Health* program, this work bridges a range of disciplines and scholarship, including determinants of Indigenous health and well-being, research methodologies and processes, knowledge systems and their representation, Indigenous resurgence, (de)colonization, Indigenous governance, and environmental management (see **Figures 1 and 4**). Beyond the realities of settler-colonialism, the disciplines of health equity and environmental management share other intersecting macro-level pressures, including globalised neoliberal political economies (Bowie, 2013; Pinkerton, 2015; Pinkerton & Davis, 2015) and socio-economic restructuring (Dolan et al., 2005; Ommer, 2007), and related

drivers of change (e.g. environmental change). Important parallels between the determinants of health equity and those of environmental management, sustainable development, and community resilience point to the possibility of important synergies in working across sectors in the face of complex issues and “wicked problems” like environmental degradation, systemic oppression, and climate change, whose solutions may lie in the realms of interactive governance and governability (Berkes, 2012a; Bowen et al., 2011; Bunch, Morrison, Parkes, & Venema, 2011; Campbell et al., 2016; Jentoft & Chuenpagdee, 2009; Khan & Neis, 2010). As such, these fields have much to learn from each other, and much to gain from their rapprochement.

In keeping with the knowledge systems engaged here, my contributions are less about filling gaps in the literature as building relationships or reinforcing bridges between disciplines, and between epistemic worlds. Below, I detail contributions as they relate to the major areas of literature engaged in this work, roughly mirroring the four papers but also indicating connections and areas of overlap between them (see **Figure 1**) as they related to decolonising: (a) health equity (b) health assessments in environmental management (c) research methods and representation of Indigenous knowledges (d) environmental management policy and practice. In particular, sections (a) and (b) emphasize the connections between the disciplines of health determinants and environmental management, while sections (c) and (d) serve to bridge Indigenous and western knowledge systems in research and practice.

Decolonising health equity models

In this work, I provided insights from environmental management and decolonization literatures to current health equity models, engaging key scholarship that positions settler-colonialism as the fundamental, self-perpetuating determinant of Indigenous health and related inequities (Alfred,

2009; H. Brown et al., 2012; M. Greenwood et al., 2015). My original intention was to explore how (de)colonial environmental management affects Indigenous health and well-being by emphasizing specific processes, practices, and mechanisms of action and impact (e.g. dispossession, exclusion, marginalization, privatization, enclosure or resurgence, self-determination). Seeking to link the institutional to the everyday, the political to the personal, this work bridged both scales and epistemologies. A similar expanse is evident in the work of resurgence scholars informed by Indigenous theories (Asch et al., 2018; Corntassel, 2012; Corntassel et al., 2018; Simpson, 2008a, 2017a), as well as in health equity frameworks informed by complexity and intersectionality theories (Hankivsky, 2011; Levac et al., 2018; McGibbon & McPherson, 2011; Osborne et al., 2019). With an emphasis on Indigenous knowledges as “ways of being”, the former emphasizes process, action, and practice as key to Indigenous resurgence. From a critical standpoint, the latter perspectives shift attention away from particular manifestations of a given power structure (e.g. well-being outcomes, management practices) toward *how* systems of power and privilege are constituted, produced, governed, and organized (Dhamoon & Hankivsky, 2011). In both cases, attention to knowledges systems and epistemologies underscore the “why” behind the “how”, underlining the impact of whose knowledges, values, and authorities are heard, respected, and practiced (L. Brown & Strega, 2005).

Through the example of Nuxalk eulachon, I focused on - and problematized - *settler-colonialism* as a form of governance that has unjustly impacted Indigenous peoples. More specifically, I took interest in the processes and structures that have created dispossession and disconnection from ancestral lands and waters, and in how, by revitalising Indigenous knowledges and re-asserting lands-based management *authority*, the processes of decolonization and resurgence

might bring about “the repatriation of Indigenous land and life” (Tuck & Yang, 2012, p. 1). Recognising that (de)colonization is fundamentally about land or territory (Alfred, 1999; Simpson, 2008a; Tuck & Yang, 2012), I focused on the management of ancestral lands and waters as a disconnecting expression of settler-colonialism or a reconnecting expression of Indigenous resurgence, each with implications for the health and well-being of Indigenous peoples. In this context, jurisdiction is where the rubber meets the road in terms of action and impact related to management knowledges and authorities (Pasternak, 2017); just as decolonization and resurgence are responses to settler-colonialism, so assertion of authority and jurisdiction are answers to dispossession.

As detailed in **Chapter 2**, determinants of Indigenous health “beyond the social”, including connection to land, spirituality, culture, and identity, are increasingly recognized in mainstream academia (M. Greenwood et al., 2015). However, while recent health equity frameworks highlight the role of settler-colonialism in (re)producing health inequities (Kent et al., 2017; Loppie Reading, 2015), I have not encountered any frameworks explicitly joining literatures on *de*colonization or resurgence and health equity. Further, beyond those related to the *Indian Act*, the specific processes that (re)produce dispossession (i.e. environmental management) are rarely identified in Indigenous health literatures (Alfred, 2009; Richmond, 2015). In the context of the west coast, Evelyn Pinkerton’s extensive work on enclosure and privatization of fisheries and their impacts is instructive in understanding some of these processes (Pinkerton, 2015; Pinkerton et al., 2014; Pinkerton & Davis, 2015; Pinkerton & Edwards, 2009; Pinkerton & Silver, 2011), as is Douglas Harris’ and Cole Harris’ historical work on the original enclosure of First Nations fisheries (C. Harris, 2002; D. Harris, 2001, 2008). Diane Newell similarly details how federal and provincial regulations affected Indigenous fishing practices and participation, undermining

subsistence economies (Newell, 1993). However, none focuses their work on Indigenous health, decolonization, or resurgence.

In this respect, this work contributed three important elements to existing models related to the determinants of Indigenous health and health equity (Kent et al., 2017; Loppie Reading, 2015). First, I underlined the importance of environmental management as a core health determinant (Donatuto et al., 2016; Loppie Reading & Wien, 2010) and pointed to dispossession (and reconnection) as mediators of its impact on Indigenous health (Alfred, 2009). Second, I suggested locating any decolonising Indigenous health model in fundamental and explicit relationship to *land*. Third, following resurgence scholars' emphasis on the role of knowledges in decolonization, I posited knowledge systems or knowledges and their holders as the *sap* connecting different elements of the model. Below, I elaborate on each of these contributions.

In this work, the case of Nuxalk eulachon served as an example of how the impacts of settler-colonialism or resurgent Indigeneity are *mediated by environmental management institutions*. I demonstrated how a particular settler-colonial management impact (loss of eulachon) affected Nuxalk well-being, and how resurgent management knowledges and practices might counter these impacts to promote well-being. While public health scholars emphasize the role of intersectoral policy and practice in the realms health and health equity (Raphael, 2009; Richmond & Cook, 2016), environmental management is rarely included under this umbrella. Meanwhile, though Indigenous health researchers highlight the importance of connection to land and related cultural practices for Indigenous health, upstream or institutional mediators of these elements are relatively marginal. In *Paper 1*, I showed how revitalizing cultural practices and upholding ancestral management knowledges at the community level may play a role in countering the health impacts of eulachon loss – even in the absence of eulachon. In *Papers 1*

and **4**, I joined a relatively small group of scholars (Alfred, 2009; H. Brown et al., 2012; Richmond, 2015; Richmond & Ross, 2009) in highlighting particular *instruments and mechanisms* of colonial environmental management in reproducing Indigenous dispossession and exclusion. In terms of **Figure 2**, this work served to link the *core* (environmental management institutions) to the *stems and branches* of the tree. I showed how the effects of dispossession are exacerbated by ongoing fisheries policies (e.g. DFO shrimp trawl openings, SARA), and how resurgence and reconnection are mediated by cultural knowledges and practices (e.g. fishing, canoeing, cooking, grease-making), relationships and connections (e.g. to lands and waters, community, and ancestors), roles, responsibilities, and identities (e.g. fisherman, grease-maker, guardian), and values (e.g. *putl'alt*, for those not yet born).

Positioning environmental management as a determinant of health “beyond the social” constitutes an important contribution to the decolonization of health equity theories, in that it *re-centres land* and its control as an foundation of Indigenous well-being (Alfred, 1999; Simpson, 2014, 2017a; Tuck & Yang, 2012; Wildcat et al., 2014). Given that environmental management decision-making processes have real consequences on the ground, and in the lives of Indigenous people, any decolonising health equity theory must therefore be grounded in place, with environmental management be within its view. Reflecting this priority, in **Figure 4**, *land* is located on the very outside ring, holding the relationship of all else, variously mediated by the structures and relations of settler-colonialism and/or Indigeneity and related knowledges, practices, and people. Reflecting a cyclical or holistic perspective, land is also located on the very inside of the circle, impacted by management priorities, people, and practices. In **Figure 2**, the tree of health equity is rooted on the land. This orientation responds in part to Chantelle Richmond’s (2015) suggestion that consideration of the ways that land, identity, knowledge, and

health are interrelated are required to understand “how indelibly and intricately the land is linked to the practice of everyday living, including the acquisition and sharing of Indigenous knowledge” (Corn tassel, 2012; Richmond, 2015, p. 57).

In this work, I represented knowledges or knowledge systems as *sap* in the proposed health equity model (**Figure 2**). Like sap, knowledges run both up and down the tree, with nutritive and communicative qualities, contributing movement and flow to an otherwise stagnant model. Focusing on the articulation and representation of management knowledges in this work provided a perspective that crossed scales, connecting personal knowledges and practices to macro-scale institutions and relations of power. Emphasis in related literature tends to focus on movement of impacts from the roots to the leaves, including the impacts of settler-colonialism on dispossession (Alfred, 2009; H. Brown et al., 2012; Pasternak, 2017; Simpson, 2014), or ecological degradation on health (Cunsolo Willox et al., 2011; Donatuto et al., 2011). In *Paper I*, I suggested that it might also be instructive to consider the effects of Indigenous health on governance capacity, or of reconnection on Indigenous management practices. Emphasizing complex interrelationships (see **Figure 4**) this work got to the roots of health inequities, connecting the experiences of Indigenous people, knowledges, meanings, values, priorities, and stories, to upstream regulatory, normative, relational, and cognitive-cultural institutions, power relations, resurgences and transformations (Artelle et al., 2018; Borrows & Tully, 2018; Chuenpagdee & Song, 2012; Jentoft & Chuenpagdee, 2009).

In keeping with theories of complexity and intersectionality, and complementing Indigenous notions of interdependence, this suggests not only a shift to positive and preventive perspectives, but also a potential reversal in agency, underlining how resurgence might begin not with political self-determination, but at the grassroots level, at the scale of everyday practices and embodiment

of knowledges and responsibilities (Corntassel, 2012; Corntassel et al., 2018; Simpson, 2017a). Just as systemic inequities are embodied at the individual level (Adelson, 2005), Leanne Betasamosake Simpson indicates that Indigenous bodies may be considered symbols of Indigenous orders of government that continually regenerate network of governance by enacting them in everyday practices (Simpson, 2017a). Simpson also makes the connection between the continued existence of salmon and the survival of coastal Indigenous governance systems. In a similar way, through this work, Nuxalk eulachon became a symbol of a larger, complex network of relationships connecting Indigenous management, governance, and health. What was particularly interesting in this context was that Nuxalk expressions of cultural and political resurgence related to eulachon were meaningful even in the fishes' absence. Indigenous knowledges can persist despite ecological depletion if people continue to enact Indigenous ways of being, resisting dispossession and moving toward health (Simpson, 2017a).

Decolonising health outcomes assessments

In ***Paper 1***, I highlighted (dis/re)connecting practices, knowledges, roles, values, and relationships as mediators of the relationship between environmental management and well-being. These findings are reflected in well-being assessment frameworks developed in partnership with coastal First Nations of the Salish Sea, which seek to inform locally-determined processes for well-being research related to resource management (Amberson et al., 2016; Biedenweg et al., 2016; Donatuto et al., 2016). These frameworks move toward capturing the impacts of depleted environments on First Nations' relationships to ancestral lands and waters, community, and culture, as well as the importance of self-determination and participation in decision-making. In particular, I find a great deal of substantive congruence in the health indicators developed by Jaime Donatuto and colleagues (Donatuto et al., 2016). Originally used

to assess the impacts of contaminated seafoods, this framework includes the domains of cultural use, community connection, education, natural resource security, self-determination, and resilience/balance. Each indicator is accompanied by a set of explanatory attributes that successfully capture complex Salishan notions of well-being, interweaving spirituality and connection to land throughout. The congruence of these indicators with the findings in *Paper 1* is testament to the validity of both studies, and suggests that Donatuto's framework and methods might inform future well-being indicator and assessment work by *Nuxalkmc* or other coastal Nations.

Indeed, while framing environmental management as a determinant of health may be new to some health researchers, the idea of well-being as a social outcome is well known to many environmental management scholars. In this arena, there are increasing critiques that Indigenous values are not captured by standard health assessment frameworks, which tend to demonstrate a lack of engagement with the upstream political-ecological processes underlying social-ecological conditions (e.g. focusing on pollution or climate change impacts, but not their underlying causes) and are inconsistent in their characterization of upstream factors related to Indigenous health.

While some assessment frameworks include the domains of governance or self-determination, the definitions, uses, and scales of related terms vary widely. For example, recent assessment frameworks include the attributes of trust in government, public services and health programming, freedom and voice, sovereignty, legitimacy, transparency, access and enforcement, power and political participation or decision-making (Amberson et al., 2016; Biedenweg, 2016; Breslow et al., 2016; Donatuto et al., 2016; Gregory et al., 2016).

Many recognize that the disconnect between standard health research and assessment frameworks and Indigenous peoples' lived experiences of environmental relationships points to

the importance of developing local definitions of well-being (Amberson et al., 2016; Biedenweg et al., 2016; Donatuto et al., 2016; Gregory et al., 2016; Jernigan, 2015). These scholars recommend that any formal assessment of Indigenous well-being be conducted in collaboration with Indigenous communities, beginning with an appropriate and considered community engagement process defining scope, scale, and priorities (Biedenweg & Gross-Camp, 2018; Biedenweg et al., 2016; Breslow et al., 2016; Browne & Stout, 2012; Donatuto et al., 2016; Richmond & Cook, 2016). As elaborated in *Papers 1* and *2*, internal definition of well-being might employ community-engaged practices based in local perspectives and methods, epistemologies and language, including the use of narrative, symbolic, relational methods to research and represent complex Indigenous well-being values (Biedenweg & Gross-Camp, 2018; Jernigan, 2015).

However, while management plans and reconciliation frameworks often identify human well-being as a goal, related theory and processes linking management policy and well-being outcomes are poorly defined (Low, 2018). My theoretical framework, explicitly focusing on environmental management processes and knowledges as they relate to Indigenous well-being may be instructive to practitioners interested in considering downstream implications of environmental management, including those involved in health and well-being assessments related to social-ecological change, environmental depletion, resource development, and environmental policy. Better grounding in theory such as that referenced by health equity researchers could help inform and ground this work.

Decolonising engagement and representation of Indigenous knowledges in research and practice

In this work, I engaged complimentary conversations in environmental research and management practice regarding the role of settler and Indigenous knowledge systems (very broadly

conceived) (Kovach, 2009c), and how they inform methods of knowledge solicitation, documentation, articulation, integration and representation. Through the example of eulachon management, I focused on how the engagement of knowledge systems (and related methodologies) can maintain or change the structural and relational processes that (re)generate health inequities. Explicitly decolonising in their intents, *Papers 2 and 3* delved into the methods and outcomes of the *Sputc Project*, exploring the role of Indigenous methodologies and knowledges (respectively) in promoting and communicating values, practices, and relationships essential to Nuxalk well-being. In terms of **Figure 2**, I highlighted the *sap* of the tree (knowledge systems) and its *trunk* (environmental management knowledges, practices, values, and institutions), and their roles in mediating the impacts of (de)colonising governance or resurgence on health.

As detailed in **Chapter 5 (Research theory and approach)**, assumptions about the nature of knowledge and processes related to its (re)generation affect power dynamics in both research and decision-making (L. Brown & Strega, 2005; Nadasdy, 1999). Adopting the idea that “(h)ow is the theoretical intervention” (Simpson, 2017a, p. 18), in this work I highlighted that the (re)production and representation of environmental management knowledges reflect and reinforce the values and biases that inform management practice and affect health outcomes. For example, settler-colonial systems of environmental management expose underlying neoliberal values about the land as a resource to extract, while place-based and Indigenous principles of interdependence, reciprocity, and respect inform more sustainable management practices (Alfred, 2009; Artelle et al., 2018; King, 2004; Latulippe, 2015a; Manuel & Derrickson, 2017; Simpson, 2017a). In this work, I found that state fisheries mis-management played a role in in

exacerbating eulachon extirpation, while Nuxalk eulachon knowledges supported Nuxalk well-being, even in the absence of eulachon.

Attempting to “include” Indigenous knowledges or support Indigenous “participation”, both community-based research and collaborative management processes reproduce – to varying degrees – the power relations they seek to address by failing to fully engage underlying epistemologies and authorities (Castleden et al., 2017; de Leeuw et al., 2012; Hill et al., 2012; Muhammad et al., 2015; Nadasdy, 1999; Reo, Whyte, McGregor, Smith, & Jenkins, 2017; von der Porten, de Loë, et al., 2016). For example, in co-management contexts, different actors’ conceptions of “rights to” vs “responsibilities for” lands and waters affect management priorities (Castleden et al., 2017, p. 8), while consideration of Indigenous actors as “stakeholders” or Nations affect management process (Singleton, 2009; von der Porten & de Loë, 2014a). In well-intentioned research and management, IK continue to be marginalised, extracted, and integrated into frameworks and processes of western epistemological origin.

Through this work, I came to understand that *Indigenous knowledges are held by people, in places, through practices, in relationship* (Corntassel et al., 2018; McGregor, 2004; Simpson, 2017a; S. Wilson, 2008). This relational conception of IK implies that processes that sideline Indigenous people and knowledges constitute a form of dispossession, while those that re-centre Indigenous people and knowledges promote resurgence, reconnection, and self-determination. In **Paper 3**, I provided an example of relational knowledge (re)production, representation, and ownership by and for Indigenous people, as an alternative to IK extraction and integration. I described the form and content of Nuxalk eulachon knowledges represented *Alhqulh ti Sputc* – a unique and valuable contribution in its own right – and how the book was distributed, received,

and used by the community. This background was used to support an informed discussion of what was required to respectfully represent Nuxalk knowledges in this context. I attributed respectful representation of IK to: (1) engaging a conception of IK consistent with Indigenous knowledge systems and epistemologies; (2) upholding the principle of relational accountability; (3) foundations in community-driven processes and cultural practices; (4) utility to community members and leaders; and (5) challenging dominant (western) conceptions of IK as divorced from knowledge-holders. Engaging a relational notion of Indigenous knowledges (Latulippe, 2015b), this work joined others in emphasizing that Indigenous knowledges may not be extracted from their context in the lives of Indigenous people (McGregor, 2004; Simpson, 2014, 2017a; von der Porten et al., 2015; von der Porten, Lepofsky, et al., 2016). Ultimately, IK should be used and interpreted by Indigenous knowledge holders; it is the people (and not their knowledges) that need to be included in (or lead) research and management processes based in mutual respect (McGregor, 2009b, 2014; von der Porten et al., 2019; von der Porten, de Loë, et al., 2016). In *Paper 4*, I outlined how appropriate representation of eulachon knowledges for and by *Nuxalkmc* enabled community consensus around related management priorities, creating a foundation for local authority and legitimacy, as detailed below.

Recognising the interdependence of Indigenous knowledges, lands, and well-being, I echo Leanne Simpson in underlining that Indigenous resurgence requires revitalizing Indigenous knowledges “in our own way according to our own traditions” (Simpson, 2017a, p. 18). Indeed, “the survival of IK requires the protection of Indigenous peoples and ways of life” (Latulippe, 2015b, p. 123), including self-determined decision-making in environmental management (McGregor, 2004). Similarly, Sarah de Leeuw and colleagues (2012) emphasize that:

... calls by Indigenous leaders and scholars not only to exercise control and ownership over research, but also to orient research toward self-determination... are fundamentally grounded in a desire to strengthen relations within and beyond Indigenous communities, including relations with land and culture. (de Leeuw et al., 2012, p. 189)

In this spirit, in ***Paper 2***, I explored how engaging Indigenous knowledges requires a reflexive and purposeful consideration of Indigenous methodologies and/or decolonising community-engaged research approaches. Beyond problematizing extractive and integrative methods, I sought to inform those who wish to strengthen and decolonize their research and management practices by respectfully engaging Indigenous knowledges and people. Indeed, while academic literature on community-based and Indigenous methodologies abounds, there is little practical guidance on choosing, distinguishing between, or combining the two.

When appropriate, engaging Indigenous methodologies can move researchers and decision-makers toward authentically and respectfully engaging Indigenous values and priorities, and ultimately, toward supporting Indigenous authority and oversight in the production, interpretation, articulation and representation of knowledge in environmental decision-making and related research. Using the *Sputc Project* process as an example of how community-driven and Indigenous methodologies might be operationalized, I demonstrated that engaging Nuxalk leadership influenced the *Sputc Project* process from conception to completion. I showed that while sharing many commonalities with qualitative methodologies, particularly community-based participatory research (CBPR), a distinctly Nuxalk approach was key to the *Sputc Project's* success. Engaging Nuxalk knowledge systems and leadership resulted in an emergent methodology that prioritized *relational accountability*, locally-grounded methods of knowledge documentation and interpretation, and *respectful representation* – elements commonly identified

as key priorities in Indigenous methodology and decolonising literatures (E. Carlson, 2016; G. S. Coulthard, 2014; Kovach, 2009c; Latulippe, 2015a; Louis, 2007; S. Wilson, 2008). As elaborated in *Paper 4*, this required time and resources that are often not recognised or available during either academic research or collaborative processes (Bowie, 2013; Castleden et al., 2017; Irlbacher-Fox, 2014).

In *Paper 2* I shared theoretical and practical insights about choosing and engaging Indigenous and/or community-engaged approaches. Reflecting on differences in methodology between the *Sputc Project* and this dissertation, I suggested that the relationship of each to critical, Indigenous, and decolonising theory may be a useful means for researchers to position their own work (see **Figure 3**). The *Sputc Project* served as an example of how engaging Indigenous methodologies can support Indigenous research in a manner distinct from CBPR, strengthening local research capacity in support of self-determined decision-making. Meanwhile, the critical, community-engaged, and decolonising approaches employed in the production of this dissertation can adopt many of the same values and principles as IM (E. Carlson, 2016) without the conflict of epistemological incongruence (Kovach, 2009c, 2017). Based in Indigenous theories of non-exclusivity, Indigenous methodologists' reserved acceptance of mixed Indigenous and western methods (Evans, Hole, Berg, Hutchinson, & Sookraj, 2009; Kovach, 2009c) parallels that of legal scholars who point to the possibility of multiple sovereignties (Webber, 2016); it is possible for multiple epistemologies or jurisdictions to exist, as long as transparency is present (Kovach, 2009c; Low, 2018).

If health inequities are (re)produced by how institutions value knowledges, then promoting real engagement of Indigenous knowledge systems has profound transformative potential. Indeed,

given that CBPR is promoted as a way to address health inequities by informing transformative policy (Israel et al., 2010, 1998), including that developed with Indigenous people (Richmond & Cook, 2016; Simonds & Christopher, 2013), then the potential of decolonising or Indigenous research methodologies in terms of their impacts on environmental research and practice could be even greater. An informed understanding by community leaders and researchers of methodological options, and selection of methods based on their preferences, is key to ‘de-centering’ academia in the engagement of Indigenous knowledges and people. I hope that this work helps Indigenous leaders and researchers, and those who support them, to consider engagement with decolonising and Indigenous theories in their own manner and for their own purposes.

Decolonising environmental management: Indigenous leadership

Focused on demonstrating the connection between Indigenous lands, knowledges, and well-being, this work advocates increased involvement of Indigenous people in environmental management through sustained access to – and control over – lands and resources. In this work, I joined others in highlighting Indigenous leadership as a driver of sustainable environmental management and community well-being (Adams et al., 2014; W. G. Housty et al., 2014), calling into question practices of knowledge integration and firmly re-centering Indigenous knowledges and expertise. Retaining the context of IK in relation to Indigenous people, places, and practices requires re-placing Indigenous people as interpreters of their own knowledges in decision-making that affects their well-being. Based in a fundamental respect for Indigenous expertise and authority, this implies active Indigenous involvement in policy and legislation, planning and decision-making beyond inclusion or participation in current decision-making processes

(Corntassel et al., 2018; Manuel & Derrickson, 2017; McGregor, 2004; Nadasdy, 1999; von der Porten et al., 2015).

However, while suggestions for increasing Indigenous leadership in environmental management abound, there are few detailed examples of how Indigenous authority is established and practiced at the community level (Pinkerton et al., 2014; Pinkerton & John, 2008). In *Paper 4*, I examined how Nuxalk eulachon management authority might be strengthened from the ground up.

Beginning with an argument for the Nuxalk Nation's jurisdiction in the management of eulachon in Nuxalk territory, I suggested that where multiple authorities exist, jurisdiction is the site where legitimacy is confirmed or contested, as determined by local peoples' actions on the ground. I then showed how the *Sputc Project* supported the Nuxalk Nation's inherent authority to manage eulachon by articulating and representing Nuxalk knowledges, broadly engaging community, and upholding local systems of governance. In particular, I highlighted that broad engagement of Indigenous community members and their knowledges is a necessary first step to building management legitimacy and authority within the community, and for engaging and respecting community authority from beyond. I further suggested that power imbalances at the interface of Indigenous relations with the state are in part a result of limited First Nations resources to engage "foreign" systems, as well as limited state capacity to respectfully engage Indigenous knowledges and people.

This work adds to a growing literature advocating the evolution of new Nation to Nation relationships and hybrid forms of collaborative governance based on a fundamental respect for Indigenous knowledges, expertise, and authority held by Indigenous people (Bowie, 2013; McGregor, 2009b, 2014; von der Porten et al., 2019; von der Porten, de Loë, et al., 2016). In focusing on Indigenous leadership and self-determination in environmental management, I

recognise that valuable ongoing work by coastal First Nations in collaborative management and planning were largely sidelined here (Coastal First Nations & Government of British Columbia, 2016; Jones et al., 2016; Low, 2018; McGee, Cullen, & Gunton, 2010; von der Porten et al., 2019; von der Porten, Lepofsky, et al., 2016).

Articulating key priorities for eulachon management, *Paper 4* provided suggestions for engagement with Indigenous leadership by other management actors, which may be of service to decision-makers with a genuine interest in upholding Indigenous knowledges and priorities. I suggested that the case of eulachon presents the Canadian state with an opportunity to align with inherent Indigenous rights and responsibilities and embrace collaborative, Nation to Nation management approaches. So doing makes the most sense in terms of expertise and resources, priorities and care, and indeed in terms of legal/jurisdictional arguments. Recent negotiations following conflict related to the herring roe-on-kelp fishery provide ample support for policy implementation in this context (Jones et al., 2016; Low, 2018; von der Porten et al., 2019; von der Porten, Lepofsky, et al., 2016). As such, in the case of Nuxalk eulachon, I argue that Indigenous leadership is not only possible, but necessary.

Intended audience and future work

While the *Alhqulh ti Sputc* was produced for *Nuxalkmc*, this work and associated papers is intended primarily for scholars in environmental and resource management, geography, Indigenous health, health equity, and related fields. I also hope that these papers will be taken up by managers and policy-makers, including Indigenous leaders. As detailed below (future work), I am also in the process of creating complimentary knowledge translation products to share this work with local and regional Nations and related actors. Ultimately, this work is intended to

serve *Nuxalkmc* and *sputc*, in hopes that Nuxalk knowledges and relationships (both ancestral and contemporary) bring eulachon back.

Following the completion of this work, I intend to continue to support my community in building capacity and resilience in the face of social-ecological change in an evolving environmental governance context. Foremost, recognizing my responsibility to Nuxalk *sputc*, I intend to follow up on priorities outlined in the *Alhqulh ti Sputc* through continued support for local management planning and cultural activities, including the annual *Sputc Ceremony*.

I know that it is my responsibility to communicate the findings of this research within and beyond the community. Prior to final submission of this dissertation, I widely distributed a two-page summary of this work to community members, presented the work to Chief and Council and *Statalmc*, hosted a community presentation evening and presented the work at the annual *Sputc Ceremony*. This presentation and related interviews will be aired on Nuxalk Radio (Nuxalk Radio, 2019). With local communications initiated, I also plan to share this work with First Nations neighbours and bridging organisations (e.g. CCIRA, CFN¹, FNFC), who have expressed interest in both process and outcomes of the *Sputc Project*. In so doing, I intend to play a role in supporting local and regional leaders and decision-makers in moving Nuxalk eulachon management priorities forward, as appropriate. I also hope to support the adaptation of this learning in other areas, advising on the representation of knowledges projects focused on ancestral governance and sustainable food systems, among others. I hope to support *Nuxalkmc* engagement with academic research and researchers, and in developing and strengthening Nuxalk research methodologies and capacities. I also intend to contribute to the academic world

¹ CFN is an alliance of nine Nations living on British Columbia's North (Metlakatla, Gitga'at) and Central Coast and Haida Gwaii (Coastal First Nations, 2019c).

by publishing the papers herein, as well as engaging in ongoing and future work related to this dissertation.

10. Limitations and learnings

In the conduct of research in Indigenous contexts, research process is as important as the outcome. As detailed in **Chapter 5 (Research theory and approach)** and *Paper 2*, Indigenous leaders and researchers are increasingly conducting research informed by Indigenous epistemologies and priorities. Many non-Indigenous researchers also intend to do research that is respectful, reciprocal, and supportive of Indigenous priorities. Ethical frameworks, guidelines, and recommendations for working with Indigenous communities abound, both in the realms of community-engaged research (Adams et al., 2014; Castleden, Sloan Morgan, et al., 2012, 2012; de Leeuw et al., 2012; LaVeaux & Christopher, 2009; Simonds & Christopher, 2013; Tobias et al., 2013) and Indigenous methodologies (Absolon, 2011; Kovach, 2005, 2009c, 2017; Louis, 2007; Smith et al., 2016; S. Wilson, 2008). However, few explicitly advise the decolonising settler-researcher specifically. Elegantly integrating essential principles of CBPR and appropriate insights from Indigenous research methodologies, Elizabeth Carlson (2016) outlines eight principles of anti-colonial research methodology for settlers: (1) resistance to and subversion of settler colonialism; (2) relational and epistemic accountability to Indigenous peoples; (3) land/place engagement and accountability; (4) egalitarian, participatory, and community-based methods; (5) reciprocity; (6) self-determination, autonomy, and accountability; (7) social location and reflexivity; and (8) wholism (E. Carlson, 2016). Below, I adapt these principles to structure a reflection on the theoretical and methodological limitations and lessons of this dissertation as a research process and product.

Resistance to and subversion of settler colonialism (decolonization)

Anti-colonial research resists and subverts settler colonialism in process, dynamics, and outcomes. It contributes towards anti-colonial change in and with peoples, relationships,

organizations, communities, institutions, and governments. It acknowledges and problematizes the reality and impact of historical and contemporary settler colonialism and it recognizes the illegitimacy of the current settler presence on the land. It ultimately works towards the building of a new society on Indigenous peoples' terms. (E. Carlson, 2016, p. 6).

As outlined in **Chapter 2 (Theoretical framework)**, my engagement with this work was explicitly decolonising in its intents. Positioning settler-colonialism as the fundamental determinant of Indigenous health and well-being in *Paper 1*, I underlined the role of dispossession and exclusion from management of ancestral lands and waters as a contributor to ongoing health inequities. In *Paper 4*, I firmly pushed back on settler-colonial management institutions and advocated Indigenous leadership in the management of eulachon. Meanwhile, *Papers 2-4* detailed how the *Sputc Project* supported Nuxalk cultural resurgence and political strength; sharing these details was intended to make space for Nuxalk voices and perspectives, and inform others doing similar work supporting Indigenous self-determination.

This dissertation bridged the practical work of Indigenous resurgence and decolonising academic work related to Indigenous knowledge documentation, interpretation, and representation.

However, the extent to which this dissertation, as an addition to the *Sputc Project*, constitutes a decolonising work remains a point of unease for me. Without undermining my potential contribution, I recognize that the methods used to create this work were somewhat extractive, in that I am telling a version of the Nuxalk story for personal gain (this PhD). Like many other community-engaged researchers before me (Castleden, Sloan Morgan, et al., 2012; Coombes et al., 2014), I did only a moderate job of involving community partners in the interpretation and representation of research results (see below). As such, I retained epistemological authority and control over both process and outcomes of this work, only somewhat addressing existing institutional and personal power dynamics (Muhammad et al., 2015). I regret not having had the

imagination and foresight to include more narrative, holistic elements. In terms of methodology and academic output, I only marginally disrupted unequal power structures or control of knowledge. I did, however, advocate for Nuxalk self-determination in terms of the content of this work.

Reflexivity and social location

Anti-colonial settler researchers examine and explicitly state their own social location with regards to the research and with regards to settler colonialism. They explore the impact of their social location on the research, and engage in critical reflexivity regarding the ways in which they enact and reproduce colonialism. Researchers are explicitly present within the text of research reports, engaging with humility, placing their knowledge within the context of how it was gained, and acknowledging their teachers and mentors. (E. Carlson, 2016, p. 8)

This work encapsulates part of what I've learned from a rich and tangential academic trajectory over the course of eight years: from urban graduate student to mother, farmer, and Indigenous ally; from quantitative researcher in epidemiology and food security studies to community-engaged researcher in Indigenous governance, well-being, and resource management. By far the most valuable and challenging part of this research process has been related to navigating my position in an adopted community, as a researcher, consultant, community member, and settler-newcomer. The work of decolonising my mind (a first step to decolonising action (Irlbacher-Fox, 2014)) has only just begun, and will continue to be a lifelong project. This learning is at once deeply personal and broadly shared by anyone who has delved into similar work (E. Carlson, 2016; de Leeuw & Hunt, 2018; Irlbacher-Fox, 2014).

It was my intention throughout this work to be transparent in my positionality, privileges, and biases. Articulating how these have infiltrated my work, this section on limitations and learnings

constitutes my reflection. In *Papers 2* and *3*, I touched on how my non-Indigenous worldview affected the *Sputc Project* process and product, limiting my capacity to engage with Nuxalk ways of knowing (e.g. story), and indeed, with many Nuxalk people. Kovach (2009) suggests that the insider/outsider relationships that result from differences in epistemology are a necessary challenge of doing research with Indigenous communities; indeed, if you are not uncomfortable, you are doing it wrong (Kovach, 2009c). Indeed, I remain an outsider to the Nuxalk community. Even in my interactions with *Nuxalkmc* colleagues, friends, and acquaintances, I continue to experience misunderstandings and awkwardness characteristic of cross-cultural relationships. While this awkwardness may be exacerbated by personal insecurities, I think the extent to which relationships with Indigenous people is cross-cultural is often under-estimated by settlers. Between the strength of a cultural legacy (and associated epistemology) very different from that of settlers, and the impacts of profound multi-generational trauma, our experiences, assumptions, and ways of communicating are often very different, despite the fact that we speak the same language. I thought that my previous experience in cross-cultural settings would come to serve me here, but instead it often further served to highlight the extent of my own privilege and related limitations.

As a researcher relatively new to community-engaged and qualitative work, I developed many of the requisite skills as I went, from basic interviewing to mediation of complex group dynamics. The need for these skills was no surprise; in retrospect, I wonder who I thought I was, that I should be able to pick up such a diversity of soft skills so quickly, and feel regretful of my ignorance/pride. Throughout the process of this work, my outlook shifted between naivete and confidence, isolation and connection, insecurity and humility. In navigating this learning, I was often uncomfortable and defensive. Accustomed to being relatively knowledgeable, I expected

myself to know how things worked without asking. Often shy or insecure, I overcompensated by taking up physical space, my voice often loud, hurried, or interrupting. I was not always a good listener. Despite my self-consciousness, I often lacked humility, and struggled with the ongoing presence of my own assumptions of intellectual authority. When I first arrived, my colleagues politely told me that my high energy was “refreshing”, but I know it was foreign to many community members, and likely shut them down. I worked to develop a quieter affect and to slow down my words, moderate my voice. I began to learn to listen better and practiced patience, with varying degrees of success. I began to recognize Nuxalk expertise in places I would not have seen it before, to understand the magnitude of some of what was being shared in stories and everyday practices. I questioned my own system of knowledge, the utility of my research. I came to accept how difficult it was to genuinely connect and belong here, accepting that my position as an outsider did not decrease my responsibility to the community.

I am quite certain that my insecurity, my whiteness, and my educated privilege created many barriers to doing this work well. Among others, I found that my involvement in this work may have reflected two concerns raised by Sarah de Leeuw and colleagues (2012): (1) that dissent or difference may have stifled by my investment in being “good”; and (2) that my attempts to overcome difference and distance may have actually retrenched colonial research relations (de Leeuw et al., 2012). For example, I often waited for *Nuxalkmc* to take the reins rather than filling my leadership role to otherwise support Nuxalk participation, placing an undue burden on knowledge-holders to also be project leaders. I may also be guilty of “settler moves to innocence”, which problematically attempt to reconcile settler guilt and complicity “without giving up land or power or privilege, without having to change much at all” (Tuck & Yang, 2012, p. 10). These include: (1) the move to “become without becoming” (e.g. adoption), where

the settler gets to pretend to be an insider but retains all the privileges of an outsider, still objectifying Indigenous peoples and knowledges as “other”; (2) a(s)t(e)risk-ing peoples, where Indigenous people are characterized as “at risk” populations, dislocated from their positions on the land and from the realities of settler-colonialism; and (3) gaining “professional kudos or a boost in their reputations for being so sensitive or self-aware” (Tuck & Yang, 2012, p. 10). These characterizations of settler-Indigenous relations ring true of my theoretical, academic orientation to *Nuxalkmc*, which continues to tend (inauthentically) toward generalization and objectification (e.g. in my focus on health inequities). This contrasts with my (authentic) personal relationships and friendships with *Nuxalkmc*, which have none or few of these qualities. I intend to continue to engage such critiques of settler-colonial tendencies in the ongoing process of decolonising my thinking, including those that limit this practice of reflexivity to the individual (Nicholls, 2009).

Responsibility/accountability to Indigenous people and places

Anti-colonial research on the part of settlers occurs within the context of Indigenous sovereignty. It requires relational accountability with Indigenous peoples... It is important that settler peoples who engage in anti-colonial research maintain relationships and dialogues with Indigenous peoples in general, and regarding our research in particular and at all stages of research. (E. Carlson, 2016, p. 6).

In the spirit of relational accountability, I take my responsibilities to *Nuxalkmc* colleagues, collaborators, and community very seriously. While this dissertation clearly benefits me as an individual, it is my intention that the work presented here respectfully represent and benefit *Nuxalkmc* community, lands, and waters. The principle of relational accountability informed every aspect of my research process, which was grounded in relational ethics informed by critical theory, Indigenous scholars, and Nuxalk knowledge systems. **Papers 2 and 3** detailed the

extent and limitations of the *Sputc Project* in applying this principle, and sought to underline its importance in conducting research with Indigenous people. And yet, I find that its presence is only partly evident in the final product of my research, this dissertation – evidence of the distance between theoretical understanding and practice. Here, I might have benefitted from processes of inter-personal and collective reflexivity and other more explicitly collaborative approaches to inform the political and relational elements of my research process (Nicholls, 2009).

As a product representing the knowledges gained by myself and others, primarily through the *Sputc Project* process, this work constitutes a kind of research-on-research – and therefore has the potential to be extractive. As such, it is important to reflect on exactly to whom am I accountable, and who I am representing in this work. As an external researcher new to the community, my relationships required a long time to develop, and remain a work in progress. During my first two years in the valley (2014-15), I focused almost exclusively on the *Sputc Project* and related relationship-building, much to the exclusion of my doctoral work. As detailed in *Paper 2*, there were certainly gaps in the extent of my outreach and engagement, but I was proud to be known by many as “the eulachon girl”. The birth of my daughter (2015) proved both isolating and exhausting, sidelining much of the relational work I had begun. Since I returning to finish my doctoral work (2016-18), I have been relatively disconnected, and limited in my community engagement since *Alhqulh ti Sputc* was complete (2017). Following many researchers before me who have problematized the falsely unifying concept of “community” (Duran, 2003; Minkler, 2005; Tobias et al., 2013; Wallerstein & Duran, 2006), I continue to question my role and position in the community, as well as the details of my responsibility thereto. I am certainly uncomfortable with the idea of being accountable to the community as a

whole, as I know there are many disparate opinions and perspectives present, and I cannot please everyone. I feel a strong allegiance to Megan Moody, as a mentor, collaborator, and friend, without whom none of this would have been possible. I also feel directly accountable to the *Sputc Project* collaborators and contributors with whom I worked directly, and to the knowledge-holders and ancestors whose voices and knowledges I have sought to uphold. In the end, I can only be accountable to the relationships I managed to form and maintain through this process – a very small proportion of *Nuxalkmc* - and recognize the bias this brings to my work.

While it was touched upon in *Paper 3*, I wish to reiterate here the importance of concurrent lands-based resurgent activities and ceremony (e.g. annual *sputc* ceremony, grease-making) for the legitimacy and effectiveness of the project, and by extension, my research. So much learning, both by myself and community members, occurred through these events, which emphasized connections between practice, relationship, land, and spirit (Corntassel, 2012). In this regard, I have come to recognize a significant overlap between engaged Indigenous research and an emerging literature (and practice) related to lands-based education and learning (Legat & Barnaby, 2012; Simpson, 2014; Wildcat et al., 2014).

Indeed, while I started out with the intention to gain new skills and get a PhD, the ultimate outcome of this process has been a deep responsibility and connection to place. I have come to perceive living, “geneologized” elements of this place (Coombes et al., 2014), and am beginning to learn the histories, names, and stories associated with my surroundings. Informed by a happy coincidence of my own values and the relational knowledges I have come to engage, I recognize that my responsibilities extend beyond my research collaborators to eulachon itself. Ultimately, what I have gained from this work is a very committed relationship with and responsibility to Nuxalk *sputc* – one that I intend to continue to honour and work for. For this privilege and

learning above all others, I am thankful. As such, I embody Carlson's fourth principle of anti-colonial research: land/place engagement and accountability:

As connected to relational accountability to the Indigenous peoples of the lands where we reside and research, anti-colonial research is accountable to the land herself. Anti-colonial research acknowledges, respects, and engages with the protocols and natural laws of the Indigenous lands where it is conducted. It attends to narratives of place and place-based memories, and to specific land-based histories. Research avoids causing further harm to the land and works directly or indirectly to return lands to Indigenous peoples. Further, anti-colonial research honours relationship and connection with non-human beings on the land. (E. Carlson, 2016, p. 7).

I do not distinguish land/place engagement from accountability to *Nuxalkmc*, as I recognize the extent of their interconnection. Admittedly, in some way, this formulation comes as a relief, and lessens the discomfort of the complexity of my relationships with people by providing me an identity and focus outside the social realm.

I remain committed to contributing to and living in my community, and to modelling for my daughter a respectful relationship with *Nuxalkmc* and Nuxalk lands and waters. In terms of my continued engagement related to this work, I have reported back to elected and hereditary leadership, solicited feedback from collaborators, and acknowledged contributions appropriately. I have created summary materials to share with community members at relevant open houses, meetings, and workshops, and am planning for a series of radio interviews on Nuxalk Radio, a local station with high community listenership.

Epistemic accountability and wholism

Standpoints, epistemes, perspectives, and experiences of Indigenous peoples are honoured, foregrounded, and valued. Researchers engage with indigeneity and Indigenous people respectfully, learning and observing context-specific cultural norms, protocols, and

languages. ... Research is congruent with the well-being of Indigenous peoples as they define it. (E. Carlson, 2016, p. 6).

In considering the different contributions of critical, decolonising, and Indigenous theory, and distinguishing between CBPR and IM, epistemic accountability is central to this work. My engagement with Nuxalk epistemologies and limitations to related accountability is detailed in **Papers 2** and **3**. In **Figure 3**, I demonstrate epistemological transparency by explicitly positioning this dissertation in relation to critical vs. Indigenous theories, decolonising goals, and community-engaged vs. Indigenous research approaches. Given my understanding of the complexity of Nuxalk knowledges, I often questioned my role in the *Sputc Project*, and wished there was someone more knowledgeable of Nuxalk epistemologies to take my place. In time, I realized that in my role as project coordinator, it was not imperative that I be steeped in Nuxalk ways of knowing. Rather, it was my job to ensure that the process be guided by *Nuxalkmc* – by initiating conversations, strengthening relationships, and heeding advice. As described in **Paper 2**, the *Sputc Project* was therefore certainly guided by Nuxalk knowledges – and as I observed how it happened, I feel comfortable in reporting on it as a process.

As illustrated in **Figure 3**, while informed by Nuxalk knowledges, and upholding their relevance, I do not claim to be grounded in Nuxalk epistemologies in the creation of this work. However, this does not mean that I have not been informed by them – hence my framing of this work as grounded in critical and decolonising theory, and informed by Indigenous theory. In this, I appreciate that Carlson stipulates that decolonising research must be (w)holistic:

Anti-colonial research is wholistic. It attends to the heart, spirit, and body in addition to the mind. It attends to values, emotion, history, and context. (E. Carlson, 2016, p. 8).

While certainly attentive to history and context, as an academic deeply rooted in positivist and western epistemologies, my heartfelt engagement in this work was not always explicit or apparent in this work. However, particularly as I began to integrate the idea of relational accountability, and began to merge the theory and practice thereof, my experience that any movement toward objective analysis or categorization felt untrue to the intent of my research, even if such an action was epistemologically transparent. As detailed below, the influence of my academic training and related expectations is evident throughout this work, in terms of structure, content, and tone. This discord is present in all of my work, where I struggled (and mostly failed) to “put (my) own voice in there” (as discussed below). **Paper 1** is the most extreme example of this, in that it explicitly represents and interprets *Nuxalkmc* relationship with *sputc*, and to a large extent, tells the story of *sputc* for, and not with, *them*. Further, single-handedly adapting a decolonising health equity framework in the structuring of introductory substantive content without input from collaborators within the context of this research might understandably raise questions as to the appropriateness of applying external frameworks.

Here, I wish to acknowledge the impact of Nuxalk language in this work – or in this case, its absence – on epistemological biases (H. Brown et al., 2012; Kovach, 2009c). Despite working with fluent Nuxalk language speakers (Snxakila, Dale McCreery, Karen Anderson), and sporadically attending language classes, my understanding of Nuxalk language is low, and related cultural engagement is therefore limited. There are few remaining language speakers left in the community, but a new generation of speakers is being sown through radio programming and primary education. This will certainly bolster capacity to engage and communicate important, sometimes subtle cultural meanings in years to come.

Respectful, appropriate methods

In this section, I combine the spirit of two of Carlson’s principles: *egalitarian, participatory, and community-based methods* and *self-determination, autonomy, and accountability*, without repeating extensive recommendations for collaborative research design and methods also suggested by many others, and touched upon in other sections here. In the former principle, I take some issue with community-based methods as the absolute gold standard (Brunger & Wall, 2016; Castleden et al., 2017; Castleden, Sloan Morgan, et al., 2012; de Leeuw et al., 2012; Moore et al., 2017; Stiegman & Castleden, 2015). While advocating respectful, reciprocal relationships, I also take issue with the term “egalitarian”, which might be seen to erase existing and unavoidable differences in power (Muhammad et al., 2015). Below, I take up the topics of Nuxalk interest and involvement (i.e. “participation”) in this work, including key areas of research initiation, interpretation, and authorship (Tobias et al., 2013); representation is addressed in the following section.

Most guidance related to community-engaged research, particularly with Indigenous communities, insists that research be “community” initiated and led whenever possible (Adams et al., 2014; Castleden, Sloan Morgan, et al., 2012; Coombes et al., 2014; Kovach, 2009c; Louis, 2007; Mulrennan et al., 2012), reflecting community priorities (Adams et al., 2014; Kovach, 2005, 2009c; Latulippe, 2015a; Mulrennan et al., 2012). The truth is, while I was invited to support the *Sputc Project* as a Nuxalk-led priority, this work was largely incidental to the project. It reflects *Nuxalkmc* interests insofar as it upholds the value of eulachon, and *Nuxalkmc* rights and responsibilities to manage the fish, aiming to support their return. Meanwhile, regional Indigenous priorities are addressed insofar as they relate to building community management capacity and authority (Thielmann, 2012). With *Sputc Project* funding applications and

initiation taking priority during the early stages of this research, and relationships in their infancy, Megan and other community partners played only a minor role in formulating my research objectives. Engaging the project process and context, I believe that my research was seen as complementary, but not as high priority. I have confirmed that Nuxalk leadership are in agreement with the messages of this work, while my immediate partners see its utility and service in terms of advancing Nuxalk voice and priorities related to eulachon. Yet, following a long history of unhelpful research in this region (Kramer, 2011; N. J. Turner et al., 2008), I still worry that some more sensitive community members perceive this work, intended for an academic audience, as being extractive and opportunistic.

Indeed, my own attitude reflects a degree of entitlement, which I work to keep in check. I am keenly aware of the resources that Megan Moody, a leader with many (more) important things to do, has spent on our bi-monthly meetings and extensive contributions to the papers herein (as reflected in her co-authorship). However, I also understand this to be an indication of the importance to this work to her interests, and those of *Nuxalkmc*. With the exception of Megan, other project partners have largely disengaged from the academic elements of this work. Perhaps reflecting a relative lack of engagement in formulating research goals and objectives, local partners' investment in interpretation and representation in this research process has been minimal— an experience common to many community-engaged researchers (Castleden, Sloan Morgan, et al., 2012; Coombes et al., 2014). In this study, I certainly came up against discord related to a desire for community ownership and leadership in research (First Nations Information Governance Centre, 2014), and limited capacity to operationalize and engage these aspirations. Collaborators are supportive of the work insofar as it supports me, and are happy to see me do it, but analysis and publication are simply not a priority. And why should they be? As

detailed in *Paper 2*, as in other academic work (Castleden, Sloan Morgan, et al., 2012; de Leeuw et al., 2012; Tobias et al., 2013), community members' energies are limited, and their priorities lie elsewhere.

In recent years, other researchers involved in well-meaning community-based research have sought to underline and legitimize communities' limitations to engagement that resonate for me in this context (Brunger & Wall, 2016; Castleden et al., 2017; Castleden, Sloan Morgan, et al., 2012; Moore et al., 2017). Indeed, the legacy of research harms and the relationship of research with settler-colonialism, theft, and extraction is still present here, as elsewhere (Battiste & Henderson, 2000; Brunger & Wall, 2016; Smith, 1999). Continued expectation of community involvement leads to research fatigue – and no wonder; most research collaborators, including advisors, reviewers, facilitators, assistants, and participants (Brunger & Wall, 2016), end up volunteering their time, compromising other priorities (Brunger & Wall, 2016; Castleden et al., 2017; de Leeuw et al., 2012). While frustrating for myself, having hoped for a greater degree of collaboration in analysis and writing, my re-adjustment of expectations comes from a place of respect for local priorities.

Representation and voice

This work demanded a great deal of reflection on respectful representation, particularly in *Paper 3* as it related to the representation of Nuxalk knowledges in *Alhqulh ti Sputc*. In light of this reflection, this dissertation fared relatively poorly when it came to representation. Admittedly, my standards have shifted greatly since the beginning of this work, and I have learned much, but this is one area where the adage “if I knew then what I know now” applies. As described in *Paper 2*, respectful representation begins early in the research process. During the *Sputc Project*, our methods evolved as we engaged the community, learning that formal interviews and directed

questions were not eliciting the desired involvement and relationships. Against good research advice (Emerson et al., 2011), I put away my research notepad and recorder during the day, opting to do my fieldnotes and reflection during the evening; not known for my memory, many salient details had escaped me by then. New to the community, I was keenly aware of peoples' suspicions of me as a researcher and did not want to create unnecessary barriers. Having not yet reconciled my position as settler-colonial researcher and community collaborator, I felt some level of shame. Further, I rejected the notion that my research was at all ethnographic – equating ethnography with extraction - as I was already convinced that my work would not be “on” but “for” or “with” *Nuxalkmc* (Brant Castellano, 2004; Louis, 2007). However, I was not fully equipped with the methods to conduct my research in this way.

With hindsight, not having employed the tools and methods necessary to directly portray *Nuxalkmc* in their own voices and “on their own terms” (Kovach, 2009c, p. 82) is almost inexcusable. Overcoming my insecurities and owning my position as researcher in order to solicit and record valuable, high quality Nuxalk voices would have far better served both my research and the community. Without direct recordings or sufficiently detailed records of specific Nuxalk voices, this work lacked pithy quotes or personal stories. Though I understood the importance of story in theory, it took me a long time to understand how to listen to the whole rather than looking for facts, bytes, and consistencies. As such, while representing a sincere effort to represent particular *Nuxalkmc*, knowledges, and priorities respectfully, I see this work representing my personal limits, growth, and potential in this regard.

Improved representation in this work would have involved one of two options: (1) methods of learning and reporting that allowed me to center particular Nuxalk voices and stories; or (2) speaking reflexively in my own voice and from my own experience (Kovach, 2009b; Louis,

2007; Nicholls, 2009; S. Wilson, 2008). As discussed above, the former was limited by my original methods of documentation and learning, and, in its ideal form, would require skill sets many academics, myself included, do not possess (e.g. film-making, story-telling, multi-media). The latter was an option available to me, and indeed emphasized by myriad community-engaged, decolonising, and Indigenous methodologists (Coombes et al., 2014; Kovach, 2009b; Louis, 2007). Simple – as Shawn Wilson (2008) says:

...put your own true voice in there, and those stories that speak to you. That is retaining your integrity; it's honouring the lessons you've learned through saying they have become a part of who you are. (S. Wilson, 2008, p. 123)

I found this appealing, and exceedingly difficult. As I wrote this dissertation, my voice morphed and evolved. I found that I had the potential to write with three voices: the automatic, authoritative and objective voice that I had been trained to use during my largely positivist academic training (which felt inauthentic), a very personal but not necessarily scholarly voice (which felt unprofessional) and a new voice that engaged scholarly content with humility and honesty, from a place that was both critical and vulnerable. I was finally learning to put my own voice in there. However, while I worked hard to find “my voice”, I often ended up re-adopting a voice and structure that was more distant than I intended. I had a tendency to default to my passive or objective voice, out of both habit and defensiveness. Perhaps I was unwilling to give up my academic authority or my white settler privilege (Coombes et al., 2014)? This dissertation will be due long before I have finished the personal and professional work of finding voice and negotiating complex expectations and realities. I have done my best to balance this shortcoming through the use of language and voice, attempting to clarify that the work is one version or interpretation of the story. I have also worked to give relevant credit and acknowledgement,

both to specific individuals and through presentation of methods that emphasize the collective contributions to the ideas herein. In so doing, I am satisfied that this work is sufficiently rigorous for its purposes.

In the production of this dissertation, I believe I was strongly swayed by my academic background, and carried strong expectations related to the type of academic product I was to produce. Given the subject of this work, I felt some discord in my reporting, which seemed extractive and colonial after all I had learned. I had difficulty negotiating academic expectations and my desire to conduct respectful Indigenous research. I found great support in a growing literature that addresses this tension, underlining academic (and related ethics board) expectations as a barrier to the application of Indigenous methodologies and scholarship (Kovach, 2009c; Smith et al., 2016), and to the appropriate application of community-engaged research (Brunger & Wall, 2016; E. Carlson, 2016; Castleden et al., 2017; Castleden, Sloan Morgan, et al., 2012; de Leeuw et al., 2012; LaVeaux & Christopher, 2009; Moore et al., 2017; Stiegman & Castleden, 2015). Luckily, my immediate academic advisors and community were both supportive and patient in this process.

In terms of representation, it is interesting to note here the blatant lack of gender analysis brought to bear on this work. Most of the “expert” interviewees and technical informants (e.g. fishers, grease-makers) were men, as are most Nuxalk hereditary leadership (*Staltmc*). Yet, many of the key ancestral knowledge-holders (elders and ancestors) and cultural leaders that informed this research were (and are) women. Interrogating the extent to which this was a result of my own biases, patriarchal elements of colonized Nuxalk priorities, or an authentic cultural division of knowledges (Hitomi & Loring, 2018) is beyond the scope of this work, but remains a point of interest. Indeed, recognising that differently positioned people experience social-ecological

impacts in myriad ways, this research would have benefitted from explicit consideration of the differential ways in which settler-colonial processes and structures operate *within* the community (e.g. across lines of gender, age, education), interfacing with other health influences (Dhamoon & Hankivsky, 2011). Exploring how loss and recovery of eulachon affects differently positioned *Nuxalkmc* would surely have provided additional insight as to how these impacts are experienced and perpetuated, from the local to the structural.

Reciprocity and meaningful outcomes

Anti-colonial research values reciprocity. Rather than focusing on taking for one's own advancement, anti-colonial settler researchers focus on what they can give, contribute, and collectively build. Researchers use their time, energy, fundraising efforts, and resources in order to give as much as, or more than, what is being received from Indigenous groups and communities. (E. Carlson, 2016, p. 7).

Leanne Betasamosake Simpson underlines that the alternative to extractivism is responsibility, relationship, and deep reciprocity (Simpson, 2017b). However, “[r]eciprocity requires time and resources” (E. Carlson, 2016, p. 14). While many community-engaged researchers acknowledge this reality in theory (Tobias et al., 2013), there remain few guidelines as to how to negotiate related tensions in practice. Sidestepping academic and institutional pressures (i.e., expected PhD completion times, presence on campus) (Castleden, Sloan Morgan, et al., 2012; Coombes et al., 2014; de Leeuw et al., 2012), the co-creation of *Alhqulh ti Sputc*, while also supporting this work, required substantial (but unregretted) sacrifices of time and resources on my part, as did my initial dedication to community relationship-building. However, the *Sputc Project*, with a final budget of over \$100,000, also provided me with essential resources to conduct this work. I do not know if this was a reciprocal trade, but I have also learned that not all trades happen equally in the moment. In this context, timelines are extended and relationships slow to develop.

During my research, this reality gave me the opportunity to practice a great deal of patience. An essential part of reciprocity is relationship, and as many Indigenous researchers have highlighted, long-term relationships are essential to conducting meaningful and respectful research (Adams et al., 2014; de Leeuw et al., 2012; Kovach, 2009c; S. Wilson, 2008). As highlighted elsewhere, I continue to have a deep sense of responsibility to *sputc* and to *Nuxalkmc*. It is my hope that my work here is not done, and that this relationship is not over. I intend to support community capacity and resilience by a number of means, including those detailed in **Future work**.

Reflection

Reflecting on this work, I envision the learnings and knowledges gathered here as a relational web, reflecting Wilson's concept of Indigenous knowledges (S. Wilson, 2008) but also drawing on intersectional notions of positionality (Hankivsky, 2011; Osborne et al., 2019). At first, I likened the web to a tangled ball of string; it was difficult hold all strings in one bundle; if I pulled on one strand, another tightened, distorting the whole. It didn't come out clean, and I wanted a clean answer. Throughout this work, there is evidence of me trying to compensate for this feeling by posturing, statements sweeping and grandiose: "look, I found a string!". Over time, I have come to realise that I need to hold the ball more loosely, to find my way inside. I have done my best to weave my own thoughts and learnings in there, adding a few new knots. I consider the cedar weavers I have come to know and their process, how the individual strands of cedar are carefully and intentionally harvested and prepared, thin strands coming together to make a strong and beautiful whole. Maybe best I choose to feel supported by, and accountable to, the network of knowledges and relationships within which I find myself; in the end, I am thankful to have had the opportunity to be rolled up in this ball at all.

REFERENCES

- Absolon, K. (2011). *Kaandossiwin: How We Come to Know*. Halifax: Fernwood Books Ltd.
- Absolon, K., & Willett, C. (2004). Aboriginal Research: Berry Picking and Hunting in the 21st Century, *1*(1), 13.
- Absolon, K., & Willett, C. (2005). Putting Ourselves Forward: Location in Aboriginal Research. In L. Brown & S. Strega (Eds.), *Research As Resistance: Critical, Indigenous, and Anti-oppressive Approaches* (pp. 97–126). Toronto: Canadian Scholars' Press.
- Adams, M. S., Carpenter, J., Housty, J. A., Neasloss, D., Paquet, P. C., Service, C., ... Darimont, C. T. (2014). Toward increased engagement between academic and indigenous community partners in ecological research. *Ecology and Society*, *19*(3).
<https://doi.org/10.5751/ES-06569-190305>
- Adelson, N. (2000). *“Being Alive Well”: Health and the Politics of Cree Well-Being*. Toronto: University of Toronto Press.
- Adelson, N. (2005). The embodiment of inequity: health disparities in aboriginal Canada. *Canadian Journal of Public Health = Revue Canadienne De Sante Publique*, *96 Suppl 2*, S45-61.
- Alfred, T. (1999). *Peace, Power, Righteousness: An Indigenous Manifesto*. Don Mills, Ontario: Oxford University Press.
- Alfred, T. (2005). *Wasase: Indigenous Pathways of Action and Freedom*. University of Toronto Press.

- Alfred, T. (2008). Opening words. In L. B. Simpson (Ed.), *Lighting the Eighth Fire: The Liberation, Resurgence, and Protection of Indigenous Nations* (pp. 9–12). Winnipeg: ARP Books.
- Alfred, T. (2009). Colonialism and State Dependency. *Journal of Aboriginal Health*, (November), 42–60.
- Alfred, T., & Corntassel, J. (2005). Being Indigenous: Resurgences against Contemporary Colonialism. *Government and Opposition*, 40(4), 597–614.
<https://doi.org/10.1111/j.1477-7053.2005.00166.x>
- Allison, E. H., Ratner, B. D., Åsgård, B., Willmann, R., Pomeroy, R., & Kurien, J. (2012). Rights-based fisheries governance: from fishing rights to human rights. *Fish and Fisheries*, 13(1), 14–29. <https://doi.org/10.1111/j.1467-2979.2011.00405.x>
- Amberson, S., Biedenweg, K., James, J., & Christie, P. (2016). “The Heartbeat of Our People”: Identifying and Measuring How Salmon Influences Quinault Tribal Well-Being. *Society & Natural Resources*, 29(12), 1389–1404.
<https://doi.org/10.1080/08941920.2016.1180727>
- Anticona, C., Coe, A.-B., Bergdahl, I. A., & San Sebastian, M. (2013). Easier said than done: challenges of applying the Ecohealth approach to the study on heavy metals exposure among indigenous communities of the Peruvian Amazon. *BMC Public Health*, 13(1), 437. <https://doi.org/10.1186/1471-2458-13-437>
- Archibald, J.-A. (2008). *Indigenous Storywork: Educating the Heart, Mind, Body, and Spirit*. Vancouver: UBC Press.

- Armitage, D., Béné, C., Charles, A. T., Johnson, D., & Allison, E. H. (2012). The interplay of well-being and resilience in applying a social-ecological perspective. *Ecology and Society*, 17(4), 15.
- Armitage, D., & Plummer, R. (2010). *Adaptive capacity and environmental governance*. Berlin, Heidelberg: Springer Verlag.
- Armitage, D., Plummer, R., Berkes, F., Arthur, R. I., Charles, A. T., Davidson-Hunt, I. J., ... Wollenberg, E. K. (2008). Adaptive co-management for social–ecological complexity. *Frontiers in Ecology and the Environment*, 7(2), 95–102. <https://doi.org/10.1890/070089>
- Artelle, K., Stephenson, J., Bragg, C., Housty, J., Housty, W., Kawharu, M., & Turner, N. (2018). Values-led management: the guidance of place-based values in environmental relationships of the past, present, and future. *Ecology and Society*, 23(3). <https://doi.org/10.5751/ES-10357-230335>
- Asch, M. (2014). *On Being Here to Stay: Treaties and Aboriginal Rights in Canada*. University of Toronto Press.
- Asch, M., Borrows, J., & Tully, J. (Eds.). (2018). *Resurgence and Reconciliation: Indigenous-Settler Relations and Earth Teachings*. University of Toronto Press, Scholarly Publishing Division.
- Atleo, E. R. (2007). *Tsawalk: A Nuu-chah-nulth Worldview*. UBC Press.
- Auger, M. D. (2016). Cultural Continuity as a Determinant of Indigenous Peoples' Health: A Metasynthesis of Qualitative Research in Canada and the United States. *The International Indigenous Policy Journal*, 7(4), 3. <https://doi.org/10.18584/iipj.2016.7.4.3>

- Augustine, S., & Dearden, P. (2014). Changing paradigms in marine and coastal conservation: A case study of clam gardens in the Southern Gulf Islands, Canada. *The Canadian Geographer / Le Géographe Canadien*, 58(3), 305–314.
<https://doi.org/10.1111/cag.12084>
- Ball, J., & Janyst, P. (2008). Enacting Research Ethics in Partnerships with Indigenous Communities in Canada: “Do it in a Good Way.” *Journal of Empirical Research on Human Research Ethics: An International Journal*, 3(2), 33–51.
<https://doi.org/10.1525/jer.2008.3.2.33>
- Barton, S. S., Thommasen, H. V., Tallio, B., Zhang, W., & Michalos, A. C. (2005). Health And Quality Of Life Of Aboriginal Residential School Survivors, Bella Coola Valley, 2001. *Social Indicators Research*, 73(2), 295–312. <https://doi.org/10.1007/s11205-004-6169-5>
- Battell Lowman, E., & Berker, A. J. (2015). *Settler*. Fernwood Publishing.
- Battiste, M. (2005). Indigenous knowledge: Foundations for First Nations. *World Indigenous Nations Higher Education Consortium-WINHEC Journal*.
- Battiste, M., & Henderson, J. Y. (2000). *Protecting indigenous knowledge and heritage: a global challenge*. Saskatoon: Purich Publishing Ltd.
- Bavinck, M., & Gupta, J. (2014). Legal pluralism in aquatic regimes: a challenge for governance. *Current Opinion in Environmental Sustainability*, 11, 78–85.
<https://doi.org/10.1016/j.cosust.2014.10.003>
- BC Stats. (2012). *Local Health Area 49 - Bella Coola Valley Socio-Economic Profile* (p. 10). Victoria.

- Beckfield, J., & Krieger, N. (2009). Epi+ demos+ cracy: linking political systems and priorities to the magnitude of health inequities—evidence, gaps, and a research agenda. *Epidemiologic Reviews*, 31(1), 152–177.
- Bennett, N. J., Kaplan-Hallam, M., Augustine, G., Ban, N. C., Belhabib, D., Brueckner-Irwin, I., ... Bailey, M. (2018). Coastal and Indigenous community access to marine resources and the ocean: A policy imperative for Canada. *Marine Policy*, 87, 186–193.
<https://doi.org/10.1016/j.marpol.2017.10.023>
- Berkes, F. (2009). Evolution of co-management: role of knowledge generation, bridging organizations and social learning. *Journal of Environmental Management*, 90(5), 1692–1702.
- Berkes, F. (2012a). Implementing ecosystem-based management: evolution or revolution? *Fish and Fisheries*, 13(4), 465–476. <https://doi.org/10.1111/j.1467-2979.2011.00452.x>
- Berkes, F. (2012b). *Sacred ecology* (3rd ed.). New York: Routledge.
- Berkman, L. F. (2000). *Social Epidemiology*. Oxford University Press, USA.
- Bhopal, R. S. (2016). *Concepts of Epidemiology: Integrating the Ideas, Theories, Principles, and Methods of Epidemiology*. Oxford University Press.
- Biedenweg, K. (2016). A Comparative Study of Human Well-Being Indicators Across Three Puget Sound Regions. *Society & Natural Resources*, 1–15.
<https://doi.org/10.1080/08941920.2016.1209606>
- Biedenweg, K., & Gross-Camp, N. (2018). A brave new world: integrating well-being and conservation. *Ecology and Society*, 23(2). <https://doi.org/10.5751/ES-09977-230232>

- Biedenweg, K., Stiles, K., & Wellman, K. (2016). A holistic framework for identifying human wellbeing indicators for marine policy. *Marine Policy*, 64, 31–37.
<https://doi.org/10.1016/j.marpol.2015.11.002>
- Black, K., & McBean, E. (2016). Increased Indigenous Participation in Environmental Decision-Making: A Policy Analysis for the Improvement of Indigenous Health. *International Indigenous Policy Journal*, 7(4). <https://doi.org/10.18584/iipj.2016.7.4.5>
- Bodin, Ö., & Tengö, M. (2012). Disentangling intangible social–ecological systems. *Global Environmental Change*.
- Bohensky, E. L., Butler, J. R. A., & Davies, J. (2013). Integrating Indigenous Ecological Knowledge and Science in Natural Resource Management: Perspectives from Australia. *Ecology and Society*, 18(3). <https://doi.org/10.5751/ES-05846-180320>
- Bohensky, E. L., & Maru, Y. (2011). Indigenous Knowledge, Science, and Resilience: What Have We Learned from a Decade of International Literature on “Integration”? *Ecology and Society*, 16(4), 6.
- Borrows, J. (1999). Sovereignty’s alchemy: an analysis of *Delgamuukw v. British Columbia*. *Osgoode Hall LJ*, 37, 537.
- Borrows, J. (2002). *Recovering Canada: The resurgence of indigenous law*. University of Toronto Press.
- Borrows, J. (2016). *Freedom and Indigenous Constitutionalism*. University of Toronto Press.
- Borrows, J., Chartrand, L., Fitzgerald, O. E., & Schwartz, R. (Eds.). (2019). *Braiding Legal Orders: Implementing the United Nations Declaration on the Rights of Indigenous Peoples*. S.l.: CIGI Press.

- Borrows, J., & Tully, J. (2018). Introduction. In M. Asch, J. Borrows, & J. Tully (Eds.), *Resurgence and Reconciliation: Indigenous-Settler Relations and Earth Teachings* (pp. 3–25). Toronto: University of Toronto Press.
- Botha, L. (2011). Mixing methods as a process towards indigenous methodologies. *International Journal of Social Research Methodology*, 14(4), 313–325.
<https://doi.org/10.1080/13645579.2010.516644>
- Bowen, K. J., Friel, S., Ebi, K., Butler, C. D., Miller, F., & McMichael, A. J. (2011). Governing for a Healthy Population: Towards an Understanding of How Decision-Making Will Determine Our Global Health in a Changing Climate. *International Journal of Environmental Research and Public Health*, 9(1), 55–72.
- Bowie, R. (2013). Indigenous self-governance and the deployment of knowledge in collaborative environmental management in Canada. *Journal of Canadian Studies/Revue d'études Canadiennes*, 47(1), 91–121.
- Bracken, A. (2019, January 28). 'The Nation Has Stood Up': Indigenous Clans in Canada Battle Pipeline Project. *The New York Times*. Retrieved from <https://www.nytimes.com/2019/01/27/world/americas/british-columbia-pipeline-wetsuweten.html>
- Brant Castellano, M. (2004). Ethics of Aboriginal research. *Journal of Aboriginal Health*• January, 99.
- Breslow, S. J., Sojka, B., Barnea, R., Basurto, X., Carothers, C., Charnley, S., ... Levin, P. S. (2016). Conceptualizing and operationalizing human wellbeing for ecosystem assessment

- and management. *Environmental Science & Policy*, 66, 250–259.
<https://doi.org/10.1016/j.envsci.2016.06.023>
- Britton, E. (2012). Women as agents of wellbeing in Northern Ireland’s fishing households. *Maritime Studies*, 11(1), 16.
- Brody, H. (1997). *Maps and Dreams: Indians and the British Columbia Frontier*. Waveland Press Incorporated.
- Brondizio, E. S., Ostrom, E., & Young, O. R. (2009). Connectivity and the governance of multilevel social-ecological systems: The role of social capital. *Annual Review of Environment and Resources*, 34, 253–278.
- Brown, F., & Brown, Y. K. (2009). *Staying the Course, Staying Alive: Coastal First Nations Fundamental Truths: Biodiversity, Stewardship and Sustainability*. Biodiversity BC.
- Brown, H., McPherson, G., Peterson, R., Newman, V., & Cranmer, B. (2012). Our Land, Our Language: Connecting Dispossession and Health Equity in an Indigenous Context. *Canadian Journal of Nursing Research*, 44(2), 21.
- Brown, L., & Strega, S. (2005). *Research as resistance: critical, indigenous and anti-oppressive approaches*. Canadian Scholars’ Press.
- Browne, A. J., & Stout, M. D. (2012). Moving Towards Nahi: Addressing Health Equity in Research Involving Indigenous People, 44(2), 4.
- Brunger, F., & Wall, D. (2016). “What Do They Really Mean by Partnerships?” Questioning the Unquestionable Good in Ethics Guidelines Promoting Community Engagement in Indigenous Health Research. *Qualitative Health Research*, 26(13), 1862–1877.
<https://doi.org/10.1177/1049732316649158>

- Bunch, M. J. (2011). Promoting health and well-being by managing for social–ecological resilience: The potential of integrating ecohealth and water resources management approaches.
- Bunch, M. J., Morrison, K. E., Parkes, M., & Venema, H. D. (2011). Promoting Health and Well-Being by Managing for Social-Ecological Resilience: the Potential of Integrating Ecohealth and Water Resources Management Approaches. *Ecology and Society*, 16(1). <https://doi.org/10.5751/ES-03803-160106>
- Burgess, C., Johnston, F. H., Berry, H. L., McDonnell, J., Yibarbuk, D., Gunabarra, C., ... others. (2009). Healthy country, healthy people: the relationship between Indigenous health status and “caring for country.” *Medical Journal of Australia*, 190(10), 567–572.
- Burgess, C., Johnston, F. H., Bowman, D., & Whitehead, P. J. (2007). Healthy country: healthy people? Exploring the health benefits of Indigenous natural resource management. *Australian and New Zealand Journal of Public Health*, 29(2), 117–122.
- Burke, C. L. (2010). *When the fishing’s gone: understanding how fisheries management affects the informal economy and social capital in the Nuxalk Nation* (M.A., Resource Management and Environmental Studies). University of British Columbia, Vancouver, B.C.
- Campbell, L. M., Gray, N. J., Fairbanks, L., Silver, J. J., Gruby, R. L., Dubik, B. A., & Basurto, X. (2016). Global Oceans Governance: New and Emerging Issues. *Annual Review of Environment and Resources*, 41(1), 517–543. <https://doi.org/10.1146/annurev-environ-102014-021121>
- Canadian Charter of Rights and Freedoms. Constitution Act, Section 35, § 35 (1982).

- Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Research Council of Canada. (2014). *Tri-council policy statement: ethical conduct for research involving humans 2014*.
- Capistrano, R. C. G., & Charles, A. T. (2012). Indigenous Rights and Coastal Fisheries: A Framework of Livelihoods, Rights and Equity. *Ocean & Coastal Management*.
- Carlson, E. (2016). Anti-colonial methodologies and practices for settler colonial studies. *Settler Colonial Studies*, 7(4), 496–517. <https://doi.org/10.1080/2201473X.2016.1241213>
- Carlson, K. T. (2001). *A Sto:Lo Coast Salish Historical Atlas*. Vancouver: Douglas & McIntyre.
- Castleden, H., Garvin, T., & First Nation, H. (2008). Modifying Photovoice for community-based participatory Indigenous research. *Social Science & Medicine*, 66(6), 1393–1405.
- Castleden, H., Garvin, T., & Nation, H. F. (2009a). “Hishuk Tsawak” (Everything Is One/Connected): A Huu-ay-aht Worldview for Seeing Forestry in British Columbia, Canada. *Society & Natural Resources*, 22(9), 789–804.
<https://doi.org/10.1080/08941920802098198>
- Castleden, H., Garvin, T., & Nation, H. F. (2009b). “Hishuk Tsawak”(Everything Is One/Connected): A Huu-ay-aht Worldview for Seeing Forestry in British Columbia, Canada. *Society and Natural Resources*, 22(9), 789–804.
- Castleden, H., Martin, D., Cunsolo, A., Harper, S., Hart, C., Sylvestre, P., ... Lauridsen, K. (2017). Implementing Indigenous and Western Knowledge Systems (Part 2): “You Have to Take a Backseat” and Abandon the Arrogance of Expertise. *International Indigenous Policy Journal*, 8(4). <https://doi.org/10.18584/iipj.2017.8.4.8>

- Castleden, H., Morgan, V. S., & Neimanis, A. (2010). Researchers' Perspectives on Collective/Community Co-authorship in Community-based Participatory Indigenous Research. *Journal of Empirical Research on Human Research Ethics: An International Journal*, 5(4), 23–32. <https://doi.org/10.1525/jer.2010.5.4.23>
- Castleden, H., Mulrennan, M., & Godlewska, A. (2012). Community-based participatory research involving Indigenous peoples in Canadian geography: Progress? An editorial introduction. *The Canadian Geographer / Le Géographe Canadien*, 56(2), 155–159. <https://doi.org/10.1111/j.1541-0064.2012.00430.x>
- Castleden, H., Sloan Morgan, V., & Lamb, C. (2012). “I spent the first year drinking tea”: Exploring Canadian university researchers' perspectives on community-based participatory research involving Indigenous peoples. *The Canadian Geographer / Le Géographe Canadien*, 56(2), 160–179. <https://doi.org/10.1111/j.1541-0064.2012.00432.x>
- Central Coast Indigenous Resource Alliance. (2016, November 20). Eulachon. Retrieved January 18, 2019, from <https://www.ccira.ca/eulachon/>
- Central Coast Indigenous Resource Alliance. (2019). CCIRA | Central Coast Indigenous Resource Alliance. Retrieved January 19, 2019, from <https://www.ccira.ca/>
- Chalmers, J. (2017). The Transformation of Academic Knowledges: Understanding the Relationship between Decolonising and Indigenous Research Methodologies. *Socialist Studies/Études Socialistes*, 12(1), 97.
- Chan, K. M. A., Guerry, A. D., Balvanera, P., Klain, S., Satterfield, T., Basurto, X., ... others. (2012). Where are cultural and social in ecosystem services? A framework for constructive engagement. *BioScience*, 62(8), 744–756.

- Chandler, M. J., & Dunlop, W. L. (2015). Cultural wounds demand cultural medicines. In M. Greenwood, S. de Leeuw, N. M. Lindsay, & C. Loppie Reading (Eds.), *Determinants of Indigenous Peoples' Health: Beyond the Social* (pp. 78–89). Toronto: Canadian Scholars' Press.
- Charron, D. F. (2012). Ecohealth Research in Practice. *Ecohealth Research in Practice*, 255–271.
- Chuenpagdee, R., & Jentoft, S. (2009). Governability assessment for fisheries and coastal systems: a reality check. *Human Ecology*, 37(1), 109–120.
- Chuenpagdee, R., & Song, A. M. (2012). Institutional thinking in fisheries governance: broadening perspectives. *Current Opinion in Environmental Sustainability*, 4(3), 309–315. <https://doi.org/10.1016/j.cosust.2012.05.006>
- Coastal First Nations. (2019a). Carbon Credits. Retrieved February 20, 2019, from <https://coastalfirstnations.ca/our-land/carbon-credits/>
- Coastal First Nations. (2019b). Coastal First Nations - Place. Retrieved January 18, 2019, from <https://coastalfirstnations.ca/our-communities/place/>
- Coastal First Nations. (2019c). Coastal First Nations homepage. Retrieved January 18, 2019, from <https://coastalfirstnations.ca/>
- Coastal First Nations. (2019d). Coastal Stewardship Network. Retrieved January 19, 2019, from <https://coastalfirstnations.ca/our-environment/coastal-stewardship-network/>
- Coastal First Nations. (2019e). Why a Conservation-Based Approach? Retrieved February 20, 2019, from <https://coastalfirstnations.ca/our-economy/why-a-conservation-based-approach/>

- Coastal First Nations, & Government of British Columbia. (2016, June). Coastal First Nations Reconciliation Protocol Amending Agreement. Retrieved from https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/coastal_first_nationas_reconciliation_protocol_amending_agreement_mar_16_17_signed.pdf
- Cole, D., & Barker, J. (Eds.). (2003). *At Home with the Bella Coola Indians: T.F. McIlwraith's Field Letters, 1922-4*. Vancouver: UBC Press.
- Committee on the Status of Endangered Wildlife in Canada. (2011). *COSEWIC Assessment and Status Report on the Eulachon (Thaleichthys pacificus), Nass - Skeena Rivers population, Central Pacific Coast population, Fraser River population in Canada*. Ottawa: COSEWIC. Retrieved from http://publications.gc.ca/collections/collection_2012/ec/CW69-14-638-2011-eng.pdf
- Coombes, B., Johnson, J. T., & Howitt, R. (2014). Indigenous geographies III: Methodological innovation and the unsettling of participatory research. *Progress in Human Geography*, 38(6), 845–854. <https://doi.org/10.1177/0309132513514723>
- Cornthassel, J. (2012). Re-envisioning resurgence: Indigenous pathways to decolonization and sustainable self-determination. *Decolonization: Indigeneity, Education & Society*, 1(1).
- Cornthassel, J., Alfred, T., Goodyear-Ka'opua, N., Silva, N. K., Aikau, H. K., & Mucina, D. (Eds.). (2018). *Everyday Acts of Resurgence: People, Places, Practices*. Daykeeper Press.

- Coulthard, G. S. (2007). Subjects of empire: Indigenous peoples and the ‘politics of recognition’ in Canada. *Contemporary Political Theory*, 6(4), 437–460.
- Coulthard, G. S. (2008). Beyond Recognition: Indigenous Self-Determination as a Prefigurative Practice. In L. B. Simpson (Ed.), *Lighting the Eighth Fire: The Liberation, Resurgence, and Protection of Indigenous Nations* (pp. 187–204). Winnipeg: ARP Books.
- Coulthard, G. S. (2014). *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition*. Minneapolis: University of Minnesota Press.
- Coulthard, S. (2012). Can We Be Both Resilient and Well, and What Choices Do People Have? Incorporating Agency into the Resilience Debate from a Fisheries Perspective. *Ecology and Society*, 17(1), 4.
- Coulthard, S., Johnson, D., & McGregor, J. A. (2011). Poverty, sustainability and human wellbeing: A social wellbeing approach to the global fisheries crisis. *Global Environmental Change*, 21(2), 453–463.
- Creswell, J. W. (2012). *Qualitative inquiry and research design: Choosing among five approaches*. SAGE Publications, Incorporated.
- Crook, D. A., Douglas, M. M., King, A. J., & Schnierer, S. (2016). Towards deeper collaboration: stories of Indigenous interests, aspirations, partnerships and leadership in aquatic research and management. *Reviews in Fish Biology and Fisheries*, 26(4), 611–615. <https://doi.org/10.1007/s11160-016-9449-7>
- Cunsolo, A., & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*, 8(4), 275. <https://doi.org/10.1038/s41558-018-0092-2>

Cunsolo Willox, A., Harper, S. L., Edge, V. L., Landman, K., Houle, K., & Ford, J. D. (2011).

‘The land enriches the soul:’ On climatic and environmental change, affect, and emotional health and well-being in Rigolet, Nunatsiavut, Canada. *Emotion, Space and Society*.

Curran, D. (2017). “Legalizing” the Great Bear Rainforest Agreements: Colonial Adaptations Toward Reconciliation and Conservation. *McGill Law Journal*, 62(3), 813.

<https://doi.org/10.7202/1042775ar>

Davidson, D. J. (2010). The Applicability of the Concept of Resilience to Social Systems: Some Sources of Optimism and Nagging Doubts. *Society & Natural Resources*, 23(12), 1135–1149. <https://doi.org/10.1080/08941921003652940>

Davidson-Hunt, I. J., & Michael O’Flaherty, R. (2007). Researchers, Indigenous Peoples, and Place-Based Learning Communities. *Society & Natural Resources*, 20(4), 291–305. <https://doi.org/10.1080/08941920601161312>

de la Torre-Castro, M., & Lindström, L. (2010). Fishing institutions: Addressing regulative, normative and cultural-cognitive elements to enhance fisheries management. *Marine Policy*, 34(1), 77–84. <https://doi.org/10.1016/j.marpol.2009.04.012>

de Leeuw, S., Cameron, E. S., & Greenwood, M. (2012). Participatory and community-based research, Indigenous geographies, and the spaces of friendship: A critical engagement. *The Canadian Geographer / Le Géographe Canadien*, 56(2), 180–194. <https://doi.org/10.1111/j.1541-0064.2012.00434.x>

de Leeuw, S., & Greenwood, M. (2011). Beyond Borders and Boundaries: Addressing Indigenous Health Inequities in Canada Through Theories of Social Determinants of

- Health and Intersectionality. In O. Hankivsky (Ed.), *Health Inequities in Canada: Intersectional Frameworks and Practices* (pp. 53–70). Vancouver: UBC Press.
- de Leeuw, S., & Hunt, S. (2018). Unsettling decolonising geographies. *Geography Compass*, 12(7), e12376. <https://doi.org/10.1111/gec3.12376>
- de Leeuw, S., Lindsay, N. M., & Greenwood, M. (2015). Introduction: Rethinking Determinants of Indigenous Peoples' Health in Canada. In M. Greenwood, S. de Leeuw, N. M. Lindsay, & C. Loppie Reading (Eds.), *Determinants of Indigenous Peoples' Health in Canada: Beyond the Social* (pp. xi–xxix). Toronto: Canadian Scholars' Press.
- DellaSala, D. A., Moola, F., Alaback, P., Paquet, P. C., Schoen, J. W., & Noss, R. F. (2011). Temperate and Boreal Rainforests of the Pacific Coast. In D. A. DellaSala (Ed.), *Temperate and Boreal Rainforests of the World: Ecology and Conservation* (pp. 42–80). Washington: Island Press.
- Deneulin, S., & McGregor, J. A. (2009). The capability approach and the politics of a social conception of wellbeing.
- Dennis, B. (2018). personal correspondence.
- Dhamoon, R. K., & Hankivsky, O. (2011). Why the theory and practice of intersectionality matter to health research and policy. In O. Hankivsky (Ed.), *Health Inequities in Canada: Intersectional Frameworks and Practices* (pp. 16–50). Vancouver: UBC Press.
- Dolan, A. H., Taylor, M., Neis, B., Ommer, R., Eyles, J., Schneider, D., & Montevecchi, B. (2005). Restructuring and health in Canadian coastal communities. *Ecohealth*, 2(3), 195–208.

- Donatuto, J., Campbell, L., & Gregory, R. (2016). Developing Responsive Indicators of Indigenous Community Health. *International Journal of Environmental Research and Public Health*, 13(9), 899. <https://doi.org/10.3390/ijerph13090899>
- Donatuto, J., Grossman, E. E., Konovsky, J., Grossman, S., & Campbell, L. W. (2014). Indigenous Community Health and Climate Change: Integrating Biophysical and Social Science Indicators. *Coastal Management*, 42(4), 355–373. <https://doi.org/10.1080/08920753.2014.923140>
- Donatuto, J., Satterfield, T. A., & Gregory, R. (2011). Poisoning the body to nourish the soul: Prioritising health risks and impacts in a Native American community. *Health, Risk & Society*, 13(2), 103–127. <https://doi.org/10.1080/13698575.2011.556186>
- Drawson, A., Toombs, E., & Mushquash, C. (2017). Indigenous Research Methods: A Systematic Review. *The International Indigenous Policy Journal*, 8(2). <https://doi.org/10.18584/iipj.2017.8.2.5>
- Duran, B. (2003). The conceptual, historical, and practice roots of community based participatory research and related participatory traditions. In M. Minkler & N. Wallerstein (Eds.), *Community-Based Participatory Research for Health* (1st ed., pp. 3–26). Jossey-Bass.
- Easby, A. (2016). *Indigenous Research Methodologies* (UNESCO Chair in Community-based Research and Social Responsibility in Higher Education Project ‘Building the Next Generation of Community-Based Researchers) (p. 31). Victoria: University of Victoria.

- Eckert, L. (2017). *Towards indigenous marine management: a case study of yelloweye rockfish on the central coast of British Columbia* (Masters thesis). University of Victoria, Victoria.
- Eckert, L., Ban, N. C., Tallio, S.-C., & Turner, N. (2018). Linking marine conservation and Indigenous cultural revitalization: First Nations free themselves from externally imposed social-ecological traps. *Ecology and Society*, 23(4). <https://doi.org/10.5751/ES-10417-230423>
- Edwards, D. N., Scholz, A., Tamm, E. E., & Steinback, C. (2005). The catch-22 of licensing policy: socio-economic impacts in British Columbia's commercial ocean fisheries. In *North American Association of Fisheries Economists Forum proceedings* (Vol. 14, pp. 65–76).
- Edwards, G. T. (1978). Oolachen time in Bella Coola. *The Beaver*, (Autumn), 32–37.
- Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing Ethnographic Fieldnotes, Second Edition*. University of Chicago Press.
- Evans, M., Hole, R., Berg, L. D., Hutchinson, P., & Sookraj, D. (2009). Common Insights, Differing Methodologies: Toward a Fusion of Indigenous Methodologies, Participatory Action Research, and White Studies in an Urban Aboriginal Research Agenda. *Qualitative Inquiry*, 15(5), 893–910. <https://doi.org/10.1177/1077800409333392>
- Evans, M., Miller, A., Hutchinson, P. J., & Dingwall, C. (2014). Decolonising Research Practice. *The Oxford Handbook of Qualitative Research*. <https://doi.org/10.1093/oxfordhb/9780199811755.013.019>

- Faden, R. R., & Powers, M. (2008). Health inequities and social justice. *Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz*, 51(2), 151–157.
- Farmer, P. (2001). *Infections and Inequalities: The Modern Plagues* (First Edition, Updated with a new preface edition). Berkeley: University of California Press.
- Farmer, P. (2004). *Pathologies of Power: Health, Human Rights, and the New War on the Poor* (1st ed.). University of California Press.
- First Nations Fisheries Council. (2015). *Creating a Course Forward: FNFC Strategic Plan 2015-2018* (p. 13). Retrieved from <https://www.fnfisheriescouncil.ca/wp-content/uploads/2015/12/FNFC-Strategic-Plan-2015-2018-2.pdf>
- First Nations Fisheries Council. (2019). Home - First Nations Fisheries Council. Retrieved January 19, 2019, from <https://www.fnfisheriescouncil.ca/>
- First Nations Fisheries Council (FNFC). (2013). *First Nations Fisheries Council Summary Report: SARA and Aquatic Species Workshop*. Richmond, BC: FNFC.
- First Nations Information Governance Centre. (2014). *Ownership, Control, Access and Possession (OCAP™): The Path to First Nations Information Governance (Paper)*. Ottawa: First Nations Information Governance Centre.
- Fisheries and Oceans Canada. (2018). *Eulachon Integrated Fisheries Management Plan 2018 (Fraser River)* (p. 54). Fisheries and Oceans Canada. Retrieved from <http://waves-vagues.dfo-mpo.gc.ca/Library/40651617.pdf>
- Folke, C. (2006). Resilience: The emergence of a perspective for social-ecological systems analyses. *Global Environmental Change*, 16(3), 253–267.

- Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. *Annu. Rev. Environ. Resour.*, 30, 441–473.
- Fortier, C. (2017). Unsettling Methodologies/Decolonising Movements. *Journal of Indigenous Social Development*, 6(1), 17.
- Frid, A., McGreer, M., & Stevenson, A. (2016). Rapid recovery of Dungeness crab within spatial fishery closures declared under indigenous law in British Columbia. *Global Ecology and Conservation*, 6, 48–57. <https://doi.org/10.1016/j.gecco.2016.01.002>
- Friedland, H., & Napoleon, V. (2015). Gathering the threads: developing a methodology for researching and rebuilding indigenous legal traditions. *Lakehead Law Journal*, 1(1), 29.
- Frohlich, K. L. (2010). The social determinants of what? *International Journal of Public Health*, 55(4), 235–236.
- Frohlich, K. L., & Potvin, L. (2008). Transcending the Known in Public Health Practice. *American Journal of Public Health*, 98(2), 216–221.
<https://doi.org/10.2105/AJPH.2007.114777>
- Garibaldi, A., & Turner, N. (2004). Cultural Keystone Species: Implications for Ecological Conservation and Restoration. *Ecology and Society*, 9(3). <https://doi.org/10.5751/ES-00669-090301>
- Gaudry, A., & Lorenz, D. (2018). Indigenization as inclusion, reconciliation, and decolonization: navigating the different visions for indigenizing the Canadian Academy. *AlterNative: An International Journal of Indigenous Peoples*, 14(3), 218–227.
<https://doi.org/10.1177/1177180118785382>

- Gauvreau, A., Lepofsky, D., Rutherford, M., & Reid, M. (2017). “Everything revolves around the herring”: the Heiltsuk–herring relationship through time. *Ecology and Society*, 22(2). <https://doi.org/10.5751/ES-09201-220210>
- Government of Canada, S. C. (2017, February 8). Census Profile, 2016 Census - Bella Coola 1, Indian reserve [Census subdivision], British Columbia and British Columbia [Province]. Retrieved January 19, 2019, from <https://www12.statcan.gc.ca/census-recensement/2016/dp-prod/prof/details/Page.cfm?Lang=E&Geo1=CSD&Code1=5945802&Geo2=PR&Code2=59&Data=Count&SearchText=Bella%20Coola&SearchType=Begin&SearchPR=01&B1=All>
- Graham, Hilary. (2004). Social determinants and their unequal distribution: clarifying policy understandings. *Milbank Quarterly*, 82(1), 101–124.
- Graham, Holly, & Martin, S. (2016). Narrative descriptions of miyo-mahcihoyān (physical, emotional, mental, and spiritual well-being) from a contemporary néhiyawak (Plains Cree) perspective. *International Journal of Mental Health Systems*, 10(1), 58. <https://doi.org/10.1186/s13033-016-0086-2>
- Green, T. L. (2007). Improving human wellbeing and ecosystem health on BC’s coast: the challenge posed by historic resource extraction. *Journal of Bioeconomics*, 9(3), 245–263.
- Greenwood, M., & de Leeuw, S. (2007). Teaching from the land: Indigenous people, our health, our land, our children. *Canadian Journal of Native Education*, 30(1), 48–53.

- Greenwood, M., de Leeuw, S., & Lindsay, N. (2018). Challenges in health equity for Indigenous peoples in Canada. *The Lancet*, 391(10131), 1645–1648. [https://doi.org/10.1016/S0140-6736\(18\)30177-6](https://doi.org/10.1016/S0140-6736(18)30177-6)
- Greenwood, M., de Leeuw, S., Lindsay, N. M., & Loppie Reading, C. (Eds.). (2015). *Determinants of Indigenous Peoples' Health in Canada - Beyond the Social*. Toronto: Canadian Scholars' Press.
- Greenwood, M. L., & Leeuw, S. N. de. (2012). Social determinants of health and the future well-being of Aboriginal children in Canada. *Les Déterminants Sociaux de La Santé et Le Futur Bien-Être Des Enfants Autochtones Au Canada.*, 17(7), 381–384.
- Gregory, R., Easterling, D., Kaechele, N., & Trousdale, W. (2016). Values-Based Measures of Impacts to Indigenous Health. *Risk Analysis*, 36(8), 1581–1588. <https://doi.org/10.1111/risa.12533>
- Gregory, R., Failing, L., & Harstone, M. (2008). Meaningful resource consultations with first peoples: Notes from British Columbia. *Environment: Science and Policy for Sustainable Development*, 50(1), 36–45.
- Grey, S., & Patel, R. (2014). Food sovereignty as decolonization: some contributions from Indigenous movements to food system and development politics. *Agriculture and Human Values*, 1–14. <https://doi.org/10.1007/s10460-014-9548-9>
- Gunderson, L. H. (2001). *Panarchy: Understanding Transformations in Human and Natural Systems*. Island Press.
- Haggan, N. (2010). *The case for including the cultural and spiritual values of eulachon in policy and decision-making* (p. 42). Vancouver, B.C.: Nigel Haggan and Associates.

- Haggan, N., Turner, N., Carpenter, J., Jones, J. T., Menzies, C., & Mackie, Q. (2006). *12,000+ years of change: Linking traditional and modern ecosystem science in the Pacific Northwest*. Vancouver, B.C.: Fisheries Centre, University of British Columbia.
- Hankivsky, O. (Ed.). (2011). *Health inequities in Canada: Intersectional frameworks and practices*. UBC Press.
- Hankivsky, O., & Cormier, R. (2011). Intersectionality and public policy: Some lessons from existing models. *Political Research Quarterly*, 64(1), 217–229.
- Harland, F. (2016). Introduction: moving from the why to the how of Indigenous law. *McGill Law Journal*, 61(4), 1–3.
- Harper, S. L., Edge, V. L., & Cunsolo Willox, A. (2012). ‘Changing Climate, Changing Health, Changing Stories’ Profile: Using an EcoHealth Approach to Explore Impacts of Climate Change on Inuit Health. *EcoHealth*, 1–13.
- Harris, C. (2002). Making Native Space: Colonialism. *Resistance and Reserves in British Columbia* (Victoria: University of British Columbia Press, 2003).
- Harris, C. (2004). How did colonialism dispossess? Comments from an edge of empire. *Annals of the Association of American Geographers*, 94(1), 165–182.
- Harris, D. (2001). *Fish, law, and colonialism: The legal capture of salmon in British Columbia*. Toronto: University of Toronto Press.
- Harris, D. (2008). *Landing native fisheries: Indian reserves and fishing rights in British Columbia, 1849-1925*. Vancouver: UBC Press.

- Harris, D., & Millerd, P. (2010). Food Fish, Commercial Fish, and Fish to Support a Moderate Livelihood: Characterizing Aboriginal and Treaty Rights to Canadian Fisheries. *Arctic Review on Law and Politics*, Vol. 1, Pp. 82-107, 2010.
- Hart, M. (2004). *Seeking Mino-Pimatisiwin: An Aboriginal Approach to Helping* (2nd ed. edition). Halifax: Fernwood Books Ltd.
- Hart, M. (2010). Indigenous Worldviews, Knowledge, and Research: The Development of an Indigenous Research Paradigm.
- Hay, D. E., Harbo, K., Clarke, J. R., Parker, G., & McCarter, P. B. (1999). *Catch composition of British Columbia shrimp trawls and preliminary estimate of bycatch - with emphasis on eulachons* (Canadian Stock Assessment Secretariat No. Research Document 99/26) (p. 45). Fisheries and Oceans Canada.
- Heiltsuk Nation. (2019). Hauyat. Retrieved from <http://www.hauyat.ca/home.html>
- Hill, R., Grant, C., George, M., Robinson, C. J., Jackson, S., & Abel, N. (2012). A Typology of Indigenous Engagement in Australian Environmental Management: Implications for Knowledge Integration and Social-ecological System Sustainability. *Ecology and Society*, 17(1). <https://doi.org/10.5751/ES-04587-170123>
- Hilland, A. (2013). *Extinguishment by extirpation: The Nuxalk eulachon crisis* (Master of Laws). University of British Columbia, Vancouver.
- Hipwell, W. T. (2010). Chapter 9: Environmental Conflict and Democracy in Bella Coola: Political Ecology on the Margins of Industria. In L. A. Adkin (Ed.), *Environmental Conflict and Democracy in Canada* (pp. 222–249). Vancouver: UBC Press.

- Hitomi, M. K., & Loring, P. A. (2018). Hidden participants and unheard voices? A systematic review of gender, age, and other influences on local and traditional knowledge research in the North. *FACETS*. <https://doi.org/10.1139/facets-2018-0010>
- Hoehn, F. (2016). Back to the Future - Reconciliation and Indigenous Sovereignty after Tsilhqot'in. *University of New Brunswick Law Journal*, 67, 109.
- hooks, bell. (2000). *All About Love: New Visions*. New York: HarperCollins.
- Houde, N. (2007). The six faces of traditional ecological knowledge: challenges and opportunities for Canadian co-management arrangements. *Ecology and Society*, 12(2).
- Housty, J. (2016, August 11). 'You're Not the Indian I Had in Mind.' Retrieved January 16, 2019, from <http://thetyee.ca/Mediacheck/2016/08/11/Interviewing-Indigenous-Peoples/>
- Housty, W. G., Noson, A., Scoville, G. W., Boulanger, J., Jeo, R. M., Darimont, C. T., & Filardi, C. E. (2014). Grizzly bear monitoring by the Heiltsuk people as a crucible for First Nation conservation practice. *Ecology and Society*, 19(2), 70.
- Howitt, R., & Suchet-Pearson, S. (2006). Rethinking the Building Blocks: Ontological Pluralism and the Idea of 'Management.' *Geografiska Annaler: Series B, Human Geography*, 88(3), 323–335. <https://doi.org/10.1111/j.1468-0459.2006.00225.x>
- Irlbacher-Fox, S. (2009). *Finding Dahshaa: Self-Government, Social Suffering, and Aboriginal Policy in Canada*. Vancouver, BC: UBC Press.
- Irlbacher-Fox, S. (2014). Traditional knowledge, co-existence and co-resistance. *Decolonization: Indigeneity, Education & Society*, 3(3), 145–158.

- Isaak, C. A., & Marchessault, G. (2008). Meaning of Health: The Perspectives of Aboriginal Adults and Youth in a Northern Manitoba First Nations Community. *Canadian Journal of Diabetes*, 32(2), 114–122. [https://doi.org/10.1016/S1499-2671\(08\)22008-3](https://doi.org/10.1016/S1499-2671(08)22008-3)
- Israel, B. A., Coombe, C. M., Cheezum, R. R., Schulz, A. J., McGranaghan, R. J., Lichtenstein, R., ... Burris, A. (2010). Community-Based Participatory Research: A Capacity-Building Approach for Policy Advocacy Aimed at Eliminating Health Disparities. *American Journal of Public Health*, 100(11), 2094–2102. <https://doi.org/10.2105/AJPH.2009.170506>
- Israel, B. A., Schulz, A. J., Parker, E. A., & Becker, A. B. (1998). Review of Community-Based Research: Assessing Partnership Approaches to Improve Public Health. *Annual Review of Public Health*, 19(1), 173–202. <https://doi.org/10.1146/annurev.publhealth.19.1.173>
- James, M., & Alexis, T. (2018). *Not Extinct: Keeping the Sinixt Way*. Nelson: MAA Press.
- Jentoft, S. (2004). Institutions in fisheries: what they are, what they do, and how they change. *Marine Policy*, 28(2), 137–149. [https://doi.org/10.1016/S0308-597X\(03\)00085-X](https://doi.org/10.1016/S0308-597X(03)00085-X)
- Jentoft, S. (2007). Limits of governability: Institutional implications for fisheries and coastal governance. *Marine Policy*, 31(4), 360–370.
- Jentoft, S., Bavinck, M., Johnson, D. S., & Thomson, K. T. (2009). Fisheries co-management and legal pluralism: how an analytical problem becomes an institutional one. *Human Organization*, 68(1), 27–38.
- Jentoft, S., & Chuenpagdee, R. (2009). Fisheries and coastal governance as a wicked problem. *Marine Policy*, 33(4), 553–560.

- Jentoft, S., & Chuenpagdee, R. (Eds.). (2015). *Interactive Governance for Small-Scale Fisheries - Global Reflections*. Switzerland: Springer International Publishing.
- Jernigan, V. B. B. (2015). Beyond Health Equity: Achieving Wellness Within American Indian and Alaska Native Communities. *American Journal of Public Health*, 15(S3), S376-378.
- Johnston, F. H., Jacups, S. P., Vickery, A. J., & Bowman, D. M. J. S. (2007). Ecohealth and Aboriginal testimony of the nexus between human health and place. *Ecohealth*, 4(4), 489–499.
- Jones, R., Rigg, C., & Lee, L. (2010). Haida Marine Planning: First Nations as a partner in marine conservation. *Ecology and Society*, 15(1), 12.
- Jones, R., Rigg, C., & Pinkerton, E. (2016). Strategies for assertion of conservation and local management rights: A Haida Gwaii herring story. *Marine Policy*.
<https://doi.org/10.1016/j.marpol.2016.09.031>
- Jones, R., Shephert, M., & Sterritt, N. (2004). Our place at the table: First Nations and the BC Fishery. *BC Aboriginal Fisheries Commission, Vancouver, 85p*. URL: [Http://Www.Bcafc.Org/Documents/FNFishPanelReport0604.Pdf](http://www.bcafc.org/Documents/FNFishPanelReport0604.Pdf).
- Joseph, B. (2018). *21 Things You May Not Know About The Indian Act: Helping Canadians Make Reconciliation with Indigenous Peoples a Reality*. Port Coquitlam: Indigenous Relations Press.
- Kapilashrami, A., & Hankivsky, O. (2018). Intersectionality and why it matters to global health. *The Lancet*, 391(10140), 2589–2591. [https://doi.org/10.1016/S0140-6736\(18\)31431-4](https://doi.org/10.1016/S0140-6736(18)31431-4)
- Kennedy, D., & Bouchard, R. T. (1990). Northern Coast Salish. In *Handbook of North American Indians* (Vol. 7, pp. 441–452). Washington: Smithsonian Institution.

- Kent, A., Loppie, C., Carriere, J., MacDonald, M., & Pauly, B. (2017). Xpey' Relational Environments: an analytic framework for conceptualizing Indigenous health equity. *Health Promotion and Chronic Disease Prevention in Canada*, 37(12), 395–402.
<https://doi.org/10.24095/hpcdp.37.12.01>
- Khan, A. S., & Neis, B. (2010). The rebuilding imperative in fisheries: Clumsy solutions for a wicked problem? *Progress in Oceanography*, 87(1–4), 347–356.
<https://doi.org/10.1016/j.pocean.2010.09.012>
- King, L. (2004). Competing Knowledge Systems in the Management of Fish and Forests in the Pacific Northwest. *International Environmental Agreements*, 4(2), 161–177.
<https://doi.org/10.1023/B:INEA.0000040418.31663.61>
- Kirby, A. (2017). *Building Indigenous Enforcement Authority Over Marine Territories* (p. 39). Coastal First Nations / Coastal Stewardship Network / West Coast Environmental Law.
- Kirk, R. (1986). *Wisdom of the elders: native traditions on the northwest coast : the Nuuchah-nulth, Southern Kwakiutl, and Nuxalk*. Douglas & McIntyre / British Columbia Provincial Museum.
- Kirkness, V. J., & Barnhardt, R. (1991). First Nations and Higher Education: The Four R's—Respect, Relevance, Reciprocity, Responsibility. *Journal of American Indian Education*, 30(3), 1–15.
- Kirmayer, L. J., & Valaskakis, G. G. (2009). *Healing Traditions: The Mental Health of Aboriginal Peoples in Canada*. UBC Press.

- Klain, S., Beveridge, R., & Bennett, N. (2014). Ecologically sustainable but unjust? Negotiating equity and authority in common-pool marine resource management. *Ecology and Society*, 19(4). <https://doi.org/10.5751/ES-07123-190452>
- Klain, S., Olmsted, P., Chan, K. M. A., & Satterfield, T. (2017). Relational values resonate broadly and differently than intrinsic or instrumental values, or the New Ecological Paradigm. *PLOS ONE*, 12(8), e0183962. <https://doi.org/10.1371/journal.pone.0183962>
- Klein, N. (2013). Dancing the World into Being: A Conversation with Idle No More's Leanne Simpson. *YES! Magazine*. Retrieved from <http://www.yesmagazine.org/peace-justice/dancing-the-world-into-being-a-conversation-with-idle-no-more-leanne-simpson>
- Kooiman, J., Bavinck, M., Chuenpagdee, R., Mahon, R., & Pullin, R. (2008). Interactive governance and governability: An introduction. *Journal of Transdisciplinary Environmental Studies*, 7(1), 1–11.
- Kotaska, J. G. (2013). *Reconciliation "at the end of the day": Decolonising territorial governance in British Columbia after Delgamuukw* (PhD, Resource Management and Environmental Studies). University of British Columbia, Vancouver, B.C.
- Kovach, M. (2005). Emerging from the margins: Indigenous methodologies. In L. Brown & S. Strega (Eds.), *Research as resistance: critical, Indigenous and anti-oppressive approaches* (pp. 19–36). Canadian Scholars' Press.
- Kovach, M. (2009a). Chapter 1: Indigenous and Qualitative Inquiry: A Round Dance? In *Indigenous Methodologies: Characteristics, Conversations, and Contexts* (pp. 23–38). Toronto: University of Toronto Press.

- Kovach, M. (2009b). Chapter 7: Indigenous Research Methods and Interpretation. In *Indigenous Research Methods: Characteristics, Conversations, Contexts* (pp. 121–140). Toronto: University of Toronto Press.
- Kovach, M. (2009c). *Indigenous Methodologies: Characteristics, Conversations, and Contexts*. University of Toronto Press.
- Kovach, M. (2017). Doing Indigenous methodologies - A letter to a research class. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage Handbook of Qualitative Research* (5th ed., pp. 214–234). SAGE Publications Ltd.
- Kramer, J. (2011). *Switchbacks: Art, Ownership, and Nuxalk National Identity*. UBC Press.
- Krieger, N. (2001). Theories for social epidemiology in the 21st century: an ecosocial perspective. *International Journal of Epidemiology*, 30(4), 668–677.
- Krieger, N. (2011). *Epidemiology and the People's Health: Theory and Context*. Oxford University Press.
- Kuhnlein, H. V., Fediuk, K., Nelson, C., Howard, E., & Johnson, S. (2013). The Legacy of the Nuxalk Food and Nutrition Program for the Food Security, Health, and Well-Being of Indigenous Peoples in British Columbia. *BC Studies*, (179), 159.
- Kuhnlein, H. V., Harvey, T., Burgess, S., & Turner, N. J. (2009). The Nuxalk Food and Nutrition Program, coastal British Columbia, Canada: 1981-2006. In H. V. Kuhnlein, B. Erasmus, & D. Spigelski (Eds.), *Indigenous peoples' food systems: the many dimensions of culture, diversity, and environment for nutrition and health* (pp. 23–44).

- Kuhnlein, H. V., & Receveur, O. (1996). Dietary Change and Traditional Food Systems of Indigenous Peoples. *Annual Review of Nutrition*, 16(1), 417–442.
<https://doi.org/10.1146/annurev.nu.16.070196.002221>
- Kuhnlein, H. V., Yeboah, F., Sedgemore, M., Sedgemore, S., & Chan, H. M. (1996). Nutritional Qualities of Ooligan Grease: A Traditional Food Fat of British Columbia First Nations. *Journal of Food Composition and Analysis*, 9(1), 18–31.
<https://doi.org/10.1006/jfca.1996.0004>
- Kung, E., & Smith, G. (2019, January 16). The Unist’ot’en stand-off: How Canada’s “prove-it” mentality undermines reconciliation. Retrieved from
<https://www.wcel.org/blog/unistoten-stand-how-canadas-prove-it-mentality-undermines-reconciliation>
- Latulippe, N. (2015a). Bridging parallel rows: Epistemic difference and relational accountability in cross-cultural research. *International Indigenous Policy Journal*, 6(2).
- Latulippe, N. (2015b). Situating the Work: A typology of traditional knowledge literature. *AlterNative: An International Journal of Indigenous Peoples*, 11(2), 118–131.
<https://doi.org/10.1177/117718011501100203>
- LaVeaux, D., & Christopher, S. (2009). Contextualizing CBPR: Key principles of CBPR meet the Indigenous research context. *Pimatisiwin*, 7(1), 1.
- Legat, A., & Barnaby, J. (2012). *Walking the Land, Feeding the Fire: Knowledge and Stewardship Among the Tlicho Dene* (2 edition). Tucson: University of Arizona Press.
- Lepofsky, D., & Caldwell, M. (2013). Indigenous marine resource management on the Northwest Coast of North America. *Ecological Processes*, 2(1), 12.

- Levac, L., McMurtry, L., Stienstra, D., Baikie, G., Hanson, C., & Mucina, D. (2018). *Learning across Indigenous and Western knowledge systems and intersectionality: reconciling social science research approaches* (p. 48). SSHRC / University of Guelph.
- Levin, S. A., & Lubchenco, J. (2008). Resilience, robustness, and marine ecosystem-based management. *BioScience*, 58(1), 27–32.
- Linklater, R. (2014). *Decolonising Trauma Work: Indigenous Stories and Strategies*. Fernwood Publishing.
- Loppie Reading, C. (2015). The Structural Determinants of Aboriginal Peoples' Health. In M. Greenwood, S. de Leeuw, N. M. Lindsay, & C. L. Reading (Eds.), *Determinants of Indigenous Peoples' Health in Canada: Beyond the Social* (pp. 3–15). Toronto: Canadian Scholars' Press.
- Loppie Reading, C., & Wien, F. (2010). *Health Inequalities and the Social Determinants of Aboriginal Peoples' Health*. National Collaborating Centre for Aboriginal Health.
- Loring, P. A. (2016). The political ecology of gear bans in two fisheries: Florida's net ban and Alaska's Salmon wars. *Fish and Fisheries*, n/a-n/a. <https://doi.org/10.1111/faf.12169>
- Louis, R. P. (2007). Can You Hear Us Now? Voices from the Margin: Using Indigenous Methodologies in Geographic Research. *Geographical Research*, 45(2), 130–139. <https://doi.org/10.1111/j.1745-5871.2007.00443.x>
- Low, M. (2018). *Practices of sovereignty: negotiated agreements, jurisdiction, and well-being for Heiltsuk Nation* (PhD, Resource Management and Environmental Studies). University of British Columbia, Vancouver, BC.

Low, M., & Shaw, K. (2011). First Nations rights and environmental governance: Lessons from the Great Bear Rainforest. *BC Studies*, (172), 9.

Mahon, R., McConney, P., & Roy, R. N. (2008). Governing fisheries as complex adaptive systems. *Marine Policy*, 32(1), 104–112. <https://doi.org/10.1016/j.marpol.2007.04.011>

Mansfield, B. (2007). Property, markets, and dispossession: the Western Alaska Community Development Quota as neoliberalism, social justice, both, and neither. *Antipode*, 39(3), 479–499.

Manuel, A., & Derrickson, G. C. R. (2015). *Unsettling Canada: A National Wake-Up Call*. Toronto: Between the Lines.

Manuel, A., & Derrickson, G. C. R. (2017). *The Reconciliation Manifesto: Recovering the Land, Rebuilding the Economy*. Toronto: James Lorimer & Company.

Marine Planning Partnership Initiative. (2015). *Central Coast Marine Plan 2015*. Victoria: Marine Planning Partnership Initiative. Retrieved from <http://www.deslibris.ca/ID/247063>

Marine Planning Partnership Initiative. (2019). MaPP Central Coast region. Retrieved January 18, 2019, from <http://mappocean.org/central-coast>

Marmot, M. (2007). Achieving health equity: from root causes to fair outcomes. *The Lancet*, 370(9593), 1153–1163.

Marmot, M., Friel, S., Bell, R., Houweling, T. A. J., Taylor, S., & others. (2008). Closing the gap in a generation: health equity through action on the social determinants of health. *The Lancet*, 372(9650), 1661–1669.

- McGee, G., Cullen, A., & Gunton, T. (2010). A new model for sustainable development: a case study of The Great Bear Rainforest regional plan. *Environment, Development and Sustainability*, 12(5), 745–762. <https://doi.org/10.1007/s10668-009-9222-3>
- McGibbon, E., & McPherson, C. (2011). Applying Intersectionality & Complexity Theory to Address the Social Determinants of Women’s Health. Retrieved from <https://tspace.library.utoronto.ca/handle/1807/27217>
- McGregor, D. (2004). Coming Full Circle: Indigenous Knowledge, Environment, and Our Future. *The American Indian Quarterly*, 28(3), 385–410. <https://doi.org/10.1353/aiq.2004.0101>
- McGregor, D. (2009a). Honouring our relations: An Anishnaabe perspective. *Speaking for Ourselves: Environmental Justice in Canada*, 27–41.
- McGregor, D. (2009b). Linking traditional knowledge and environmental practice in Ontario. *Journal of Canadian Studies*, 43(3), 69–100.
- McGregor, D. (2014). Lessons for collaboration involving traditional knowledge and environmental governance in Ontario, Canada. *AlterNative: An International Journal of Indigenous Peoples*, 10(4), 340–353.
- McIlwraith, T. F. (1992). *The Bella Coola Indians* (Vols. 1–2). Toronto: University of Toronto Press.
- McLaren, D., Fedje, D., Dyck, A., Mackie, Q., Gauvreau, A., & Cohen, J. (2018). Terminal Pleistocene epoch human footprints from the Pacific coast of Canada. *PLOS ONE*, 13(3), e0193522. <https://doi.org/10.1371/journal.pone.0193522>

- McLaren, D., Rahemtulla, F., White, E., & Fedje, D. (2015). Prerogatives, Sea Level, and the Strength of Persistent Places: Archaeological Evidence for Long-Term Occupation of the Central Coast of British Columbia. *BC Studies*, 187(Autumn), 37.
- McMillan, L. J., & Prosper, K. (2016). Remobilizing netukulimk: indigenous cultural and spiritual connections with resource stewardship and fisheries management in Atlantic Canada. *Reviews in Fish Biology and Fisheries*, 26(4), 629–647.
<https://doi.org/10.1007/s11160-016-9433-2>
- Mills, A. (2016). The lifeworlds of law: on revitalizing indigenous legal orders today. *McGill Law Journal*, 4(61), 847–884.
- Minkler, M. (2005). Community-based research partnerships: challenges and opportunities. *Journal of Urban Health*, 82. Retrieved from
<http://www.springerlink.com/index/714rh0726x643h31.pdf>
- Minkler, M., & Wallerstein, N. (Eds.). (2003). *Community-Based Participatory Research for Health* (1st ed.). Jossey-Bass.
- Moody, M. (2008). *Eulachon past and present* (Master of Science). University of British Columbia, Vancouver.
- Moore, C., Castleden, H., Tirone, S., & Martin, D. (2017). Implementing the Tri-Council Policy on Ethical Research Involving Indigenous Peoples in Canada: So, How's That Going in Mi'kma'ki? *International Indigenous Policy Journal*, 8(2).
<https://doi.org/10.18584/iipj.2017.8.2.4>
- Muhammad, M., Wallerstein, N., Sussman, A. L., Avila, M., Belone, L., & Duran, B. (2015). Reflections on researcher identity and power: The impact of positionality on community

- based participatory research (CBPR) processes and outcomes. *Critical Sociology*, 41(7–8), 1045–1063.
- Mulrennan, M. E., Mark, R., & Scott, C. H. (2012). Revamping community-based conservation through participatory research. *The Canadian Geographer / Le Géographe Canadien*, 56(2), 243–259. <https://doi.org/10.1111/j.1541-0064.2012.00415.x>
- Murray, G., D’Anna, L., & MacDonald, P. (2016). Measuring what we value: The utility of mixed methods approaches for incorporating values into marine social-ecological system management. *Marine Policy*, 73, 61–68. <https://doi.org/10.1016/j.marpol.2016.07.008>
- Murray, G., & King, L. (2012). First Nations values in protected area governance: Tla-o-qui-aht tribal parks and Pacific Rim National Park Reserve. *Human Ecology*, 40(3), 385–395.
- Nadasdy, P. (1999). The politics of TEK: Power and the "integration" of knowledge. *Arctic Anthropology*, 1–18.
- Nadasdy, P. (2003). Reevaluating the co-management success story. *Arctic*, 367–380.
- Nadasdy, P. (2005). The Anti-politics of TEK: The Institutionalization of Co-management Discourse and Practice [traditional ecological knowledge]. *Anthropologica; Waterloo*, 47(2), 215–232.
- Napoleon, V. (2007). *Thinking About Legal Orders*. National Centre for First Nations Governance.
- Napoleon, V., & Friedland, H. (2016). An inside job: engaging with indigenous legal traditions through stories. *McGill Law Journal*, 61(4), 725–754.

- Napoleon, V., & Overstall, R. (2007). *Indigenous Laws: Some Issues, Considerations and Experiences* (Aboriginal Policy Research Consortium International (APRCi) No. 281) (p. 19).
- Nature United Canada. (2019). Indigenous Guardians Toolkit. Retrieved January 19, 2019, from <https://www.indigenousguardianstoolkit.ca/home>
- Neis, B. (2005). *Changing tides: gender, fisheries and globalization*. Winnipeg: Fernwood Publishing.
- Newell, D. (1993). *Tangled Webs of History: Indians and the Law in Canada's Pacific Coast Fisheries*. Toronto ; Buffalo: University of Toronto Press.
- Nicholls, R. (2009). Research and Indigenous participation: critical reflexive methods. *International Journal of Social Research Methodology*, 12(2), 117–126.
<https://doi.org/10.1080/13645570902727698>
- Noisecat, J. B. (2018). The resurgence of the Nuxalk. *Canadian Geographic*, (Sept/Oct).
Retrieved from <https://www.canadiangeographic.ca/article/resurgence-nuxalk>
- Nussbaum, M., & Sen, A. (1993). *The Quality of Life*. Oxford University Press.
- Nuxalk Food and Nutrition Program Staff. (1984). *Nuxalk Food and Nutrition Handbook*. Bella Coola: Nuxalk Food and Nutrition Program.
- Nuxalk Food and Nutrition Program Staff. (1985). *Kanusyam a Snknic "Real Good Food": A Nuxalk Recipe Book*. Nuxalk Food and Nutrition Program.
- Nuxalk Nation. (2019a). About. Retrieved from <https://nuxalknation.ca/about/>

- Nuxalk Nation. (2019b). Nuxalk Territory Maps. Retrieved January 18, 2019, from <http://www.nuxalk.net/html/maps.htm>
- Nuxalk Radio. (2019). Nuxalk Radio [Live]. Bella Coola: Nuxalk Radio 91.1.
- Nwe Jinan. (2016). *We Are Medicine*. Bella Coola. Retrieved from <https://www.youtube.com/watch?v=VeWqgLLCef0>
- Olsson, P., Bodin, Ö., & Folke, C. (2010). Building transformative capacity for ecosystem stewardship in social–ecological systems. *Adaptive Capacity and Environmental Governance*, 263–285.
- Ommer, R. E. (2007). *Coasts Under Stress: Restructuring and Social-Ecological Health*. Montreal and Kingston: McGill-Queen’s University Press.
- Osborne, N., Howlett, C., & Grant-Smith, D. (2019). Intersectionality and Indigenous Peoples in Australia: Experiences with engagement in Native Title and mining. In O. Hankivsky & J. S. Jordan-Zachery (Eds.), *The Palgrave Handbook of Intersectionality in Public Policy*. Palgrave Macmillan.
- Parkes, M. (2011). Diversity, Emergence, Resilience: Guides for A New Generation of Ecohealth Research and Practice. *EcoHealth*, 8(2), 137–139. <https://doi.org/10.1007/s10393-011-0732-8>
- Parkes, M. (2013). *Ecohealth and aboriginal health: common ground* (Emerging Priorities) (p. 12). NCCAHA.
- Pasternak, S. (2017). *Grounded Authority: The Algonquins of Barriere Lake against the State*. U of Minnesota Press.

- Patenaude, J. (2006). *Prevalence of diabetes mellitus in the Aboriginal and non-Aboriginal people living in the Bella Coola Valley*. Library and Archives Canada = Bibliothèque et Archives Canada, Ottawa.
- Pauly, B., MacDonald, M., Martin, W., Perkin, K., Wallace, B., Zeisser, C., ... O'Briain, W. (2014). What is the role of health equity tools in large-systems transformation? *The European Journal of Public Health*, 24(suppl 2), cku166.002.
<https://doi.org/10.1093/eurpub/cku166.002>
- Peltier, C. (2018). An Application of Two-Eyed Seeing: Indigenous Research Methods With Participatory Action Research. *International Journal of Qualitative Methods*, 17(1), 1609406918812346. <https://doi.org/10.1177/1609406918812346>
- Pinkerton, E. (2015). The role of moral economy in two British Columbia fisheries: Confronting neoliberal policies. *Marine Policy*, 61, 410–419.
<https://doi.org/10.1016/j.marpol.2015.04.009>
- Pinkerton, E., Angel, E., Ladell, N., Williams, P., Nicolson, M., Thorkelson, J., & Clifton, H. (2014). Local and regional strategies for rebuilding fisheries management institutions in coastal British Columbia: what components of comanagement are most critical? *Ecology and Society*, 19(2). <https://doi.org/10.5751/ES-06489-190272>
- Pinkerton, E., & Davis, R. (2015). Neoliberalism and the politics of enclosure in North American small-scale fisheries. *Marine Policy*, 61, 303–312.
<https://doi.org/10.1016/j.marpol.2015.03.025>
- Pinkerton, E., & Edwards, D. N. (2009). The elephant in the room: the hidden costs of leasing individual transferable fishing quotas. *Marine Policy*, 33(4), 707–713.

- Pinkerton, E., & John, L. (2008). Creating local management legitimacy. *Marine Policy*, 32(4), 680–691.
- Pinkerton, E., & Silver, J. J. (2011). Cadastralizing or coordinating the clam commons: Can competing community and government visions of wild and farmed fisheries be reconciled? *Marine Policy*, 35(1), 63–72.
- Plummer, R. (2009). The adaptive co-management process: An initial synthesis of representative models and influential variables. *Ecology and Society*, 14(2), 24.
- Plummer, R., & Armitage, D. (2007). A resilience-based framework for evaluating adaptive co-management: Linking ecology, economics and society in a complex world. *Ecological Economics*, 61(1), 62–74.
- Plummer, R., Crona, B., Armitage, D., Olsson, P., Tengö, M., Yudina, O., & Unpacking, A. C. M. (2012). Adaptive Comanagement: a Systematic Review and Analysis. *Ecology and Society*, 17(3), 11.
- Poe, M. R., Donatuto, J., & Satterfield, T. (2016). “Sense of Place”: Human Wellbeing Considerations for Ecological Restoration in Puget Sound. *Coastal Management*, 44(5), 409–426. <https://doi.org/10.1080/08920753.2016.1208037>
- Potts, K., & Brown, L. (2005). Becoming an Anti-oppressive Researcher. In *Research as Resistance: Critical, Indigenous, and Anti-oppressive Approaches* (1st ed., pp. 255–286). Toronto: Canadian Scholars’ Press.
- Powers, M., & Faden, R. (2006). *Social justice: the moral foundations of public health and health policy*. Oxford University Press, USA.

- Prime Minister's Office. (2018, June 21). Reconciliation Framework Agreement for Bioregional Oceans Management and Protection. Retrieved February 20, 2019, from <https://pm.gc.ca/eng/news/2018/06/21/reconciliation-framework-agreement-bioregional-oceans-management-and-protection>
- Province of British Columbia. (2019). Reconciliation & Other Agreements. Retrieved February 20, 2019, from <https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/consulting-with-first-nations/first-nations-negotiations/reconciliation-other-agreements>
- Raphael, D. (2009). *Social Determinants Of Health: Canadian Perspectives*. Canadian Scholars' Press.
- Reading, J., Loppie, C., & O'Neil, J. (2016). Indigenous health systems governance: From the Royal Commission on Aboriginal Peoples (RCAP) to Truth and Reconciliation Commission (TRC). *International Journal of Health Governance*, 21(4), 222–228. <https://doi.org/10.1108/IJHG-08-2016-0044>
- Reo, N. J., Whyte, K. P., McGregor, D., Smith, M. A., & Jenkins, J. F. (2017). Factors that support Indigenous involvement in multi-actor environmental stewardship. *AlterNative: An International Journal of Indigenous Peoples*, 13(2), 58–68.
- Resilience Alliance. (2010). Assessing resilience in social-ecological systems: workbook for practitioners. *Version 2.0*, 54.
- Richmond, C. (2015). The Relatedness of People, Land, and Health: Stories from Anishinabe Elders. In M. Greenwood, S. de Leeuw, N. M. Lindsay, & C. Loppie Reading (Eds.),

- Determinants of Indigenous Peoples' Health in Canada - Beyond the Social* (pp. 47–63).
Toronto: Canadian Scholars' Press.
- Richmond, C., & Cook, C. (2016). Creating conditions for Canadian aboriginal health equity: the promise of healthy public policy. *Public Health Reviews*, 37(1).
<https://doi.org/10.1186/s40985-016-0016-5>
- Richmond, C., Elliott, S. J., Matthews, R., & Elliott, B. (2005). The political ecology of health: perceptions of environment, economy, health and well-being among 'Namgis First Nation. *Health & Place*, 11(4), 349–365.
<https://doi.org/10.1016/j.healthplace.2004.04.003>
- Richmond, C., & Ross, N. A. (2009). The determinants of First Nation and Inuit health: A critical population health approach. *Health & Place*, 15(2), 403–411.
<https://doi.org/10.1016/j.healthplace.2008.07.004>
- Riddell, J. K., Salamanca, A., Pepler, D. J., Cardinal, S., & McIvor, O. (2017). Laying the Groundwork: A Practical Guide for Ethical Research with Indigenous Communities. *International Indigenous Policy Journal*, 8(2). <https://doi.org/10.18584/iipj.2017.8.2.6>
- Robinson Consulting and Associates. (2012). *Socio-economic and Cultural Overview and Assessment Report for the Pacific North Coast Integrated Management Area* (p. 230). Victoria, B.C. Retrieved from <http://pop.pncima.org/media/documents/secoa/secoa-final-mar-1-12.pdf>
- Rohe, J. R., Govan, H., & Ferse, S. (2018). A legal pluralism perspective on coastal fisheries governance in two Pacific Island countries. *Marine Policy*.

- Ross, A. (Ed.). (2011). *Indigenous peoples and the collaborative stewardship of nature: knowledge binds and institutional conflicts*. Walnut Creek, CA: Left Coast Press.
- Roughan, N. (2013). *Authorities: Conflicts, Cooperation, and Transnational Legal Theory*. OUP Oxford.
- Ruru, J. A. (2012). *Settling Indigenous place: Reconciling legal fictions in governing Canada and Aotearoa New Zealand's national parks*. University of Victoria. Retrieved from <http://dspace.library.uvic.ca:8080/handle/1828/3965>
- Salomon, A. K., Tanape Sr, N. M., & Huntington, H. P. (2007). Serial depletion of marine invertebrates leads to the decline of a strongly interacting grazer. *Ecological Applications*, 17(6), 1752–1770.
- Salomon, A., Lertzman, K., Brown, K., Wilson, Kii'iljuus Barbara, Secord, D., & McKechnie, I. (2018). Democratizing conservation science and practice. *Ecology and Society*, 23(1). <https://doi.org/10.5751/ES-09980-230144>
- Satterfield, T., Gregory, R., Klain, S., Roberts, M., & Chan, K. M. (2013). Culture, intangibles and metrics in environmental management. *Journal of Environmental Management*, 117, 103–114. <https://doi.org/10.1016/j.jenvman.2012.11.033>
- Schabus, N. (2014). Landmark Decision on Aboriginal Title. *Environmental Policy and Law; Amsterdam*, 44(4), 383–385.
- Schnarch, B. (2004). Ownership, control, access, and possession (OCAP) or self-determination applied to research: A critical analysis of contemporary First Nations research and some options for First Nations communities. *International Journal of Indigenous Health*, 1(1), 80.

- Scott, W. R. (2013). *Institutions and Organizations: Ideas, Interests, and Identities*. SAGE Publications.
- Self, B. R., Birmingham, L. C., Elliott, R., Zhang, W., & Thommasen, H. V. (2005). The prevalence of overweight adults living in a rural and remote community. The Bella Coola Valley. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*, 10(2), 133–138. <https://doi.org/10.1007/BF03327535>
- Sen, A. (2001). *Development as Freedom*. Oxford University Press.
- Senkowsky, S. (2007). A Feast to Commemorate—and Mourn—the Eulachon. *BioScience*, 57(8), 720–720. <https://doi.org/10.1641/B570815>
- Shaw, K. (2008). *Indigeneity and political theory: sovereignty and the limits of the political*. London ; New York: Routledge.
- Shaw, W. S., Herman, R. D. K., & Dobbs, G. R. (2006). Encountering indigeneity: Re-imagining and decolonising geography. *Geografiska Annaler: Series B, Human Geography*, 88(3), 267–276.
- Simonds, V. W., & Christopher, S. (2013). Adapting Western Research Methods to Indigenous Ways of Knowing. *American Journal of Public Health*, 103(12), 2185–2192. <https://doi.org/10.2105/AJPH.2012.301157>
- Simpson, L. B. (2004). Anticolonial Strategies for the Recovery and Maintenance of Indigenous Knowledge. *American Indian Quarterly*, 28(3/4), 373–384.
- Simpson, L. B. (2008a). *Lighting the Eighth Fire - The Liberation, Resurgence, and Protection of Indigenous Nations*. Winnipeg: ARP Books.

- Simpson, L. B. (2008b). Oshkimaadiziig, the New People. In L. B. Simpson (Ed.), *Lighting the Eighth Fire: The Liberation, Resurgence, and Protection of Indigenous Nations* (pp. 13–22). Winnipeg: ARP Books.
- Simpson, L. B. (2008c). Our Elder Brothers: The Lifeblood of Resurgence. In L. B. Simpson (Ed.), *Lighting the Eighth Fire: The Liberation, Resurgence, and Protection of Indigenous Nations* (pp. 73–88). Winnipeg: ARP Books.
- Simpson, L. B. (2011). *Dancing On Our Turtle's Back: Stories of Nishnaabeg Re-Creation, Resurgence, and a New Emergence*. Winnipeg: ARP Books.
- Simpson, L. B. (2014). Land as pedagogy: Nishnaabeg intelligence and rebellious transformation. *Decolonization: Indigeneity, Education & Society*, 3(3).
- Simpson, L. B. (2017a). *As We Have Always Done: Indigenous Freedom through Radical Resistance* (3rd ed. edition). Minneapolis: Univ Of Minnesota Press.
- Simpson, L. B. (2017b). Nishnaabeg anticapitalism. In *As we Have Always Done: Indigenous Freedom Through Radical Resistance* (pp. 71–82). Minneapolis: University of Minnesota Press.
- Singleton, S. (2009). Native People and Planning for Marine Protected Areas: How “Stakeholder” Processes Fail to Address Conflicts in Complex, Real-World Environments. *Coastal Management*, 37(5), 421–440.
- Smith, L. T. (1999). *Decolonising Methodologies: Research and Indigenous Peoples*. Zed Books.

- Smith, L. T., Maxwell, T. K., Puke, H., & Temara, P. (2016). Indigenous knowledge, methodology and mayhem: What is the role of methodology in producing indigenous insights? A discussion from Mātauranga Māori, *4*(3), 131–156.
- Smith, L. T., Tuck, E., & Yang, K. W. (2018). *Indigenous and Decolonising Studies in Education: Mapping the Long View*. Routledge.
- Smithers Graeme, C., & Mandawe, E. (2017). Indigenous Geographies: Research as Reconciliation. *International Indigenous Policy Journal*, *8*(2).
<https://doi.org/10.18584/iipj.2017.8.2.2>
- Snowshoe, A., Crooks, C. V., Tremblay, P. F., & Hinson, R. E. (2017). Cultural Connectedness and Its Relation to Mental Wellness for First Nations Youth. *The Journal of Primary Prevention*, *38*(1), 67–86. <https://doi.org/10.1007/s10935-016-0454-3>
- Snxakila, (Clyde Tallio). (2014). personal correspondence.
- Snxakila, (Clyde Tallio). (2018). personal correspondence.
- Social Planning and Research Council of British Columbia. (2014). *Who Gets Sustenance? Community Voices Speak About Access to Local, Healthy Food*. Burnaby: Social Planning and Research Council of British Columbia (SPARC BC).
- Song, A. M., Chuenpagdee, R., & Jentoft, S. (2013). Values, images, and principles: What they represent and how they may improve fisheries governance. *Marine Policy*, *40*, 167–175.
<https://doi.org/10.1016/j.marpol.2013.01.018>
- Sputc Project Team. (2017). *Alhqulh ti Sputc (The Eulachon Book)*. Bella Coola: Nuxalk Stewardship Office.

- Starfield, B. (2007). Pathways of influence on equity in health: a rejoinder.
- Stephens, C., Parkes, M. W., & Chang, H. (2007). Indigenous perspectives on ecosystem sustainability and health. *EcoHealth*, 4(4), 369–370.
- Stevenson, M. G. (2006). The Possibility of Difference: Rethinking Co-management. *Human Organization*, 65(2), 167–180.
- Stewart-Harawira, M. (2013). Challenging Knowledge Capitalism: Indigenous Research in the 21st Century. *Socialist Studies/Études Socialistes*, 9(1). <https://doi.org/10.18740/S43S3V>
- Stiegman, M., & Castleden, H. (2015). Leashes and Lies: Navigating the Colonial Tensions of Institutional Ethics of Research Involving Indigenous Peoples in Canada. *International Indigenous Policy Journal*, 6(3). <https://doi.org/10.18584/iipj.2015.6.3.2>
- Swanky, T. (2016). *The Smallpox war in Nuxalk Territory*. British Columbia: Dragon Heart.
- Tanner, A. (2009). The Origins of Northern Aboriginal Social Pathologies and the Quebec Cree Healing Movement. In L. J. Kirmayer & G. G. Valaskakis (Eds.), *Healing Traditions: The Mental Health of Aboriginal Peoples in Canada* (pp. 249–271). Vancouver: UBC Press.
- Thielmann, T. (2012). *Enhancing the Environmental Stewardship Authority of Indigenous Peoples* (p. 36). Coastal First Nations / UVic Environmental Law Centre / West Coast Environmental Law. Retrieved from <https://www.indigenousguardianstoolkit.ca/community-resource/enhancing-environmental-stewardship-authority-indigenous-peoples-coastal>

- Thomas, R. A. (2005). Honouring the Oral Traditions of My Ancestors Through Storytelling. In L. Brown & S. Strega (Eds.), *Research as Resistance: Critical, Indigenous, and Anti-oppressive approaches* (pp. 237–254). Toronto: Canadian Scholars' Press.
- Thommasen, H. V., Hanlon, N., Thommasen, C., & Zhang, W. (2006). Alcohol drinking habits and community perspectives on alcohol abuse in the Bella Coola Valley. *Canadian Journal of Rural Medicine*, 11(1), 15–21.
- Thommasen, H. V., & Zhang, W. (2006). Health-related quality of life and type 2 diabetes: A study of people living in the Bella Coola Valley. *BC Medical Journal*, 6(48), 272–279.
- Tides Canada. (2019). Eyes and ears on the Pacific Coast. Retrieved January 19, 2019, from https://tidescanada.org/impact_stories/eyes-and-ears-on-the-pacific-coast/
- Tobias, J. K., Richmond, C., & Luginaah, I. (2013). Community-based participatory research (CBPR) with Indigenous communities: Producing respectful and reciprocal research. *Journal of Empirical Research on Human Research Ethics*, 8(2), 129–140.
- Trosper, R. L. (2002). Northwest coast indigenous institutions that supported resilience and sustainability. *Ecological Economics*, 41(2), 329–344.
- Trosper, R. L. (2003). Resilience in pre-contact Pacific Northwest social ecological systems. *Conservation Ecology*, 7(3), 6.
- Tuck, E., McKenzie, M., & McCoy, K. (2014). Land education: Indigenous, post-colonial, and decolonising perspectives on place and environmental education research. *Environmental Education Research*, 20(1), 1–23. <https://doi.org/10.1080/13504622.2013.877708>
- Tuck, E., & Yang, K. W. (2012). Decolonization is not a metaphor. *Decolonization: Indigeneity, Education and Society*, 1(1), 1–40.

- Turner, D. (2006). *This Is Not a Peace Pipe: Towards a Critical Indigenous Philosophy* (1 edition). Toronto: University of Toronto Press, Scholarly Publishing Division.
- Turner, K., & Bitonti, C. (2011). Conservancies in British Columbia, Canada: Bringing Together Protected Areas and First Nations' Interests. *The International Indigenous Policy Journal*, 2(2). <https://doi.org/10.18584/iipj.2011.2.2.3>
- Turner, N. J. (2014). *Ancient pathways, ancestral knowledge: ethnobotany and ecological wisdom of Indigenous peoples of northwestern North America*. Montreal ; Ithaca: McGill-Queen's University Press.
- Turner, N. J., & Berkes, F. (2006). Coming to understanding: Developing conservation through incremental learning in the Pacific Northwest. *Human Ecology*, 34(4), 495–513.
- Turner, N. J., Berkes, F., Stephenson, J., & Dick, J. (2013). Blundering Intruders: Extraneous Impacts on Two Indigenous Food Systems. *Human Ecology*.
<https://doi.org/10.1007/s10745-013-9591-y>
- Turner, N. J., Gregory, R., Brooks, C., Failing, L., & Satterfield, T. (2008). From invisibility to transparency: identifying the implications. *Ecology and Society*, 13(2), 7.
- UN General Assembly. United Nations Declaration on the Rights of Indigenous Peoples, A/RES/61/295 § (2007).
- UVic Environmental Law Clinic. (2012, December 14). Memo re. file # 2012-03-07: Saving eulachon and enhancing use of traditional ecological knowledge.
- Valverde, M. (2009). Jurisdiction and Scale: Legal 'Technicalities' as Resources for Theory. *Social & Legal Studies*, 18(2), 139–157. <https://doi.org/10.1177/0964663909103622>

- von der Porten, S. (2012). Canadian indigenous governance literature: A review. *AlterNative: An International Journal of Indigenous Peoples*, 8(1), 1–14.
- von der Porten, S., Corntassel, J., & Mucina, D. (2019). Indigenous nationhood and herring governance: strategies for the reassertion of Indigenous authority and inter-Indigenous solidarity regarding marine resources. *AlterNative: An International Journal of Indigenous Peoples*.
- von der Porten, S., & de Loë, R. C. (2014a). How Collaborative Approaches to Environmental Problem Solving View Indigenous Peoples: A Systematic Review. *Society & Natural Resources*, 27(10), 1040–1056. <https://doi.org/10.1080/08941920.2014.918232>
- von der Porten, S., & de Loë, R. C. (2014b). Water policy reform and Indigenous governance. *Water Policy*, 16(2), 222–243.
- Von Der Porten, S., De Loë, R. C., & McGregor, D. (2016). Incorporating Indigenous Knowledge Systems into Collaborative Governance for Water: Challenges and Opportunities. *Journal of Canadian Studies*, 50(1), 214–243.
- von der Porten, S., de Loë, R. C., & McGregor, D. (2016). Incorporating Indigenous Knowledge Systems into Collaborative Governance for Water: Challenges and Opportunities. *Journal of Canadian Studies*. <https://doi.org/10.3138/jcs.2016.50.1.214>
- von der Porten, S., de Loë, R., & Plummer, R. (2015). Collaborative Environmental Governance and Indigenous Peoples: Recommendations for Practice. *Environmental Practice*, 17(02), 134–144. <https://doi.org/10.1017/S146604661500006X>

- von der Porten, S., Lepofsky, D., McGregor, D., & Silver, J. J. (2016). Recommendations for marine herring policy change in Canada: Aligning with Indigenous legal and inherent rights. *Marine Policy*, 74, 68–76. <https://doi.org/10.1016/j.marpol.2016.09.007>
- Walby, S. (2007). Complexity theory, systems theory, and multiple intersecting social inequalities. *Philosophy of the Social Sciences*, 37(4), 449–470.
- Wallerstein, N., & Duran, B. (2006). Using community-based participatory research to address health disparities. *Health Promotion Practice*, 7(3), 312–323.
- Wallerstein, N., Duran, B., Oetzel, J. G., & Minkler, M. (2017). *Community-Based Participatory Research for Health: Advancing Social and Health Equity*. John Wiley & Sons.
- Waltner-Toews, D., & Kay, J. (2005). The evolution of an ecosystem approach: the diamond schematic and an adaptive methodology for ecosystem sustainability and health. *Ecology and Society*, 10(1), 38.
- Webber, J. H. A. (2016). We are still in the age of encounter: Section 25 and a Canada beyond sovereignty. In P. Macklem & D. Sanderson (Eds.), *From Recognition to Reconciliation: Essays on the Constitutional Entrenchment of Aboriginal and Treaty Rights* (pp. 63–99). Toronto: University of Toronto Press.
- Weicker, F. (2009). *Social and economic assessment and analysis of First Nation communities and territorial natural resources for integrated marine use planning in the Pacific North Coast Integrated Management Area*. Ference Weicker & Company Ltd. Retrieved from <http://ccira.ca/media/documents/pdf/marine-sector-report-f-w.pdf>
- Whitehead, M. (1991). The concepts and principles of equity and health. *Health Promotion International*, 6(3), 217–228.

- Whyte, K. P. (2013). On the role of traditional ecological knowledge as a collaborative concept: a philosophical study. *Ecological Processes*, 2(1), 1.
- Wild, P. (2004). *One river, two cultures: a history of the Bella Coola Valley*. Madeira Park, B.C.: Harbour Pub.
- Wildcat, M., McDonald, M., Irlbacher-Fox, S., & Coulthard, G. S. (2014). Learning from the land: Indigenous land based pedagogy and decolonization. *Decolonization: Indigeneity, Education & Society*, 3(3), 15.
- William, G., & Armstrong, J. (Eds.). (2015). *River of Salmon Peoples*. Theytus Books.
- Williams, T., & Hardison, P. (2013). Culture, law, risk and governance: contexts of traditional knowledge in climate change adaptation. *Climatic Change*, 120(3), 531–544.
<https://doi.org/10.1007/s10584-013-0850-0>
- Wilson, K. (2003). Therapeutic landscapes and First Nations peoples: an exploration of culture, health and place. *Health & Place*, 9(2), 83–93.
- Wilson, S. (2008). *Research is Ceremony: Indigenous Research Methods*. Winnipeg: Fernwood Publishing.
- Winbourne, J. (1998). *Taking Care Of Salmon: Significance, Sharing, and Stewardship in a Nuxalk Food Fishery* (Master of Environmental Science). Dalhousie University, Nova Scotia.
- Young, I. M. (2002). Equality of whom? Social groups and judgments of injustice. *Journal of Political Philosophy*, 9(1), 1–18.

FIGURES and IMAGES

Figure 1: Four overlapping topics addressed by the Sputc Project (SP) with a decolonising health equity focus.

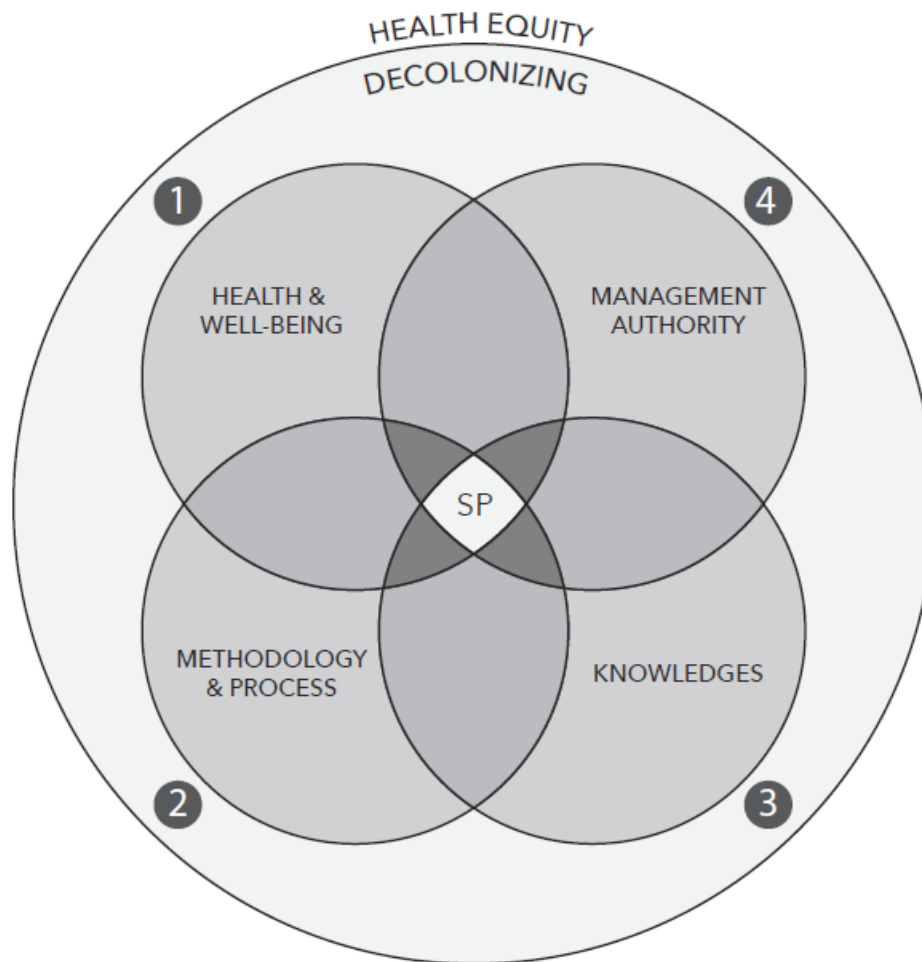


Figure 2: Decolonising health equity model

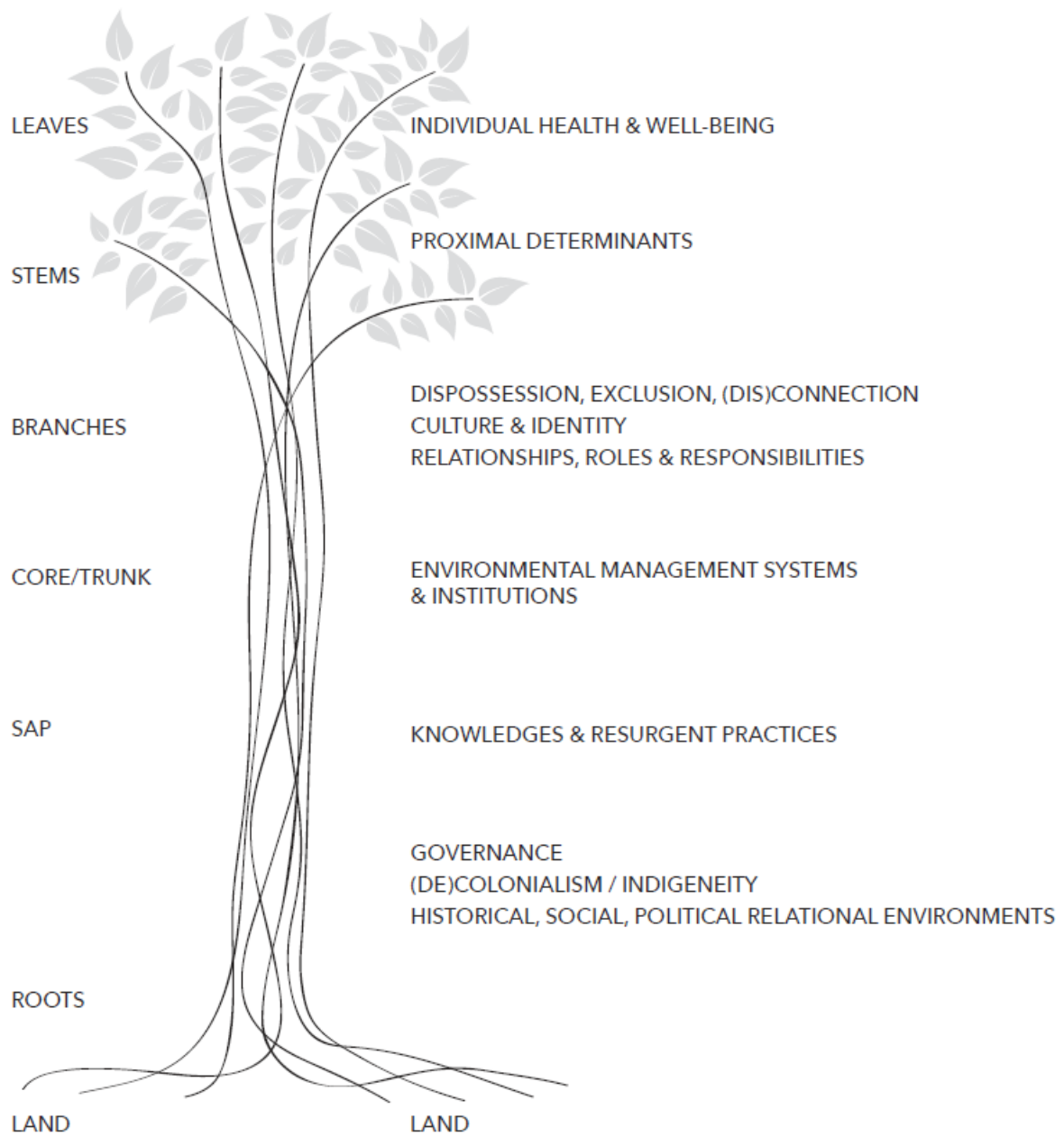
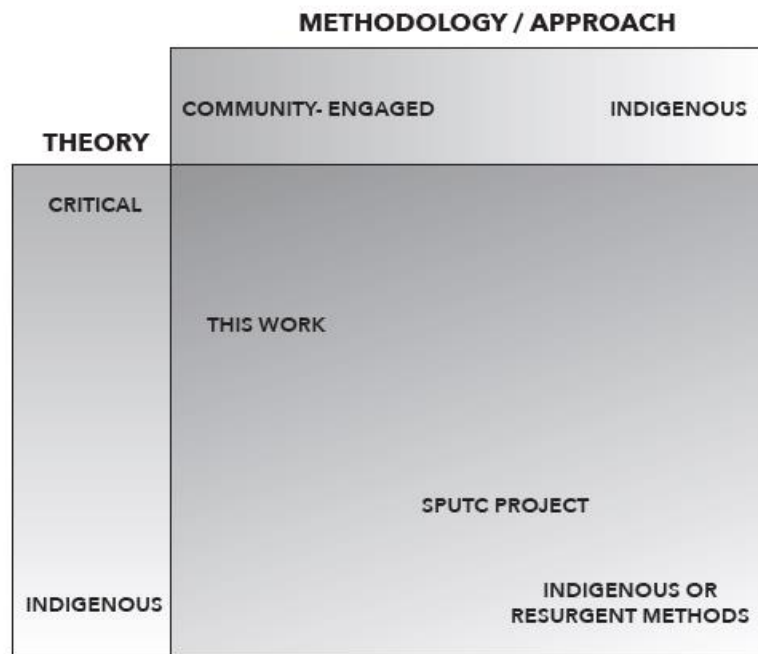
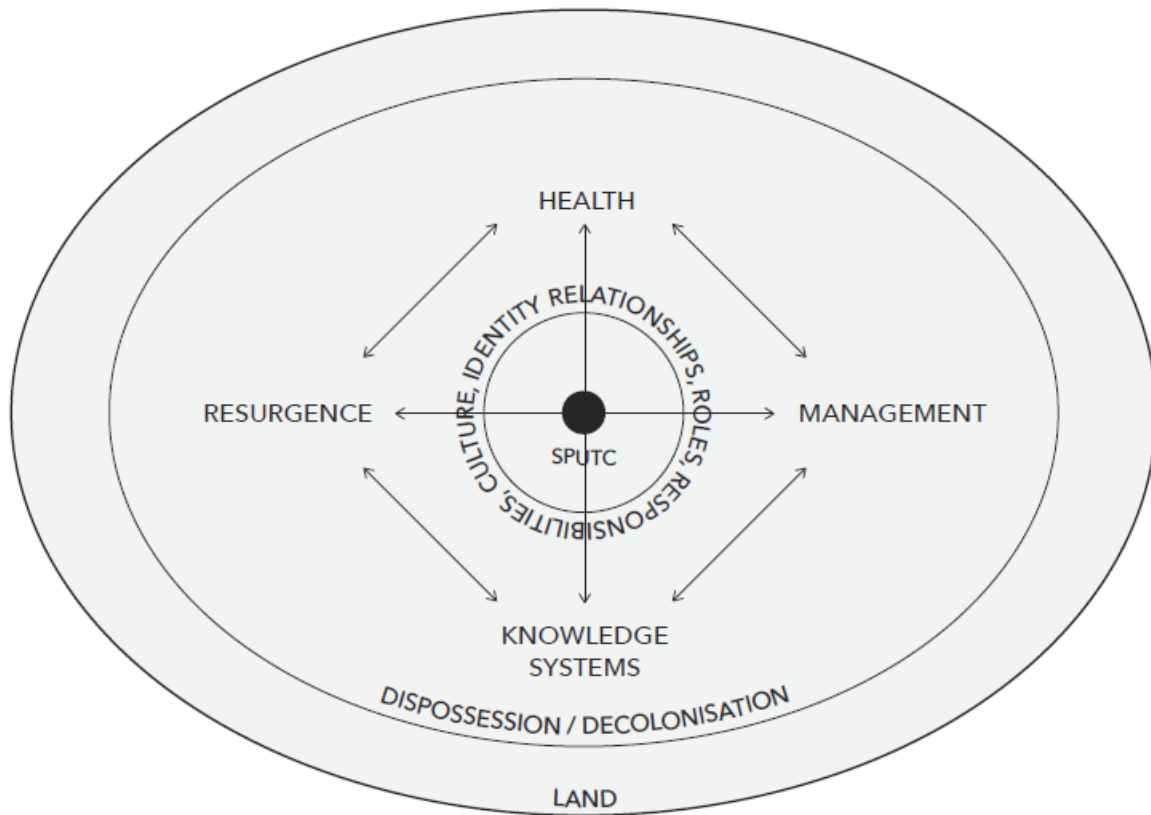


Figure 3: Indigenous research approaches



This dissertation, the *Sputc Project* and resurgent Indigenous methods are shown in relation to their orientation to critical or Indigenous theories, and community or Indigenous methodologies. Each may or may not be decolonising in intent. Collaborative or Indigenous-led natural sciences, including ecological and environmental sciences, may not be explicitly located on the critical-Indigenous continuum described here.

Figure 4: Dissertation topics in relation to land and *sputc*.



Sputc (eulachon) mediate the interactions between Indigenous health, resurgence, management, and knowledge systems. Dispossession or decolonization/reconnection mediate the relationship between the land and *Nuxalkmc* relationships, responsibilities, roles, cultural practices, and identities, including those related to *sputc*.

Map 1: Eulachon spawning rivers on the central coast

Red dots represent eulachon spawning rivers in Nuxalk territory and/or historically accessed by Nuxalkmc. Grey dots represent eulachon central coast spawning rivers outside of Nuxalk territory. Blue dots represent rivers that may or may not have been accessed or had regular eulachon runs (Sputc Project Team, 2017, p. 66).



APPENDIX

Original research objectives (2014)

- A. Characterise Nuxalk understandings of how eulachon support past and present well-being, including how eulachon promoted well-being historically, and how *Nuxalkmc* have been affected by their disappearance.
- B. Describe the *Sputc* Project and process:
 - 1. Clarify intended goals and objectives of the *Sputc Project*
 - 2. Describe project rollout
- C. Characterize how *Nuxalkmc* engaged in the project
 - 1. Explore enablers and barriers to project engagement and execution (as appropriate)
 - 2. Characterise how *Nuxalkmc* understand its benefits, including well-being benefits
- D. Nuxalk *sputc* guardianship institutions:
 - 1. Document and characterise Nuxalk eulachon protection knowledge and institutions related to eulachon guardianship, including traditional laws, rules, practices, and beliefs.
 - 2. Explore how these institutions are understood to support Nuxalk well-being
 - 3. Explore challenges to documenting and integrating (distributed and colonised) indigenous knowledge systems.
- E. Situate the *Sputc Project* in the larger social-ecological and governance context by characterizing elements and actors beyond the local, focusing on the extent to which the current SARA process - and involved actors - support, recognize, or undermine Nuxalk *sputc* guardianship priorities and objectives.