

**Healing the Land by Reclaiming an Indigenous Ecology:
A journey exploring the application of the Indigenous
worldview to invasion biology and ecology**

by

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Abstract

Using western science as the only worldview when examining complex topics of applied science limits inquiry and understanding. The Indigenous worldview offers an opportunity to renew the way research is done. It opens up new ways for scientists to acquire, comprehend and share knowledge, and helps generate new approaches to solving modern challenges that western science may be ill-equipped to handle on its own.

Common approaches to ecological restoration are rooted in colonial concepts of “nature” including native versus non-native dichotomies and constructs of pre-human “naturalness” that disregard the purposeful stewarding and shaping of the lands and waters by Indigenous peoples to meet the needs of human and animal relations. While Indigenous traditional ecological knowledge is increasingly sought in recent years, lack of understanding of its origins, the relational worldview, leaves its full potential unrealized.

This thesis follows my journey as an Indigenous invasive species specialist as I set out to answer the following question, "What does the application an Indigenous worldview to ecological restoration tell us about the impacts of invasive species on Indigenous food security and food sovereignty in the context of our changing climate?" Working with Cowichan Tribes’ staff, Elders, and other traditional knowledge holders as co-authors, I gathered oral histories, stories, and perspectives on the related topics of ecology, climate change, history, and food security. These histories and stories, along with relational methods of land observation, revealed an Indigenous ecology that departs from dualistic concepts of species belongingness and Eden-based ecological restoration goals. In response to the stories collected, my co-authors and I formulated new terminology for land healing, and created a new framework to guide land management decision-making reflective of an Indigenous worldview and cultural values; this framework allows us to redefine and reclaim practice that protect food security and sovereignty for generations to come. My journey, and this thesis, demonstrate the power of the Indigenous worldview to illuminate new paths of scientific inquiry and expand our understanding of complex issues.

Lay Summary

Indigenous peoples see the world as a series of relationships. Learning this way of seeing could help western scientists as they address many of today's challenges including environmental degradation, invasive species, food security, and climate change. This work follows the journey of an Indigenous invasive species specialist as she set out to collect Indigenous stories, knowledge, and perspectives on ecology and invasive species, while spending time on the land seeing anew. An ecology was revealed whose legacy is seen on our land and waters today. It is time to reclaim an Indigenous ecology that includes humans in our ecosystems and gives them the responsibility of shaping ecosystems to adapt to our ever-changing environment. Our relational way of seeing will help lead us toward ecological reconciliation as it redefines how we approach the healing that our lands and waters need.

Preface

This dissertation is based on the unpublished, original work of Jennifer Grenz with the support of co-researchers in the project, Cowichan Tribes. Original project ideas were brought to Cowichan Tribes Lands Department and Lands Committee by author, Jennifer Grenz. Jennifer and Cowichan Tribes Lands Staff worked together to determine research objectives, desired outcomes, and research design. Research design was further developed with the assistance of Jennifer's PhD Supervisor, Dr. Carol McAusland, and supervisory committee members, Dr. David Clements and Dr. Maja Krzic.

The narrative presented throughout the dissertation is entirely the work of Jennifer Grenz. Indigenous knowledge, perspectives and history shared throughout this work by Cowichan Tribes Elders, Luschiim (Dr. Arvid Charlie), Diane Modeste, Peter and Mena Williams, Cowichan knowledge holder, Harold Joe, as well as Kwakwaka'wakw knowledge holder, Thomas Sewid, are shared as direct quotations from audio recordings to ensure the accuracy of what was shared.

All work conducted with Elders and knowledge holders was completed under a Certificate of Approval from the Behavioural Research Ethics Board at UBC #H17-01876 project title "The Impacts of Invasive Species on Indigenous Food Security and Food Sovereignty".

Field work was completed solely by the author with permission from Cowichan Tribes at their ancient ancestral site , Ye'yumnuts, in what is now referred to as Duncan, British Columbia. The development of the land healing plan for Ye'yumnuts described in Chapter 6 was completed in collaboration with Cowichan Tribes and Saanich Native Plants (James and Kristen Miskelly). The development of the "Webwork for Values-Based Land Healing" in Chapter 6 was the idea of the Cowichan Tribes Lands Committee and work to create it done with participation of Cowichan Tribes Lands staff and the author.

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With a relational worldview it is difficult to write acknowledgements. As an Indigenous woman, I know that my place in this world is in relation to all who have touched my life. It is this that grounds me. Where I am today and the completion of this work is the result of the intricate weaving together of the influence of all my relations past and present as well as my responsibility to the next generations. To all whom have been part of my web of connections; family, friends, colleagues, lands and waters, please accept my deeply humbling thank you.

I feel it important to extend thanks to those who contributed directly to this work.

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Finally, I wish to acknowledge the missing and murdered Indigenous women. I hope to use my voice because yours was taken from you. It is a responsibility I lovingly take seriously. To you and your relations, may this work honour you. We will not be silenced.

Kukstemc.

To my father,

Introduction

As a Nlaka'pamux woman keeping with our traditions, I will teach you by way of a story. While the primary objective of this book is to share with you my journey of applying our Indigenous worldview to the fields of invasion biology and ecological restoration, and I will do that, I have an ulterior motive. I hope that through my story, your curiosity is peaked about what an Indigenous worldview is and what it can offer complicated fields of scientific study. The application of what I call "Relational Science" as an act of reconciliation between the two worlds I walk in. That of an Indigenous woman, and that of a scientist.

What you read in this book might make you uncomfortable. Not because anything in it is explicit or inappropriate in any way but because some scientists might consider the methodology sacrilege. Others may be uncomfortable because some folks just aren't comfortable talking about colonialism. But you see, the impacts of colonialism run deep. So deep that they have an impact on things you may not realize. Things that you are indeed familiar with. Like the topics within this book. Food security, ecological restoration, invasion biology and western science.

Western science has been the cornerstone of my own work and it has served me well. It will continue to serve us all well. Of that we can count on. What I have come to realize over my two decades of working in the fields of Invasion Biology and Ecological Restoration is that it might not be providing us with the whole picture. Or at least, no clear path in "big picture" problem solving. These incredibly complicated fields of study often find themselves locked in dogmatic, encamped positions. Stuck in the stalemate of a false dichotomy. Meanwhile our food security and food sovereignty remains vulnerable to the challenges posed by the legacy of colonialism and a quickly changing climate.

Over the course of my career, leading armies of volunteers into the invasive species battle, I found myself questioning the work I was doing. Not because I felt what we were doing was ill-intentioned, but because I could hear the ancestors sounding their alarm. In fear of discrediting myself in both my scientific and Indigenous worlds, I spent nearly two decades keeping them apart. Suddenly these worlds collided. It was time to speak out. Western science was not the only way of seeing the world and on its own, would not solve the problems facing our environment. There was a better way.

The stakes are too high for us to place our eggs all in one basket. The presence of Indigenous peoples on Turtle Island for thousands of years, surviving through changes in climate and speciation, and the attempted termination of our people by colonial governments is a testament to our qualifications to chime in. Adaptation is who we are as a people. We ARE the adaptation experts. So why not turn to us at this time of ecological crisis?

It is our worldview that makes us different. This is what often lacks acknowledgement. Or perhaps it is a complete lack of recognition that we see the world differently at all. This goes far deeper than simply learning some Indigenous knowledge. While it has become trendy to incorporate our traditional knowledge into ecology, it is simply not enough.

Traditional ecological knowledge is knowledge shared by Indigenous knowledge keepers. It is important. Knowledge acquired from our deep relationship with the places we are from. Intergenerational knowledge, passed through our lineages about plants, animals, places, and things we did. Ancestral knowledge that is also simply "in" us.

There is great benefit to learning and applying our traditional ecological knowledge in a settler's world. However, the full benefit will not be realized without understanding the foundation of our knowledge, our relational worldview. To use only fragmented pieces of our knowledge is to admire a tree without admiring its roots. My love of the standing people (trees) is not only in my admiration of their immense beauty that I can see, but in their foundation that I cannot. Their beginning as a seed, their extensive roots, the community they are part of beneath the soil that nurtures and stewards them so that they could then make their majestic appearance on the landscape, their deep connection with Mother Earth, their continued connection and contributions to their communities as they grow. Understanding and acknowledging this is to know the power of the standing people.

You must know and appreciate our roots to understand our real power, our worldview. The headwaters from which our knowledge flows. Only then you then can see the world as we do. And by doing this, as Jayne Goodall said in her book, "Reason for Hope: A Spiritual Journey", you will be able to "make the old new again"¹. Is there any better remedy for solving an old problem, than seeing it from a fresh perspective?

Chief Dan George² offered his wisdom when he spoke about the integration of Indigenous children into the public-school system. I think it speaks to the integration of Indigenous knowledge into any colonial structure:

"Can we talk of integration until there is integration of hearts and minds? Unless you have this, you have only a physical presence, and the walls between us are as high as the mountain range. "

To know our worldview is to know our hearts and minds. To know only our traditional ecological knowledge is for us to then have only a superficial relationship vulnerable to misunderstanding.

What is an Indigenous Worldview?

Imagine yourself putting on glasses. Your first look through the lenses shows you the world as a web of connections that span both space and time. You no longer see things or people or animals as individuals. You can tangibly see how each of these things and beings are connected to each other and the environment. You look down at yourself. You see your own connections. Your feet to the Earth. Your breath to the trees. Your heart to your grandparents and great grandparents. You become overwhelmed by the intricacy and abundance of these connections. You are surprised by the relationships you have that you never knew you did. What else do you see? Perhaps you can see for the first time that **you are not outside the natural environment but very much a part of it**. You are alongside and in relation with the beings and the things upon our Earth Mother. This is the relational, Indigenous worldview.

If you spoke our languages, you would not need these glasses. As Robin Kimmerer³ points out in her book, "Braiding Sweetgrass", our worldview is rooted in the nature of our verb-based languages. English is a noun-based language that objectifies most things. That tree. That rock. That mountain. Our Indigenous languages are verb-based. This is profoundly transformative. That isn't a tree, it's "treeing". That isn't a bay, it's "baying". That isn't a mountain, it's "mountaining". Do you feel how that changes

¹ Jane Goodall, *Reason for Hope: A Spiritual Journey* New York, Soko Publications Ltd., 1999.

² Dan George and Helmut Hirschall, *My Heart Soars* Hancock House Publishing Ltd Reprint Edition, 1989.

³ Robin Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants* Canada, Milkweed Editions 2003.

the world around you? It makes tangible the relationality of our world. It eliminates the distance created by naming “things”.

It is relationality that is the foundation of who we are and how we see the world.

Understanding Indigenous Research Methodology

I began this research journey by reaching out to other Indigenous academics at a time when I was struggling to break free of conventional science. I had for the first time recognized my own colonization. I needed to find a way to decolonize myself. It was this poem, sent to me in this format by Dr. Peter Cole⁴ at UBC, that I felt gave me the permission to do what I felt I needed to do and provided me a first taste of what Indigenous Research Methodology is all about:

write in your own way think in your own way research in your own way don't think you
have to ask permission how long does that have to go on for quote your elders and
your children and the wind the waves the clouds they are always telling you
stories listening to your stories

From this, I dove into the works of Kovach⁵ and Wilson⁶, my only available tools to use to better understand the application of our Indigenous worldview to research, Indigenous Research Methodology (IRM). It was as if they gave a voice to the nagging feelings I had in my own work all along. For the first time I realized I wasn't alone.

I think it important to clarify that simply incorporating “aspects” or blending of both Indigenous methodologies and western science will not achieve the intended purpose of this research journey. Shawn Wilson⁷ expressed it well when justifying his not using an assimilated view when approaching his research:

“It is important for me to use an Indigenous viewpoint while conducting and writing up this research, in order that a legitimate and comprehensive understanding of an Indigenous research paradigm is reached.”

Though an Indigenous research paradigm has existed for millennia, it is only in the past few years that the research discourse has allowed for the expression or acceptance of this paradigm in mainstream academia⁸. Our ways of knowing have often been characterized as anti-intellectual. Wilson⁹ said,

“The notion that empirical evidence is sounder than cultural knowledge permeates western thought but alienates many Indigenous scholars. Rather than their cultural knowledge being seen

⁴ Dr. Peter Cole, Associate Professor, Indigenous Education, University of British Columbia Vancouver personal communication July 21, 2017

⁵ Margaret Kovach, *Indigenous Methodologies: Characteristics, Conversations, and Contexts* Toronto, Canada, University of Toronto Press Incorporated 2009.

⁶ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*, Winnipeg, Manitoba, Canada, Fernwood Publishing 2008.

⁷ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

⁸ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

⁹ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

Respect

Research rooted in respect means that our work must be GOOD. Our work must do something positive for the community. This respect places the community in the role of “co-researcher” helping to develop and refine the research question, determine the objectives, methodology, and outcomes¹³. The researcher must demonstrate respect by being accountable to the relations within the research.

Research rooted in respect means that all knowledge is valued EQUALLY whether it be a story, a vision, oral history, the archaeological record, or soil tests. This concept of respect in research will be among the most difficult to accept by those more familiar with western scientific method.

Relationality

Relationality, the foundation of our worldview was described above. Our relational connection with our work means that for us, **RESEARCH IS CEREMONY**¹⁴.

You can consider data collection a series of ceremonies. Working relationally to address research objectives, ceremonies of all types take place. The final ceremony is working relationally with our co-researchers to find the connections between the ceremonies, data analysis.

Reciprocity

Reciprocity is defined in the Oxford dictionary¹⁵ as “the practice of exchanging things with others for mutual benefit, especially privileges granted by one country or organization to another”. This is an important part of IRM as it ensures that our work has a greater purpose than ourselves and that we will always remember why we are doing the work we are. This is what we, as Indigenous researchers, give back to the community for its participation in this relational effort. Our research must contribute to the community’s well being. Our research cannot be born without their being a community benefit. It is this that makes the work GOOD.

The Journey to Our Research Question

Grounded in our worldview, guided by the three R’s, I began this journey with the intention to examine the impacts of invasive species and ecological restoration on Indigenous food security and food sovereignty using Indigenous Research Methodology.

Invasive species are of concern to our Indigenous communities as they could have a negative impact on species we rely on for food, technology, and medicines for our daily lives, narratives and ceremonies¹⁶. Meanwhile, traditional foods are often overlooked in food security discussions despite them being shown to be more nutritious than conventional diets¹⁷. Climate change and contamination, [such as the

¹³ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

¹⁴ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

¹⁵ Oxford English Dictionary. “Reciprocity” 2nd Edition New York: Clarendon Press, 2019.

¹⁶ Nancy J. Turner, *The Earth’s Blanket: Traditional Teachings for Sustainable Living*, Seattle, Washington, USA, University of Washington Press 2005.

¹⁷ B. Elliot, D. Jayatilaka, C. Brown, L. Varley, and K. Corbett, ““We are not being heard.”: Aboriginal Perspectives on Traditional Foods Access and Food Security” *Journal of Environmental and Public Health* Vol. 2012 Article ID 130945.

biological contamination caused by invasive species], have been cited as factors in affecting access to traditional food.

In my professional life I saw other related factors that could be having a negative impact. Land management policies and plans didn't seem to mention the protection or enhancement of traditional food plants. Planting plans seemed based in ecological restoration done for altruistic reasons. Based on an aesthetic notion of a "natural state" and what plants, shrubs and trees "should" be there. Invasive species management rested upon dogmatic assertions of the non-native bad/native good dichotomy.

I began to feel as though those of us working on the various aspects of ecological restoration had become so focused on the execution of our work that we forgot to remember the intentions of our work.

When I reflected on traditional stories I knew, I recalled stories of changes in speciation and the role given to us by the Creator to bring balance to the plant and animal kingdoms. Indigenous peoples have demonstrated an epistemic openness to "new" species¹⁸. Alongside plants we have used in Coast Salish territories (South Coastal British Columbia) for thousands of years (by oral histories and the archaeological record) such as Salmonberry and Thimbleberry, we use plants introduced to us post contact such as St. John's Wort and Plantain (also called white man's foot).

Indigenous peoples actively managed and altered the landscape for time immemorial, creating some of the very habitats that conservation groups now work hard to protect without realizing that these are not "natural" habitats, in the sense of being unmodified by humans. Human ingenuity shaped them such that they served a purpose such as the production of food or technology.

All of this made me wonder, what did we, Indigenous people, actually think about invasive species and modern-day ecological restoration? What did we think and know about their impacts to our food security, to our food sovereignty? Important topics when Indigenous peoples are among the most food insecure groups in Canada and that Indigenous food insecurity is correlated with many-diet related chronic health conditions¹⁹. And looking ahead at our changing climate, is our ability to adapt at risk?

As we completed our preliminary investigations, true to Indigenous research methodology, the research question evolved to become, "What does the application of an Indigenous worldview to ecological restoration tell us about the impacts of current land management approaches on Indigenous food security and food sovereignty in the context of our changing climate?"

I set out on this journey with Cowichan Tribes, my co-researchers in this project, examining these issues alongside their Elders, knowledge holders, and lands staff, spending time on their lands to try and figure this out. Our way.

¹⁸ D.S. Trigger, "Indigeneity, Fertility, and What 'Belongs' in the Australian Bush: Aboriginal Responses to Introduced Animals and Plants in a Settler Descendant Society" *The Journal of the Anthropological Institute* Vol. 14 2008:628-626.

¹⁹ Health Canada, Minister of Health, Office of Nutrition Policy and Promotion, Health Products and Food Branch "Income-Related Household Food Security in Canada" Canadian Community Health Survey, Cycle 2.2, Nutrition 2004.

Working together we set out to:

- examine Indigenous perspectives, stories, and oral histories on invasive species management, ecological restoration, and our role in land stewardship.
- examine the impacts of invasive species and research desirable and historic species at our case study site, the ancestral site Ye'yumnuts
- evaluate ecological restoration/invasive species management policy documents for the inclusion of traditional knowledge, Indigenous participation, Indigenous history, consideration of food security and food sovereignty
- create an Indigenous land management decision-making framework that can be applied on other projects

How this book is written

Having the freedom to write from the first-person perspective is something that really sets Indigenous research methodology apart from western scientific method. The requirement for science to be objective may well be what has pushed us away from admitting to and allowing ourselves to be in-relation with our work for fear of undermining its validity. It is a fear that I held when I began this work and has waned as I progressed through this research journey. This inner battle of the trained western scientific academic with the Indigenous woman is woven through the book and I believe contributes to the authenticity of this work.

This book is a mixture of my own personal stories and experiences, the stories and knowledge of Elders and knowledge keepers, and an attempt at revealing and examining the relationships between them all. It is through this discovery and synthesis that our work illuminates the old ways. Each chapter of this book is intended to guide you through our research journey so that you may paddle with us through the rough and flat waters, the stops and starts, the peace of the familiar and the uncertainty of the unfamiliar. All so that like any long journey, we may look back to realize it was all necessary to lead us to our destination.

Stories I share of my own experiences will be presented in italics so that it is obvious when I am sharing a personal story to differentiate it from my narrative. Wilson²⁰ used this technique in his book “Research is Ceremony” and I found it effective as it really helps the reader to hear the author’s voice and thus, strengthens the connection to the work. Stories directly transcribed from Elders and knowledge holders will be shared in italics as well and with each their own font colour to achieve a similar effect.

Revelations of the Journey

Our Indigenous worldview allowed us to look at complicated fields of study like invasion biology and ecological restoration from a vantage point that allowed us to be “in-relation” with the very problems we were trying to solve. This relationship with our work gave us the freedom to discover, acknowledge and tend to what it was that connects us to our concern for Indigenous food security and food sovereignty, our community values. This put front and center the importance of the work and allowed it to be fuelled by the pursuit of benefiting our communities in a tangible way.

²⁰ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

The application of a different worldview need not be perceived as a threat. It doesn't undermine the integrity of the work done from other vantage points. It only helps to complete the picture. For us, it illuminated assumptions and took us on a journey that revealed the heart of the threat to Indigenous food security and food sovereignty. By uniting through our common values, we were able to decolonize ecological restoration and make LAND HEALING an act of reconciliation.

This journey has profoundly changed me. I am walking in one world now, as myself. I continue to feel passionate about finding ways to protect our adaptability in the wake of a changing climate. I have a new mission now. To help others, Indigenous and non-Indigenous, to understand and unleash the power of what the Indigenous worldview offers us all.

May this journey challenge you to make the old new again. May this journey be an encouragement to you. May this journey give you the freedom to have your work guided by the 3 Rs "Respect-Relationality- Reciprocity". May your work be GOOD.

Kukstemc

Chapter 1

My Shelhsteelt

Today's ecological management places humans outside of the ecosystem. It took me nearly 20 years of my career to finally articulate that. Twenty years of not being able to quite put my finger on why the work we were doing to restore important habitat just didn't seem right. There was no question that the work we were doing was important. We are facing the realities of a rapidly changing climate coupled with serious degradation of our ecosystems. Any works to help remedy the threats posed by this reality are to be praised. But the question is, are we as effective as we need to be?

No.

It's that simple.

No.

Ecological restoration has become a science where fascinating and exciting work has been done to help species at risk, control of invasive species, and better understand ecological function within plant communities. Despite scientific progress continually informing and improving my years of work in this field, I have mostly felt like we were never quite measuring up to the daunting task we faced. I often found myself singing parts of Coldplay's "The Scientist"²¹ when I worked. A slightly depressing soundtrack as we found ourselves "...Running in circles. Chasing our tails...."

So why did it seem that we were ineffectual? Why did this song resonate?

I was just guessing

At numbers and figures

Pulling the puzzles apart

Questions of science

Science and progress

Do not speak as loud as my heart

I wonder if the writers of this song would have ever thought they would be contributing to a PhD dissertation about ecological restoration. I realize the song is about someone reflecting on a relationship they had and how they might do it differently if they went back. But this poetry can speak to any relationship we care deeply about. Taking the time to reflect on how we might do it differently if we could go back is an important exercise, an investment in trying to do better. Only then can we find the lessons and learn from them to chart a new course.

Running in Circles

Chasing our Tails

²¹ Coldplay. *The Scientist*. Coldplay. Track 4 on *Rush of Blood to the Head*, Capitol Records 2002, iTunes.

Coming back as we are.

Nobody said it was easy.

Oh it's such a shame for us to part.

Nobody said it was easy.

No one ever said it would be so hard.

I'm going back to the start.

And that is what this book is about. A reflection of our modern-day relationship with our ecosystem and how we manage it. An act of reflection that will allow us to acknowledge where we need to do better. An exercise in freeing ourselves from the chains of “how we’ve always done it”. A challenge to make the old new again by returning to the start. To examine the ancestral and traditional knowledge of Indigenous people in Coast Salish territory of British Columbia so that we may better understand the nature of our relationship to the land and how that has changed over time. To better understand our Indigenous worldview and how it relates to ecosystem management. To demonstrate what our worldview has to offer when tackling important related issues such as food security, food sovereignty, ecological restoration, and climate change. All in hopes of empowering others to acknowledge, learn, and realize the potential of our worldview when tackling complicated ecological issues.

This book is an exercise in the application of our Indigenous relational worldview and the use of Indigenous research methodology to fields of study dominated by western science, ecological restoration and invasive species management. I tell you this because this book is really an experiment itself. One where a uniquely positioned Indigenous woman trained in western science (me) learns to embrace her Indigenous worldview to take a fresh look at a field she’s been working in for almost two decades. A mission to help her community ensure that our foods and medicines will be there for future generations. The demonstration of a process that will challenge others, Indigenous or not, to embrace a new way of seeing. All in the name of healthier communities and a healthier planet.

Back to the Start

I met Luschiim for the first time with a group of graduate students also working on the restoration of Cowichan Tribes’ ancient village site, Ye’yumnuts. Luschiim, also known as Dr. Arvid Charlie, is an Elder and important knowledge holder of the Cowichan people. His knowledge connects us to that of his grandfather’s over 100 years ago. It is a rare gift to hear someone speak of our relationship with the land before settlers and to hear first-hand the resilience of someone who has lived through colonial policies and structures that continue today. Luschiim represents a connection to a time when we cared for the land our way and carries the wisdom of how we can once again connect with and heal the land, our way.

It is important to understand that colonization is not a single event in the past, but a continuous process that carries on today. A process that has brought and continues to bring devastation to both our people and the environment. A process that continues to attempt to separate us from our land. Our Indigenous worldview does not allow for such separation. Our very existence is inside the ecosystem as an equal relation. Meaning we are just as important as the grasshoppers, worms, birds, and soil are. I hope this explanation may help generate understanding of just how devastating it is for us to exist in a world where colonial legacies continue to force us outside of the ecosystem. A reflection of the settler

worldview rooted in Judeo-Christian belief giving humans dominion over the other creatures of the Earth. A worldview that objectifies what is referred to as “the environment” as if it is separate from humans. We watch as the settlers tinker with elements of the ecosystem in hopes of repairing the harm they have caused. We watch them trying to fix things from the outside of the ecosystem. A vantage point that separates them from our relations on the Earth, the very relations they are trying to help. A vantage point that is both difficult to understand for an Indigenous person such as myself, and one that is clearly not leading us toward the level of ecological reconciliation needed for the current time.

Settlers may have attempted to separate us from our connection to land. To have us adopt their worldview. The settlers may have thought they succeeded. That our relationship with the land was changed as we seemingly embraced their agrarian practices, engaged in their commerce. That we yielded as they barred us from engaging in practices that connected us with each other and the land. We may have adapted to the world they thrust upon us, but they do not know what we have continued to carry in our hearts. Our ancestral knowledge and our connection with our lands and waters have never left us. We have been an adaptive and resilient people in waiting and our time is now.

During this initial meeting with Luschiim, he asked the graduate students what brought them to their research. I shared the following story of the moment in my career that made me realize I just couldn't keep working as I had any more.

I was sent with the Watchmen of an Indigenous community to survey and control an isolated infestation of an invasive species along a river on the community's land. It was an opportunity to protect the river from the spread of this species. A rare opportunity to engage in what we call Early Detection Rapid Response. A practice where we engage in control of species when populations are small to prevent their spread. Once we arrived at the site, I went to grab my equipment ready to take on the invaders with gratifying zeal. An Elder grabbed my arm. "Let's just go look at the plants first." he said. Perplexed, but never one to disrespect an Elder, I followed him and the other Watchmen to the site. He sat down and motioned for me to sit beside him. I sat and began to share my thoughts about what we should do. He put his finger to his lips to shush me and pointed at the plants. So, we sat and stared at the plants. At first it felt like an eternity, a confusing waste of time. And then, I could see the plants, the surrounding trees, the limits of the infestation, the small breaks in the tree canopy, the position of the sun relative to them, the skeletal structure of leaves eaten by slugs, and I noticed the size of the plants relative to other populations at that time of year. Then we sat some more. Finally, he stood and offered me a hand up. We quietly walked to our quads and drove away from the site.

I visit this site almost every year. Some years there have been no plants. Other years, a couple of small ones but never the explosion of plants I almost used to hope would appear so that my world could make sense again. A world of predictability in the science I knew. A simplicity in seeing the world in one way instead of in relation with everything else.

Luschiim told me, “That is your shelhstamut.” The hul'q'minum (the language of the Cowichan People) word for “a new path for you” created in a pivotal moment. It was this pivotal moment, that set me on my shelhsteelt (meaning “a new path for me”) that launched me on this journey into graduate work. It was something much later that Elder Peter Williams, also from Cowichan Tribes, said to me that brought it all home. He said,

“The greatest distance a man must travel is between his head and his heart.”

That is what this research journey is. A journey to connect my head (western science) and my heart (my Indigenous worldview). I see now that what led me to my stelhsteelt were many moments of hesitation, of uncertainty, of discomfort throughout my professional journey. I had just learned to ignore them in the name of good science. It was time to go back and revisit them so that I could find the lessons and build this bridge. An act of ecological reconciliation.

Turning Around

Retracing the steps of my professional journey has been deeply humbling and frankly, really hard. I am not someone who does anything lightly. I have poured myself into my work. I have taken great pride in my accomplishments and felt driven by my passion for the work. I felt the cause to be important and I lead a lot of significant efforts to do something about it.

The cause was invasive species management and ecological restoration. I became engaged in invasive species issues during my days as an undergraduate in the Agroecology program at the University of British Columbia. At the time, I worked for the Outdoor Recreation Council of BC as the Coordinator of BC Rivers Day. A new organization was forming during that time, overseen by the Fraser Basin Council, The Invasive Plant Council of BC. They were looking for a representative from outdoor recreation. My interest in ecology and weed science, meant I got to go. This set me on a trajectory for almost two decades of the best work in the world. I have worked for environmental non-profit organizations and within them had freedom to design, fundraise and implement invasive species education and outreach campaigns. I built a social enterprise to follow through on our education and get bodies on the ground to do the important work of controlling invasive species and doing the required repair work when they were gone. I have acted as a prominent media spokesperson for invasive species issues from threats to infrastructure, threats to salmon, threats to human health, to promotion of solutions, to new possible threats like tsunami debris. I have worked with every level of government. Local, regional, provincial, federal, First Nations. I have worked on both sides of the government, with incredible bureaucrats working to make solutions happen to politicians working to protect their constituents, the economy and environment. Many of these people chose to become important champions for our cause. I have worked along side some of the most incredible humans. Devoted folks working for environmental non-profit organizations and the heart of environmental causes, volunteers, who show up no matter how busy their personal lives are, no matter the weather, making magic happen. I have stood in some of the most sensitive ecosystems we have in our province. I have stood in front of colleagues, the public, and politicians to rally the troops.

During my work as a field practitioner, working on invasive species management in many different environments, marine, conservation areas, rural, urban, parks, I prided myself on the quality of the science I used to inform my work. I prided myself on the quality of the science that I did through countless field trials on different control and suppression treatments and forest floor recovery. I believe passionately in sound science and have been somewhat ruthless toward pseudoscience on numerous occasions.

Meanwhile, I quietly practiced traditional medicine. As a Nlaka'pamux woman, I lived my other life discretely. Many of my colleagues unaware of this "other side". I nurtured and collected plants I learned about from my Elders and other knowledge keepers to make medicines for my family, friends and those putting out calls for help for something outside of conventional medicine. I created a comfortable cognitive dissonance that somehow provided me with a free pass to engage in traditional knowledge

and cultural practices while maintaining my credibility as a woman of science. I'm not even sure I did that on purpose. In fact, I know I didn't. Looking back, it had become as natural as a tree bending to the wind. I had seen what happened to those who attempted to present another perspective of invasive species management to my colleagues. I had even been part of the eye rolls and jokes.

Self protection is a funny thing.

Working alongside an army of other environmental do-gooders, I battled my way through the prickles. Thorns scraping my arms, catching the sleeves of my jacket and my pant legs, poking through my gloves. It seemed an unattainable goal, bringing this wall down, cane by cane. But there we were. On a mission greater than ourselves. Clear the wall of Himalayan blackberry so we could plant native plants in their place. I can't tell you how many Saturdays I spent, leading these armies in terrible weather, bleeding arms. If we made it through the thorny thicket, we dragged heavy pots of lovingly grown native plants across the park, dug holes while talking about our plans for the rest of the weekend, sometimes talking about our despair over the state of the watershed, plugged these green saviours into the ground, and high-fived each other victorious as we carried our shovels back to our cars. Soaking wet. Warmed by the goodness of the work.

It seems naïve now.

You do this enough, especially in places you may frequent, you tend to want to return to those battle grounds to bask in the glory of your victories. For all those Saturdays, I struggle to think of a single site where the flag of our environmental victory remained planted. Pardon the pun. Instead of the fulfillment of my vision of a flourishing native plant community as a memorial for the battle that once took place there, I found myself staring at a tangled mess of the invader's canes once more. The green saviours seemingly vanished....

Repeat. Repeat. Repeat.

One site in particular can be credited with the onset of my chronic case of "environmental do-gooder angst". A condition best described as an overwhelming heap of self doubt leading an environmental steward to question all they had ever learned, done, and what their future was in all of it. Suddenly, altruism wasn't enough of an antidote to persevere.

I was leading a group of youth planting conifers across what was an old landfill. Funding provided by an organization looking to plant trees to reduce CO2. A noble mission. The weather was horrible. The site worse. Shovelling in muck, dragging 50 plus pound potted trees up hills for long distances with youth looking to improve their lives. I tried to stay positive. I was setting an example, after all. The kids nick named me "Hardcore" which gave me hope that if this environmentalist thing didn't pan out, I may have a future in acting. The project took 2 months. My muscles burned. My fingers and toes were often numb with cold. As I dragged and shovelled, my inner voice kept asking relenting questions that went beyond the usual thoughts questioning the sanity of willingly participating in such seeming torture. "Why are we doing this?" "Does this make sense?" "Are these the right trees?" "Is this the right medium for planting?" "What is the point of this?" "What is this site supposed to be?" "What happens after this?" "Who is going to care for these trees when it gets hot across this vast, shade-less landscape?" "What about forest succession?" After the project was finished, hundreds of conifers were planted in a Christmas tree-lot fashion. I remember thinking how incredibly weird and disconnected the whole venture seemed. We

praised the youth for their environmental victory. I never let my questioning get beyond my internal monologue. It seems an unspoken agreement in my line of work not to articulate the feelings behind the knowing glances we share with colleagues. Two years later, one of those youth came back to visit me and told me that they saw the site from the road and it looked like Every. Single. Tree. Was. Dead. A friend confirmed it. I couldn't go back to see it for myself.

I wish I could say that the story I just shared was an anomaly. It's not. There have been many like this over the years. Over time I began vocalizing my thoughts on these matters only to realize that I didn't make myself very popular. I wrestled with questions like: What was it that kept us going through these failures? What was it about the work that made it seem right? And what was it that also seemed so wrong? What were we missing that we just couldn't seem to win? What did it mean to win?

How could I answer these questions?

Ancestral wisdom.

Facing decades of professional work with new eyes is unsettling. What would the lens of the Indigenous worldview reveal? The possibility of undermining myself seemed both terrifying and freeing. I knew that it would be hard to see the familiar in an entirely different way. I knew it would be more difficult than simply putting on new glasses. It would require a conscious effort to prepare myself to "see" in this new way.

My goal as an Indigenous researcher is not simply to do research and report back. True to our Indigenous, relational worldview, my goal as a researcher is to help strengthen your connection to this work through my own story. I hope as we experience this journey together, that you may also see yourself in it so that it will have power in your own life. That as you read, you understand what is behind this quest to decolonize ecological restoration so that we can heal the land together.

Chapter 2

It's Time for the Time of the Eagle

You may be wondering why the Indigenous worldview is needed at all when it comes to the fields of invasion biology and ecological restoration. While I will explain at length what our worldview offers these fields of study, and western science at-large, I need to start by making it clear that this work is meant to be an act of ecological reconciliation. Our Indigenous worldview belongs within fields of study that inform the very policy developed to manage our stolen lands. Our Indigenous researchers and knowledge holders deserve equal space, consideration and respect that their settler counterparts receive.

I recognized that my fields of expertise provided an important opportunity to demonstrate the challenges facing Indigenous researchers to work freely within an Indigenous worldview and to show the value of our contributions when we work unapologetically OUR WAY. Invasion biology and ecological restoration are subject areas that have been incredibly resistant to any alternative perspectives at all and thus, lack diverse perspectives to inform them. I believe that the Indigenous worldview is the research paradigm that offers the best opportunity for a fresh path forward to meet the demands of the challenges we face in a changing climate. It provides the opportunity to create the context for fresh discovery and interdisciplinary work. At a time when these research communities are becoming more familiar and comfortable with our Indigenous traditional knowledge, we must take this opportunity to strengthen understanding by revealing our real power. It does not lie within fragmented pieces of our knowledge, but in how we see and relate to the world.

The purpose of the application of the Indigenous worldview to research is not to result in alternative perspectives on current scientific understanding. Nor is its application a simple exercise of integration of traditional knowledge into western scientific methodologies. **The application of the Indigenous worldview pushes us into an entirely different world of research.** Using Indigenous research methodology, we depart from research confined by the guise of objectivity. There is freedom without risk of persecution to explore new ideas, other methods of acquisition of knowledge, and how we arrive at our conclusions. We can create work that is the realization of the potential that comes from the unchaining of researchers otherwise bound by the rules and culture of the dominant, western scientific worldview.

The resistance to both alternate points of view and any departure from the dominant western scientific paradigm are not unique to invasion biology or ecological restoration. The protectionist culture of any field of scientific study and defence of their cornerstone, the dominant paradigm, are to be expected. The question is whether this self-protecting culture of dogmatism is best serving the interests of the academy and society.

The dominant paradigm has left researchers frozen by fear of expression of original thought. It is a fear both rooted in the potential of facing ridicule for questioning the prevailing consensus unless you can disprove it using the current, fashionable methods and a fear of being ignored because someone else published a similar idea before. This fear wields a power so significant that it dictates how we think, explore, discover, and achieve (can I get this published in a high tier journal?). Does this power dynamic provide the context for us as researchers to freely push the bounds of our knowledge and

understanding? Academic institutions operating within the dominant paradigm have become a “safe space” for understanding and discovery. Safe so long as one yields and subscribes entirely to it. A resulting risk averse culture where we do not make the waves the world needs for fear of drowning.

It may seem like it, but I am not beating up on western science itself. It has provided us with a way to formulate important research questions, find reliable answers, and build upon the work done by others. It serves an important function. It has a role to play in the acquisition of knowledge and progress of society. My criticism is that this paradigm has a culture that has morphed it into an ideology of academia. The **only** acceptable ideology of academia.

Discussions with non-Indigenous academic friends have revealed similar feelings and frustrations. It is ironic that they have shared that I am in a better position to push back against it. I suppose upon reflection it makes sense because as an Indigenous researcher, I am more directly impeded by its limitations. I have no choice. My way of knowing simply cannot be made to fit within the dominant paradigm. To attempt to do so is to colonize my work. It is to put a square peg in a round hole.

To be Indigenous is to speak truth. This is my answer to the question of what it is to be an Indigenous person. We are chronic truth tellers. Whether it hurts or not, clarity is always our preferred method of operation. I will therefore speak my truth to provide clarity for what I am about to do. I do this so that I do not compromise/colonize my work going forward. As Shawn Wilson²² said that “using an Indigenous perspective is not sufficient, but that Indigenous research must leave behind dominant [western scientific] paradigm and follow an Indigenous research paradigm,” as “any attempts to insert an Indigenous perspective into one of the major paradigms will not be very effective as it is hard to remove the underlying epistemology and ontology upon which the paradigms are built.” The language of Indigenous Knowledge is not the language of scientific discourse. It is grounded in moral, ethical, and spiritual worldviews²³.

I will therefore not apologize for my departure from the dominant research paradigm. I am well-aware of what I am doing/or not doing depending on the perspective you have. The following are my statements of truth as I release myself of the constrains of the dominant paradigm as an Indigenous researcher:

- I give myself permission to stop attempting to create the illusion of objectivity.
- I give myself permission to stop attempting to distance myself from my work.
- I give myself permission to openly express my personal connection to my work.
- I give myself permission to not engage in the game of knowledge ownership.
- I give myself permission to not ask whether how I conduct my research is the correct way.
- I give myself permission to embrace discovery in whichever way seems right.
- I give myself permission to learn lessons however they may arise.
- I give myself permission to learn from all who cross my path.
- I give myself permission to defend my work from colonization.
- I give myself permission to stop engaging in processes that require me to legitimize my work.

²² Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

²³ J. Ford and D. Martinez, “Traditional Ecological Knowledge, Ecosystem Science, and Environmental Management” *Ecological Applications* Vol. 10 Issue 5 2000:1249-1250.

- I give myself permission to stop softening my work to make settlers more comfortable.
- **I give myself permission to not be afraid of the repercussions of producing work outside of the dominant worldview.**

To these truths I remain committed as they are the foundation I stand upon as an Indigenous researcher. They are here for me as a reminder to stay true to who I am. They are here for you as a reminder that colonization has a continued grip upon the lives of Indigenous people and that we must make daily, purposeful efforts to free ourselves in the many facets of our lives.

The Time of the Eagle

I married a non-Indigenous man who came from a small German/Mennonite family. A family whose culture and size greatly contrasted my own. His culture is best described as one of formalized structure, understood and unspoken rules (which are always followed), and quiet peacefulness. I think it was quite a transition for him to be shot into my extremely large and even louder family. Kids running around playing, squealing, and generally having the run of the place. Adults telling each other like it is. We may as well be from different planets.

When he observed parenting in my family and community, he saw chaos. When I observed parenting in his family and community, I saw stifling childhoods.

We carried these biases with us into parenting our own children. It took a few years of disagreements to realize that what we were experiencing was a culture clash in our own home.

He feels strongly that children need structure and rules. I observed in his family an imposing of familial social expectations from a young age. I observed the consequences of departing from what was expected.

*I explained to my husband that in my culture, we recognize that children are in the time of the eagle. A precious stage of life when you are the closest to the Creator. Parenting is a ceremony where we guide our children toward the fulfillment of their life's purpose. As guides, it is so important to let them be free during this time of the eagle. A time for self exploration. A time of building foundational relationships. To allow them to find and embrace what it is that makes them uniquely themselves and to discover their gifts. It is by no means a free ranging type scenario but one that is filled with aunties and uncles and cousins keeping an eye on their physical and spiritual safety **without unnecessary constraints**.*

I am sure I have revealed my obvious bias here. Honestly, the debate between our cultural parenting styles has still not been resolved and given that our children are 12, 12, and 10, it probably never will be.

*When I think about today's academia, I think about this parenting debate. I think it may provide the best analogy for what we are currently experiencing under its dominant paradigm. **We are living a stifling childhood mired with constraints**. We need to experience an academia that is more **like the time of the eagle**.*

The more I have reflected upon our parental culture clash, the more parallel I find it to the challenges of introducing a new paradigm to academia. True to our Indigenous worldview, there are relatable lessons to be found everywhere.

While we may have been brought up with different cultural parenting approaches, I am happy to report that my husband and I both turned out ok. We are both smart and productive members of society. If we are evaluating the results of our own cultural upbringings based on the above mentioned attributes, can we say that one type of childhood was better than the other? On the surface, the answer must be no.

BUT

Perhaps it is our obsession with this very question that is the problem. We must move away from the “which is better” question and instead ask, “what is the result of a childhood where two different cultural parenting approaches are utilized?” While this experiment is far from over, preliminary results do seem worth noting. Our children are a tangible demonstration of what happens when two differing worldviews are given an equal platform to contribute. Our children are heading out into the world with much more open, accepting, and fluid worldviews. Plural. They can see the world in two ways and aren’t afraid to tell the world about this apparent superhero capability. They are fearlessly creative and naturally push back against the ordinary and conformity. They think critically. They know how to change how they see the world when problem solving and see the benefit of being able to do that.

My children are already fulfilling an important role for those of us who Bohensky and Maru²⁴ refer to as intercultural knowledge bridgers.

Creating the Context

Our inadvertent cultural-clash-parenting experiment shows us that the real work is in providing space for both worldviews. This involves the creation of the context for a shared and equal platform to exist. I find it amusing that such a context may be easier to create within the context of a marriage as opposed to within academic culture. My husband and I came together because of our mutual respect and appreciation for the other (including our differences). While we may claim this same intention to embrace “other” within academic culture, the intention has not been readily manifested if “other” does not play within the rules of the dominant paradigm.

It is difficult to create space on the platform as it requires the dominant worldview to yield to provide space. As an Indigenous academic, I can tell you that right now the burden for space creation has solely been mine to bare. I will also tell you that once you work your way onto the platform (often elbows up), it doesn’t mean people want you on there. I have personally experienced this lack of mutual respect and appreciation. I once had an important mentor try to talk me out of my current research project because “...that Indigenous stuff would undermine my credibility as a scientist.”

Let that resonate.

This upward battle to climb upon the platform is difficult and can seem threatening. Sometimes it seems as though it would be easier to just give up. This is where it is going to take a commitment to understanding, mutual respect and a heap of humility for mainstream academics to help us to find an easier way up and provide us the support we need to remain there.

We proudly share our parenting platform. It may appear equal, but my husband has a distinct advantage. He practices the parenting approach most others are used to. If he is out in the world with

²⁴ E. Bohensky and Y. Maru “Indigenous Knowledge, Science, and Resilience: What Have We Learned From a Decade of International Literature on “Integration”? Ecology and Society Vol. 16 Issue 4 2011:6.

our kids on his own and they are running around causing a disturbance, others nearby will give him the benefit of the doubt. Maybe it was time for the children to run off a little steam. If I am out in the world with our kids and they are running around causing a disturbance, others nearby are likely not to give me the benefit of the doubt. The kids are running around because I am not parenting the right way.

This is what it is for Indigenous academics. Even when we find a place on the platform, we must constantly defend ourselves. We do not have the advantage of the benefit of the doubt. We are often not acknowledged at all.

Though an Indigenous research paradigm has existed for millennia, it is only in the past few years that the research discourse has allowed for the expression or acceptance of this paradigm in mainstream academia²⁵. Our ways of knowing have often been characterized as anti-intellectual. Wilson said,

“The notion that empirical evidence is sounder than cultural knowledge permeates western thought but alienates many Indigenous scholars. Rather than their cultural knowledge being seen as extra intellectual, it is denigrated. It is the notion of the superiority of empirical knowledge that leads to the idea that written text supersedes oral tradition. For Indigenous scholars, empirical knowledge is still crucial, yet it is not their only way of knowing the world around them.”

Nakashima *et al.*²⁶ point out the injustice of numerous scientists and development agencies dismissal of other knowledge systems as insignificant when they have contributed to the development of “modern science”. As Europe was “discovering” the new world, for example, “ethnobotany and ethnozoology were established to grapple with the sudden influx of biological information from ‘foreign parts.’...Western science profited from the appropriation of traditional taxonomic and ecological understandings, with little acknowledgement of their intellectual origins.”

Indigenous knowledge is a scientific paradigm. ‘Science’ defined in the Oxford Dictionary²⁷ is “the intellectual and practical activity encompassing the systematic study of the structure and behaviour of the physical and natural world through observation and experiment.” You will see similarities with the definition of Indigenous knowledge. I will use the definition provided by Nakashima *et al.*²⁸ in their UNESCO article, *Tapping into the World’s Wisdom*. “Indigenous knowledge is the local knowledge that is unique to a culture or society.” It “...encompass[es] sophisticated arrays of information, understandings and interpretations that guide human societies around the globe in their innumerable interactions with the natural milieu: in agriculture and animal husbandry; hunting, fishing and gathering; struggles against disease and injury; naming and explanation of natural phenomena; and strategies to cope with fluctuating environments.”

In order to have mutual respect and appreciation for our differences and discover our similarities, we must get to know one another better. This is where I recognized that Indigenous researchers take a turn at having the advantage. We have been living in and learning the dominant paradigm of western science

²⁵ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

²⁶ D. Nakashima, L. Prout and P. Bridgewater “Tapping into the World’s Wisdom.” UNESCO Sources Vol. 125 (July/August) 2000:12.

²⁷ Oxford Learner’s Dictionaries. “Science.” Accessed September 5, 2019.
<https://www.oxfordlearnersdictionaries.com/definition/english/science>

²⁸ D. Nakashima, L. Prout and P. Bridgewater “Tapping into the World’s Wisdom.”

since grade school. We learned about the scientific method. Its history and how to apply it. We know more about you than you know about us.

Think of when you meet someone for the first time. Your first impressions are not based upon a thorough understanding of the person and their context. They are based upon a snapshot of your experience with them. I have several people in my life that when we first met, they did not make a favourable impression at all. My grandmother always said that there was good in everyone so you must give everyone a chance long enough to find that good. She was right. One of these very people is my best friend in the whole world now. A woman whom I admire deeply and try to be more like.

We often say we need to build bridges of understanding. Such a statement may be to put the cart before the horse. Who wants to build a bridge to somewhere you don't know much, if anything at all, about? I realize that as much as western academia needs to make space for me, I have work to do to help those space makers get to know our Indigenous worldview and its application to research, Indigenous research methodology. Lack of understanding is the perfect recipe for misunderstanding. Improving understanding is the first step to reveal the potential of our way of knowing so that it may spark the imagination of dominant paradigm researchers about how their field of study may benefit from it.

For those of you less familiar with Indigenous knowledge and Indigenous research methodology, I highlight some key differences in our ontology, epistemology, methodology, and axiology in the following examples.

Ownership of knowledge and relationality

The first and I think most important difference surrounds the ownership of information. As Wilson²⁹ says, "...dominant [western science] paradigm is built on the fundamental belief that knowledge is an individual entity: the research is an individual in search of knowledge, knowledge is something that is gained, and therefore, knowledge may be owned by an individual" while an Indigenous paradigm comes from the fundamental belief that knowledge is relational. Knowledge is shared with all creation and researchers **are only the interpreters of this knowledge**. Relational accountability is an important principle of an Indigenous research framework and thus research participants are considered co-researchers as opposed to subjects and they are part of a cumulative and collaborative analysis of research findings³⁰. Giving back to the community is also an integral part of Indigenous research. A premise found in a Nehiyaw epistemology is about giving back to community, and as researchers we can do this by sharing our work so that it can assist others³¹.

Ford and Martinez³² said, "The relational way of being is at the heart of what it means to be Indigenous". Kimmerer³³ provides an example of our relational worldview within ecosystem inquiry by presenting the differences between the questions asked by western scientists versus Indigenous people. While she was doing her undergraduate degree she found that when encountering a plant they didn't know, "The questions scientists raised were not 'Who are you?' but 'What is it?' No one asked the

²⁹ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

³⁰ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

³¹ Margaret Kovach, *Indigenous Methodologies: Characteristics, Conversations, and Contexts*.

³² J. Ford and D. Martinez, "Traditional Ecological Knowledge, Ecosystem Science, and Environmental Management."

³³ Robin Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*.

plants, ‘What can you tell us?’ The primary question was ‘How does it work?’ Research subjects are reduced to an object.”

Acknowledging the Lack of Objectivity and Embracing Values

Wilson³⁴ said, “The idea that knowledge is approached through the intellect leads to the belief that research must be objective rather than subjective, that personal emotions and motives must be removed if the research results are to be valid”. Hampton³⁵ acknowledged that in research *there is* motive that comes from our emotions that we feel. He pointed out that we do what we do for reasons, emotional reasons. He said this “is the engine that drives us. To say that emotionless intellectual research exists is a goddam lie, it does not exist.” Despite Hampton’s sentiments, objectivity is revered in science, and conversely, subjectivity is expected in Indigenous research methodology. In my own experience when I have looked to Elders to help me with research projects, their first question is usually, “Why are you doing this work? What makes it good work?” This is rooted in our relational worldview, in relational accountability.

To be accountable to your relations, the researcher is therefore a part of his or her research and inseparable from the subject of that research³⁶. The Indigenous researcher has a vested interest in the integrity of the methodology (respectful) and the usefulness of the results if they are to be of any use in the Indigenous community (reciprocity). Evelyn Steinhauer³⁷ said, “Respect, reciprocity and relationality are the three things that should be guiding the research”.

How We Know What We Know

Indigenous knowledge is not gained in a lab or even in books. It is through the passing down of cumulative knowledge over time through stories and experiences. This makes our perspectives on knowledge acquisition different. It is less something to be gained so much as it is earned and shared/transferred **to the next generation to take and use and alter as the person sees fit**. It is not static. Native scholar, Greg Cajete³⁸, has written that “...in indigenous ways of knowing, we understand a thing only when we understand it with all four aspects of our being: mind, body, emotion, and spirit.... When training as a scientist, you only learn one possibly two of those ways of knowing: mind and body”.

Our Languages

How Indigenous peoples see the world is closely connected to our languages. While many of us do not speak our languages fluently (I’m trying to learn!), the ways we have been taught to relate to our world by our Elders is reflective of our languages. Kimmerer³⁹ said that, “while science can be a language of distance which reduces a being to its working parts; English is a language of objects. 70% of the English language is made up of nouns leaving only 30% as verbs.” Indigenous languages are largely the opposite.

³⁴ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

³⁵ E. Hampton “Toward a Redefinition of American Indian/Alaskan Native Education” *Canadian Journal of Native Education* Vol.20 Issue 2 1993:1-24.

³⁶ J. Wilson “King Trapper of the North: An Ethnographic Life History of a Traditional Aboriginal Sporting King” Unpublished Masters Thesis University of Alberta, Edmonton 2000.

³⁷ Evelyn Steinhauer in Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

³⁸ Greg Cajete in Robin Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*.

³⁹ Robin Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*.

Kimmerer gives the example in her own language, Potawatomi, 70% of the words are verbs. The languages are divided largely by things that are living and things that are not, and the division of those things is not the same as in the English language. For example, the noun, 'bay'. A bay is a noun only if water is dead. But the verb *wiikwegawmaa-* means 'to be a bay'- it allows the water to live. She goes on to say that our languages have a "grammar of animacy". This animacy is extended to things we would normally call objects. This is extended to rocks, mountains, water, fire, and places. This animacy goes even beyond English understanding of living things like trees, plants, animals. This allows us to have a different level of respect for these 'things'. English does not give us tools for this. This illustrates that within our very languages, we see the world differently. This is important to understand as there is power in words. It is the difference between objectifying nature as "natural resources" and being morally responsible for our fellow beings. Kimmerer uses the example, "If a maple is an *it*, we can take up the chainsaw. If a maple is a *her*, we think twice."

Our Stories and Experiences (data, to you)

Incorporating one's own personal life experiences and stories we have heard in the presentation of our research is important to the Indigenous knowledge paradigm. Through our own storytelling, it allows listeners to find their own relevance in the story⁴⁰. This also demonstrates the flexibility within our methodology as Karen Martin⁴¹ challenges Indigenous scholars to articulate their own approaches to research and their own data collection methods.

It's Time for the Time of the Eagle

Transitioning to an academic time of the eagle sets the context for us to build the bridge between the western scientific paradigm and the Indigenous worldview. Scientists from the dominant paradigm will have to acknowledge and move away from the tendency Simpson⁴² pointed out that "some of our ways of thinking may be more a product of disciplinary inheritance, habits and tendencies adopted from the scientists who preceded us".

There is great potential for each paradigm to be able to credibly inform the other. "There is general agreement that in order to maximize opportunities for progress and break-throughs in disciplines based on collaboration, it is vital to accommodate diverse perspectives." As emphasized by Longino⁴³, a primary benefit of participating in a diverse community is that the community is able to recognize and cancel out the biases an individual brought, either intentionally or unintentionally, to the table. The importance of embracing plurality in ecological thought has been emphasized many times over the years⁴⁴. Page⁴⁵ said, "The value of collaboration in solving problems ultimately stems from the synergy resulting from independent and diverse perspectives".

⁴⁰ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

⁴¹ Karen Martin "Aboriginal People, Aboriginal Lands and Indigenist Research: A Discussion of Re-search Pasts and Neo-colonial Research Futures" Unpublished Masters Thesis James Cook University, Townsville, Qld. 2003.

⁴² G. Simpson, *Principles of Animal Taxonomy* New York, USA, Columbia University Press 1961.

⁴³ H.E. Logino, *Science as social knowledge: values and objectivity in scientific inquiry* Princeton, New Jersey, USA, Princeton University Press 1990.

⁴⁴ R.P. McIntosh "Pluralism in ecology" *Annual Review of Ecology and Systematics* Vol. 18 1987:321-341.

⁴⁵ S.E. Page, *The difference: how the power of diversity creates better groups, firms, schools, and societies*, Princeton, New Jersey, USA, Princeton University Press 2007.

It is important that we ensure that informing each other is done in a respectful fashion. As Wohling⁴⁶ warned that caution needs to be exercised by Indigenous groups as in some cases, knowledge integration has merely become a fashionable trend in natural resource management amounting to little more than a box-ticking exercise. Researchers must be ok with acknowledging the truthful past. Kovach⁴⁷ said, “Introducing Indigenous knowledges into any form of academic discourse (research or otherwise) must ethically include the influence of the colonial relationship, thereby introducing a decolonizing perspective to a critical paradigm.”

Indigenous knowledge holders must also be open to working on collaborative research projects even in the face of having to educate non-Indigenous researchers who may hold hurtful viewpoints. I have personally run into numerous situations where unknown ignorance was demonstrated about who we are as First Nations people and our perspectives. As Kovach⁴⁸ said, “As indigenous researchers, our responsibility is to assist others to know our worldview in a respectful and responsible fashion.” As we may need help up onto the platform, you may well need our help to fly.

It is my hope that in embracing an academic time of the eagle, the result will be bridges in research built that embody the Mi’kmaq concept “Etuaptmumk,” described by Elder Dr. Albert Marshall⁴⁹ as “...learning to see from one eye the strengths of Indigenous knowledges and ways of knowing, and from the other eye with the strengths of Western knowledge and ways of knowing... and learning to use both these eyes together, for the benefit of all.”

Kimmerer⁵⁰ provides an interesting way of considering how the knowledge systems can work together but remain distinct.

“The Three Sisters offer us a new metaphor for an emerging relationship between indigenous knowledge and Western science, both of which are rooted in the earth. I think of the corn as traditional ecological knowledge, the physical and spiritual framework that can guide the curious bean of science, which twines like a double helix. The squash creates the ethical habitat for coexistence and mutual flourishing. I envision a time when the intellectual monoculture of science will be replaced with a polyculture of complementary knowledges. And so all may be fed.”

There are already examples of both paradigms credibly informing the other. An excellent example provided by Huntington *et al.*⁵¹ is understanding the migration of the eastern Chukchi Sea beluga whales. Harvests from this stock is an important part of the diet for the Inupiat Eskimo village in Point Lay, Alaska. While the Inupiat hunters were able to provide extensive traditional knowledge of the ecology of the belugas, they could not offer any information on their subsequent movements of the animals when they left the coast. The hunters expressed great interest in having this information and worked with scientists

⁴⁶ M. Wohling “The problem of scale in Indigenous knowledge: a perspective from northern Australia” *Ecology and Society* Vol. 14 Issue 1 2009:1 [online] <http://www.ecologyandsociety.org/vol14/iss1/art1/> Accessed Nov.6, 2017.

⁴⁷ Margaret Kovach, *Indigenous Methodologies: Characteristics, Conversations, and Contexts*.

⁴⁸ Margaret Kovach, *Indigenous Methodologies: Characteristics, Conversations, and Contexts*.

⁴⁹ Albert Marshall, *The Science of Humility* Eskasoni, NS: Mi’kmaq Nation, Unamak’ki Institute of Natural Resources. 2004.

⁵⁰ Robin Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*.

⁵¹ H.P. Huntington, R.S. Suydam and D.H. Rosenberg “Traditional knowledge and satellite tracking as complementary approaches to ecological understanding” *Environmental Conservation* Vol. 31 Issue 3 2004:177-180.

using satellite telemetry to track the migration. This is a great example of how Indigenous knowledge and science can work together to more accurately complete the picture.

Kovach⁵² points out that, “A foundational challenge for Indigenous researchers is the inevitability of being accountable to culturally and epistemologically divergent communities.” I am hopeful that I will be able to rise to this challenge for the benefit of both my scientific and Indigenous communities. My goal is to not only provide another example of how our Indigenous worldview and science can work together successfully, but to share my journey so that others may follow and realize the potential of existing in an academic time of the eagle that is free to embrace another way of knowing.

⁵² Margaret Kovach, *Indigenous Methodologies: Characteristics, Conversations, and Contexts*.

Chapter 3

The Unseeing, To See Ceremony

A Stranger in the Bush

I pick my way along. Making my own path around the rocks and roots and ferns and shrubs and trees. On the hunt. The target set. Fixated on the glowing red dot on my iPad map. I have done this long enough that little attention need be paid to my surroundings. I brought my best friend along to assist. Her first time out on such a quest. As I moved swiftly, honing-in on the bad plants whose demise were imminent, she kept asking me, "What is this?" pointing at the plants and trees. Ordinarily such inefficiency would make me annoyed, but for some reason, her interest intrigued me. With my recent pondering on worldviews, I realized that her view provided me a rare opportunity. Ordinarily, I am working with folks who like me, have spent most of their lives crawling through the dense brush. It isn't so much that you take it for granted, but you just don't take it in anymore in its entirety. So I tried to patiently answer her questions. And then I realized, I didn't know the answer to a lot of her questions.

I looked around through her eyes. I finally saw all the plants, the shrubs, the trees, the mosses, the insects, the fungi. I felt like I needed to introduce myself to them. How was this possible? How did I not know many of them? The ones I did know, felt mostly like acquaintances I met in another context but couldn't remember where. Later I realized that we met while I put together orders of native plants for restoration projects. From the lists I was provided by native plant nurseries. I had placed check marks next to their names. I had some old friends I could introduce her to though. The berries I ate with my dad when we fished the rivers and creeks. Those were awkward introductions though as I couldn't remember their names. They were mostly typecast as edible or not.

I felt as though my feet left the Earth. Disoriented. Quickened breath. I glanced down at my iPad and realized that the glowing red dot was within my crosshairs. I looked up. There they were. Right where the sun broke through the canopy. The invasive knotweed plants. I breathed a sigh of relief. I felt grounded again. There you are. My enemies. Thank goodness.

It was in that moment that I realized that my way of seeing the world had become so reflexive that it could have been part of my autonomic nervous system. Years of conditioning by my education, experiences, and profession had moved me far past simple indoctrination. I was hard-wired to see that which did NOT belong.

This realization occurred just as I had embarked upon this research journey to "see" my work from my heart, my Indigenous worldview. It made apparent that I was going to have to do some preparatory work first. I had to free myself from this reflexive way of seeing. Or at the very least, become more aware of it. Like a good yogi, working to master control of the breath, I set out to master control of my way of seeing. Something I called the "unseeing, to see ceremony".

To "unsee" is to put aside that which you know. It sounds simple. I learned it is a lot more difficult than it sounds. We are built by what we know. The values we were brought up with, the stories we were told, the education we have received, and a lifetime of experiences all shape who we are. Who we are creates the frame from which we see. As we progress in our careers, whether they be in academia or not, we develop confidence in this frame and our ability to use it analytically. It is at this point where we

transition into what is referred to in my culture as young Eldership. We carry valuable experience and knowledge and it is our time to share that which we know with others in our community. This life stage is both an honour and a privilege. Unfortunately, this life stage is not without its own challenges. We have learned and seen so much that it becomes difficult to approach problems from a new vantage point. Even when our knowledge may fail. This is the folly of the modern day “expert”. Let me be clear, this is not a devaluation of expertise, but an important observation deserving of dedicated awareness. As I found in my own experience, the wealth of knowledge born of my education and experience in invasion biology and ecology made it difficult to see things from an alternative worldview. A worldview that lay within my DNA that I had intense personal desire to “see” from.

The concept of “the beginner’s mind” was raised by my supervisor, Dr. Carol McAusland, after my first submission of this chapter for her review. Upon further investigation, I found that the “unseeing, to see ceremony” I had completed as part of my research journey, was a subject area worthy of further attention as it provided clarity in explaining the process I undertook.

Shunryu Suzuki⁵³ in “ZenMind, Beginner’s Mind” said, “In the beginners mind, there are many possibilities, but in the experts’ there are few.” The term, “Shoshin”⁵⁴, is a word in Zen Buddhism that means, “a beginner’s mind”. Shoshin “refers to having an attitude of openness, eagerness, and lack of preconceptions when studying a subject, even when studying at an advanced level, just as a beginner would.” This is a concept that is somewhat at odds with the position of nineteenth-century scientist Louis Pasteur⁵⁵ who said, “In the field of observation, chance favours the prepared mind.” A position that best describes the context required for the “aha” moment of a scientist. Only through a “prepared mind”, acquired through extensive education and experience, could the conditions required for discovery be met.

Just as I had found in my own process of attempting to leave behind the western scientific worldview to embrace the Indigenous worldview, Mark and Barbara Stefik⁵⁶ observed that,

“As we work in an area, we gain experience and acquire particular patterns of thinking. A mindset is a pattern and a set of assumptions that guide our thinking. Over time, these patterns of thinking become deeply ingrained. Without noticing it, we become very efficient at thinking “inside the box.” When we’re faced with a novel situation, these built-in assumptions can cause us to overlook inventive possibilities and potential breakthroughs.”

I think it may be difficult for some experts to see the value of contributions a “beginner’s mind” can make toward our own fields of study. A major hurdle is a culture of defensiveness of our own position within our fields for fear that a beginner may undermine our contributions as experts. I personally experienced the devaluation of the “beginner’s mind” early in my career as perhaps many of you have. I recall countless times, early in my career as an invasive species specialist, that my comments beginning with, “Why don’t we just....?” or any other such attempt at offering alternative possible solutions, were quickly dismissed by more senior government staff. These experiences were quite deflating and

⁵³ Shunryu Suzuki. *Zen Mind, Beginner’s Mind: Informal Talks on Zen Meditation and Practice* Shambhala Publications 2011.

⁵⁴ Wikipedia <https://en.wikipedia.org/wiki/Shoshin>

⁵⁵ Stefik, Mark, and Barbara Stefik. "The Prepared Mind Versus the Beginner's Mind." *Design Management Review* 16.1 (2005): 10-6.

⁵⁶ Stefik, Mark, and Barbara Stefik. "The Prepared Mind Versus the Beginner's Mind."

incredibly frustrating. Now that I am more senior myself in my professional community, I understand the tendency for this type of disregard. Beginner level thinking can lend to an inefficiency we don't necessarily have the time for. Very often these suggestions have been tried before without success, or require a budget we just don't have, or are impractical for some other reason. All things a beginner doesn't know yet. Out of the despair I felt in those early days, I attended a seminar on "multi-generations in the workplace" to help me better understand the disregard I was experiencing. While I left with a better understanding of the dynamics I was experiencing, I refused to accept them as a work culture I was willing to tolerate. I vowed that if I became an "expert" at anything, I would be open to the value a beginner may well bring to me. My own out-of-the-box thinking gave rise to new strategies for invasive species awareness and education programming that had significant impact to the entire field. A situation that required strategy to go around the experts rather than finding someone to listen and help me. A situation that evolved to my favourite saying coming to fruition, "The mighty oak was once the lone nut" as what I created was used widely and my expertise sought out. Perhaps it was this personal experience and the promise I made to myself that made me inclined to revisit the "beginner's mind" once more.

What I have come to realize is that the prepared and beginner's mindsets are relationally connected and play important roles in the progress of any process of knowledge acquisition or discovery. The answer to the question of whether a "beginner's mind" or a "prepared mind" will lead to important breakthroughs or discovery is that both can. Further, both mindsets can reside within an individual. While some have suggested that an expert seeking to take on a "beginner's mind" should "discard your previous experience"⁵⁷, I see it instead as the expert setting said experience aside temporarily. It is about the creation of the mind-space needed for an expert to realize the potential of taking on a "beginner's mind". Mind-space creation requires a conscious effort to set aside what ordinarily occupies that space. This was the intention of the mental exercises I completed within this research journey that I will share in the pages to come. While I will never be able to be a beginner within my fields of study again, and I may not be as likely as a beginner to come up with a completely out-of-the-box discovery, I can use my knowledge and experience to find and address the weaknesses within my field of study from an alternate worldview.

There are published examples of successful adoption of a "beginner's mind" within the contexts of science and leadership. One such example was that of Dr. Benjamin Kligler⁵⁸ whom shared his experience with using the "beginner's mind" as he transitioned into a new leadership role as the National Director of the Integrative Health Coordinating Center for the Veterans Health Administration in Washington, DC. Dr. Kligler described his use of the "beginner's mind" while being simultaneously an expert helped him to "maintain that 'lack of preconceptions' about how integrative medicine 'should' work in the VA [Department of Veterans Affairs, USA]...." while it has given him "the opportunity to bring some of the new out-of-the-box ideas... while still respecting all of the tremendous work done in integrative health," in the years prior. He wrote that "It has helped me remember again to make deep listening the cornerstone of my leadership". I think that this is a poignant example of why expert adoption of a beginner's mindset is a worthy process.

⁵⁷ Stefik, Mark, and Barbara Stefik. "The Prepared Mind Versus the Beginner's Mind." *Design Management Review* 16.1 (2005): 10-6.

⁵⁸ Benjamin Kligler "The Beginner's Mind in Leadership" *Explore* Vol.12 Issue 6 2016:459-460.

The process of breaking out of a prepared mindset can be extremely difficult. For me, it was a matter of being open to experimenting to figuring out strategies that worked. Mark and Barbara Stefik⁵⁹, whose article, "The Prepared Mind Versus the Beginner's Mind," I read after I completed my own "unseeing, to see ceremony", present strategies to help with this process. These included exercises such as changing activities, trying the opposite, and uncovering assumptions by discussing the subject area with someone unfamiliar with the topic at hand. You will recognize in the examples I provide of my ceremony some of the strategies that they outlined. I found this to be a reassuring after-the-fact discovery that my own intuition was correct.

The adoption of the Indigenous worldview, to me, was more than a simple adoption of a "fresh perspective". To work from a different worldview is to embrace a new philosophy. Something that affects both perception and the interpretation of those perceptions. In my mind, to fully realize its potential, the deep work of a dedicated ceremony was required. This involved a significant investment in time to create the mind-space needed. We do so much work investing in the creation of a "prepared-mind" through our years of education and experience, I think it a challenge to experts that time be invested, at the appropriate career stage or when a unique opportunity may arise, in the creation of a "beginner's mind". There is much to be revealed by that which we presume to know already if we embrace the "prepared beginner's mind."

What I Was Up Against

As an Indigenous woman, I should have been capable all along of seeing my work as an invasive species specialist from an Indigenous worldview. Without realizing it, I allowed myself to be colonized by my education within the dominant western scientific paradigm. While I have certainly received a quality scientific education, the culture surrounding it set the stage for me to simply turn off the Indigenous part myself in the name of conducting sound science. Couple this with working in a field directly tied to advocacy and education, I became entrenched in the dogma of our field of study by the strength of the hyperbole I used as an effective tool for communicating the invasive species cause. Any possible glimpse from my Indigenous worldview was fleeting at best.

As I worked to plan a large invasive species conference, I was hoping to bring in the author of the book, "Where do camels belong?" as a guest speaker. The book⁶⁰, written by Dr. Ken Thompson, examines examples of the contradictions of 'native' and 'invasive' species and the crucial questions about why only certain introduced species are successful. It is openly critical of how our fears could be getting in the way of conserving biodiversity and responding to climate change. I was challenged to read the book by my colleagues in Alberta during a work trip and after doing so, felt personally challenged by what I read. It was like reading my own self-doubt about my profession. Every invasive species conference I have been to has had speakers from "our camp" so-to-speak, so the opportunity to bring in a new perspective that would stimulate debate over the course of the conference seemed exciting. Sadly, as I excitedly presented the idea to others involved in the conference planning, I was not met with shared enthusiasm. The criticism... he's too controversial. "His views are too oppositional to our own."

⁵⁹ Stefik, Mark, and Barbara Stefik. "The Prepared Mind Versus the Beginner's Mind."

⁶⁰ Ken Thompson, *Where Do Camels Belong?* British Columbia, Canada, Greystone Books Ltd. 2014.

There is a culture within the field of invasion biology that is oppositional to alternative perspectives. I have watched keynote speakers at conferences flippantly cite the work of the common detractors and roll their eyes in a theatrical manner. It seems that Davis⁶¹ has also experienced this as he said, “There are times when invasion biology has not been as welcoming as it might have been of diverse perspectives”.

The very nature of science is that it is a constantly changing, self correcting process, which evolves along with advancement of knowledge. This should mean that alternative perspectives which challenge current theories should be welcomed. While there can be resistance to paradigm shifts within any field of study, the strong aversion to the consideration of alternative perspectives within the field of invasion biology seems somewhat unique. Surrowiecki⁶² said that “The mean of a group of independent estimates is generally much more accurate than any single estimate. However, if the group acts as a committee, it usually yields a much less accurate estimate than the mean value based on independent estimates of each individual of the group”. He explained that the poorer performance by the group when operating as a committee is because the small-group dynamics reduce the impact of independent thinking in the group⁶³. It seems evident that the invasive species community is largely operating by committee-level thinking. This is concerning because as Davis⁶⁴ said, “Like all sciences, if invasion biology is to maximize its progress, it needs to encourage diverse perspectives, to be open to criticism, both from inside and outside the discipline, and to effectively network thousands of independently minded researchers and managers”.

While theories such as the diversity-invasibility hypothesis and niche theory have dominated the field of research within invasion biology, further evidence of the resistance to consider other perspectives are the persistence of these theories in the face of empirical data that have contradicted them⁶⁵. Bruno *et al.*⁶⁶ charged the field with uncritically accepting the niche-based competition paradigm for several decades. Despite increasing reservations by many regarding the utility of niche-based and competition approach to understanding invasions, niche-based invasion models have continued to play a major role in invasion theory⁶⁷. It is this commitment to theories that may be hindering our understanding of invasion biology by directing research down the same paths.

We must acknowledge the reality of the cultures surrounding fields of scientific study as part of the “unseeing to see ceremony”. There can be much at stake for those willing to take on a “beginner’s mindset” and understanding the context for how such cultures have arisen, can help us to create

⁶¹ M. Davis, *Invasion Biology*. Oxford University Press, New York, USA. 2008.

⁶² J. Surrowiecki. *The wisdom of crowds: why the many are smarter than the few and how*. Doubleday, New York, 2004.

⁶³ M. Davis, *Invasion Biology*.

⁶⁴ M. Davis, *Invasion Biology*.

⁶⁵ M. Davis, *Invasion Biology*.

⁶⁶ J. F. Bruno *et al.* “Insights into biotic interactions from studies of species invasions” in M. Davis, *Invasion Biology*.

⁶⁷ K. Shea and P. Chesson, “Community ecology theory as a framework for biological invasions” *Trends in Ecology and Evolution* Vol. 17 2002:170-176.

J. Farigone, C.S. Brown and D. Tilman “Community assembly and invasion: an experimental test of neutral versus niche processes” *Proceeding of the National Academy of Sciences USA* Vol.100 2003:8916-8920.

D. Tilman “Niche tradeoffs, neutrality, and community structure: a stochastic theory of resource competition, invasion, and community assembly” *Proceedings of the National Academy of Sciences USA* Volume 101 2004:10854-10861).

B.A. Melbourne “Invasion in a heterogeneous world: resistance, coexistence or hostile take-over?” *Ecology Letters* Vol.10 2007:77-94.

supportive contexts for new understanding. Authors such as Russell and Blackburn⁶⁸ in their article “The Rise of Invasive Species Denialism” demonstrate how difficult it is for researchers within the field to venture outside of mainstream thinking and to depart from what Blackburn frames in the article as the scientific dogma of invasive alien species. Their extreme viewpoints, where they seem to equate skepticism with science denialism, and place skeptics of certain aspects of invasion biology on par with climate change deniers, show what anyone with an opposing viewpoint may face within the research community. While it is reassuring to see responses to this article such as by Crowley *et al.*⁶⁹, “Raising challenging questions should be possible without being accused of denialism, and might be most productively engaged with through listening, acknowledgment, and open discussion rather than via rebuttal. We are therefore concerned that the tone of Russell and Blackburn’s article is counter to its stated message that ‘there should be a vibrant and robust dialogue’ about invasive species.” They go on to say, “Labelling those who challenge dominant views ‘deniers’, and assuming their ‘motivations are disingenuous’, is not conducive to good quality public, or indeed scientific, debate. Furthermore, such labelling might easily be misused as a means of shutting down valid concerns about the principles, recommendations, and scientific outputs of invasion biology.” Susanna Lidstrom’s⁷⁰ response to the article sums up the need to bridge the gap in knowledge by avoiding the creation of a dichotomy between evidence and values as this dichotomy undermines science. She said, “...robust dialogue around invasive alien species is best served by ‘opening up’ science through increased co-design and co-production of research, and involvement of experts and perspectives from a variety of disciplines and societal sectors. This will help build new models of science-society interaction that can effectively negotiate- rather than deny- the role of values in ecological science.”

I have recognized through my research journey that my “unseeing, to see ceremony” was critical to fully embracing the Indigenous worldview and Indigenous research methodology. There is so much focus on the exciting process of what will be discovered working from a new paradigm that we forget that work must be done to blaze the trail that leads to there first. I learned that a shift in worldview is not a quick and simple flipping of a switch but more akin to a slow wading into unknown waters. Achieving a “prepared beginner’s mind” was a process of release, reorientation that could only have come through the “unseeing, to see ceremony”. This committed and purposeful preparatory work enabled the release of what I presumed to know and allowed me to find my feet again. It was deeply humbling work to develop a conscious resistance to my reflexive thinking so that I could be open to what may be revealed from a new paradigm within a context I am so otherwise deeply familiar with.

This is my ceremony.

⁶⁸ J.C. Russell and T. Blackburn “The Rise of Invasive Species Denialism” *Trends in Ecology and Evolution* Vol. 32 Issue 1 2017:3-6.

⁶⁹ S.L. Crowley, S. Hinchliffe, S.M. Redpath and R. McDonald “Disagreement about invasive species Does not Equate to Denialism: A Response to Russell and Blackburn” *Trends in Ecology and Evolution* Vol. 32 Issue 4 2017:228-229.

⁷⁰ Susanna Lidstrom “An Interdisciplinary Perspective on Invasive Alien Species” *PLOS Blogs* 2017. <http://blogs.plos.org/ecology/2017/10/18/an-interdisciplinary-perspective-on-invasive-alien-species/>

A Ceremony in the Weeds

After years of developing invasive species education campaigns vilifying many weedy species, I needed a process to move myself away from this good/bad plant dichotomy. My purposeful process into “unseeing” would involve a series of acts to get to know weeds in a way other than as targets for obliteration. I commenced “A Ceremony in the Weeds” in the summer of 2017.

Embracing Weeds

I recently went out collecting different “weeds” to dry for medicinal teas. While healing teas have always been part of the traditional medicine I practice, I mostly purchased them from the health food store. My daughter’s chronic illness sent me to the plants for help. I was desperate to find relief for her. The plants I knew I needed were weeds. I had never myself gathered these plants for this purpose. I discovered an incredible mind block. While I knew the medicinal benefits of these plants, I have also spent many hours advising others how to kill and prevent the invasion of the very same plants. I had killed them myself. The cognitive dissonance was hard to reconcile. I realized that I had been successfully conditioned to view these plants negatively as enemies. I realized that I prevented myself from getting to know these plants because it is much easier to attack enemies you do not know.

The weedy medicines appeared between the raised garden beds of my market garden and along the edge of the forest that surrounds our farm. I had never really paid attention to them before. Other than sending them an annoying glance as they represented yet another farmy task I needed to do. Having given them pause for the first time there I saw, illuminated by the ray of sunshine like a light from the heavens, the bees pollinating them. Damn. I looked away quickly as if caught staring at a stranger. I approached them uncomfortably as I continued to watch at least three species of bees covered in pollen upon them. Now what? Ordinarily when I collect plant medicines I greet the plant, ask for permission to harvest, say a prayer of thanks and leave an offering. The very thought of doing that in this case felt strange. Like it was far too personal of an exchange with my historic foes.

It felt silly but I thought perhaps I needed to introduce myself to them first. It was awkward. It did not feel like enough to overcome the hurdle I felt. Then I apologized to the plants. “I’m sorry. I’m sorry I didn’t see your potential before. I’m sorry I didn’t give you and your relations more consideration.” As weird as it sounds, it ended up being a humbling and deeply healing “conversation”. I then asked the plants for permission to harvest them so that they could help my ailing daughter who I went on to explain through tears, was suffering terribly. They said they would help. Through the blur of tears, I ceremoniously plucked horse tail and dandelion from the ground and picked the leaves of plantain and comfrey. Never had I been so careful with these yield reducers, indicators of poor soil health, and enemies of biodiversity. I now provide nurturing places for these pain relievers, infection preventers, and anti-inflammatories. When I find myself quick to judge, I think about those plants who helped me heal my daughter.

The Unseeing of the Children

My 8-year-old son and 9-year-old daughters came outside to help me to collect my old enemies to include in our dinner. They thought the fact that we would actually eat weeds for dinner was hilarious. “Mom, have you gone crazy?!” asked Josh. Then we laughed and laughed at the ridiculousness of what we were doing. It was like some sort of weedy family betrayal. The experience made me realize that I

had managed to successfully indoctrinate my own children with this anti-weed bias from an early age. Was that successful education on biological invaders or was I robbing them of their culture and the opportunities presented by these plants?

Dandelion pesto has become a family staple. It's confusing.

Knot the Cure for Me

I have been working on the management of knotweed species across British Columbia for almost 20 years now. Knotweed I believe to be the weedy species that may deserve all of the vilification I have hurled at it over the years. Destroyer of salmon spawning grounds, disrupter of riparian areas, destroyer of infrastructure, it is both remarkable in its ability to persist and in its ability to wreak havoc.

In 2014, I was diagnosed with Lyme disease. After a year of bizarre symptoms that eventually lead me to an inability to walk, bell's palsy in my face and forgetting where I lived, I finally got the diagnosis. Treatment was brutal. Multiple anti-biotics at the same time. Terrible reactions to the bacteria dying off in my system. And to top it all off, an issue with C.diff.

*I was out of antibiotic options as a result. I was much better at this point but not quite there. My doctor gave me a couple of natural options to consider that had shown promise in studies against the Borrelia bacteria. She left the exam room and came back with a small glass bottle. Written on it, "Fallopia japonica extract". Thankfully my doc and I have a great relationship because I immediately blurted out, "You gotta be ****ing kidding me!" She said, "What?!" I said, "You know what I do for a living right?" and I pulled up a recent news piece about knotweed I did on GlobalTV National News. She watches and begins laughing hysterically. The very plant I was on the war path against, had killed hectares of, had been on multiple news broadcasts about, was the next line of treatment for my disease.*

I wish I could say that I also embraced this weed as part of my "unseeing to see ceremony" but I just couldn't bring myself to do it. I bought the bottle of the extract. It is still, 2 years later, in my cupboard. I went with different plant medicine that also showed promising results. I worried that the inner battle in my mind would have an impact on the efficacy of the treatment. At the time it was "knot" the treatment for me. The scenario did offer me an interesting opportunity for a lesson about the potential of this plant for healing. Prior to this, I had watched YouTube videos of a guy promoting its medicinal benefits, but I had written the hippy and his claims off. He was a bit of a pebble in my shoe as he widely promoted the medicinal benefits of knotweed and was critical of those of us working hard to kill it. His views posed a threat to our alien-plant-busting mission. While I still do not agree with this his "live and let live" plant philosophy, I am at least receptive now to his message of knotweed's powerful medicinal benefits.

Blackberry Confessional

I confess, we have Himalayan blackberry on our property. I made myself stop fighting it at two sites on our farm. Anyone visiting our property that knows me finds this strange. The thorny beast that started it all, the catalyst of my waging war on invasive species, allowed to live on my farm all these years later.

It was driving me crazy to watch the blackberry expand in our yard. My commitment to this "unseeing" process made me leave it. I watched it. I considered it. I hated it. I admired it. I was grateful for it. Then I hated it again. One wouldn't think blackberry could cause such an emotional roller coaster but for someone who passionately spreads the word, not the weeds, this process felt sacrilegious.

Then the bees arrived. I never realized how much both the honeybees and our many native pollinators used this plant. With the plight of honeybees and our native pollinators, it made me wonder if the bees needed the blackberry. I assigned myself the task of looking for other pollen sources in our area and the majority were sources of domestic flowers. Squashes, tomatoes, cucumbers, fruit trees, lavender, mint, cilantro, peppers.

Then the berries arrived. My kids enthusiastically got their containers and wanted to go picking after dinner one evening. I grudgingly went along with this. I have long claimed my distaste for the blackberry out of principle. Applying food values to weeds can then make it difficult to have social license from the public to kill them within invasive species management programs thereafter. I broke my rule and I ate some for the sake of science. The kids' happy, berry stained faces made it palatable.

Then the bear came. We were doing dishes and cooking breakfast one morning and a young boar came sauntering past the kitchen window. His trajectory, the blackberry patch at the front of the property. Apparently, he didn't care that they are an invasive species. He was hungry and with all the development that has happened in his hood that destroyed his habitat, I felt like I had done something right.

I confess that considering the blackberry has resulted in things becoming a lot less black and white. I tore up my arms as I pruned the thorny beasts back enough that they won't take over, but they can stay.

Seeding Weeds

I bought weed seeds. Those seed sharers lurking at Seedy Saturdays that I have shamed in the past for spreading invasive plants, I sought them out. Not to preach at them from my ecologically superior soap box either. I chose a vendor who would not recognize me, and I admired their extensive collection of all things weedy and invasive. I chose a few packets of seeds and gave them my money. I happily received their growing advice never having attempted to deliberately cultivate these plants before. I shoved the seeds deep into my purse and kept my head down as I exited so I could pass my colleague at the Invasive Species Council booth undetected. When I got home, I planted the weed seeds in trays filled with our carefully crafted blend of starting medium in our greenhouse along side our trays veggie starts. I am nurturing them alongside each other. It's weird.

My weedy colleagues think I've lost my damn mind.

My "unseeing, to see ceremony" has been a process of profound transformation. I have deepened my connection with my culture embracing plant medicine and empowering others to practice it too. I have deepened my relationship with the land such that I can now see the multitude of relationships with it and within it. It is as though I switched camera lenses from the laser-like focus of micro and to something even bigger than the widest of wide-angle. The psychological barrier of belongingness (good/bad plants) is gone. My daughter is healed. The weeds helped do that. The freedom gained by "unseeing" has not landed me in the professional crisis I thought it would. Instead my colleagues wait supportively for me to report back.

I have done the complex work of releasing myself from the grip of my "expertise". I believe that I have managed, in hindsight, to achieve the "prepared beginner's mindset" and the freedom it provides to pursue new paths of inquiry that an Indigenous worldview may reveal. The old had become new again.

I was ready.

Chapter 4

An Indigenous Ecology

“We did not think of the great open plains, the beautiful rolling hills, and the winding streams with tangled growth, as ‘wild’. Only to the white man was nature a ‘wilderness’ and only to him was the land ‘infested’ with ‘wild’ animals and ‘savage’ people. To us it was tame. Earth was bountiful and we were surrounded with blessings of the Great Mystery.” -Luther Standing Bear, Oglala Lakota (1868-1939)

Stories. To teach us. To guide us. To connect us.

To all beings. To the past. To the now. To the future.

They are alive.

Stories are a sacred and integral part of our Indigenous way of life. They provide for us a way to understand our place in the world. Our stories can be as grand as explaining our origins, involve the animal and spirit worlds, or be as simple, but no less profound, as the sharing of a personal experience. Our stories are meant to be dynamic in nature. Every storyteller making changes to meet the needs of the listener. An acknowledgement of the ever-changing tides of our world. Our stories are as diverse as the beautiful Indigenous peoples across our Earth Mother. The differences of our stories celebrated, admired, and respected. While our stories may differ in content and context, they are united in the power of their telling as ceremonies that connect us to important lessons. Stories are received as treasured gifts to be held in our hearts with the responsibility to share them with those who may need them.

This research journey I have received such treasured gifts. They were given with the responsibility to share them with those who are interested in living a life with the purpose of healing our sick Earth Mother. At a time where we face the uncertainty of a rapidly changing climate and when despite many of our best efforts, we are not making the difference we need to, we need these stories. We need these stories to form a new foundation from which we heal the land.

Through our process of “unseeing, to see” we can be ready to embrace these stories as tools of learning as valid as the findings of research conducted using the western scientific method. While simply defined, ecology is a branch of science concerned with the interrelationship of organisms and their environments. While this may encapsulate its essence in the modern context, it does not acknowledge the impact that its foundation has on the examination of these relationships and the actions it may inform.

The current foundation of modern ecology rests upon a different kind of story. Learning about the world and our place within it through stories is not unique to Indigenous peoples. The influence of the dominant religion practiced by European settlers in North America has had a significant impact on our relationship with the Earth. Ecology finds itself atop a foundation surprising to many working within it,

Christianity. This observation is not new and is certainly not meant to be a criticism of the Christian faith. It is an observation meant to draw attention to the depth of the colonial influences upon our land that have not only harmed it, but whose influence may be inhibiting the effectiveness of our efforts to heal Her. It is an observation meant to present an opportunity to bring about ecological reconciliation by resting ecology back upon its rightful, relational foundation.

The power of stories is not to be underestimated. The profound influence of the Christian story on the development of modern ecology can be seen in today's Ecological restoration practices. The narrative of the perfect creation of Earth by God who later added His perfect human creations, Adam and Eve, in the image of Himself. They resided within the Garden of Eden with the intention to multiply, to steward over the Earth, all in complete obedience to God..... until that fateful day. Their fall from grace the impetus to the lifelong human quest of restoration and a return to Eden.

While that was a very simple summary of this foundational story, this story and its influence in the shaping of Western society laid the foundation for what I refer to as Eden ecology. An ecology with notions of perfectionism of the environment. An ecology where perfectionism was broken by the introduction of humans as they fell from grace. Where humans are blamed for the resulting imbalance of the once perfect world. Herein lies the great divide between our foundational Indigenous and Christian stories. This divide accounts for entirely different understandings of our relationship with and purpose within our Earthly home. Indigenous creation stories, regardless of their origin, place us as equals with our other relations on the Earth. The Creator gave humans the responsibility of bringing balance to the plant and animal kingdoms. Before the human, there was no balance. The Earth needs the human to bring balance.

Humans

Bringers of Balance

Shapers of the land and waters

When I use the terms 'balance' or 'balancer' to describe the role of humans in ecosystems, it is important to recognize that this is not the 'balance' that has been debated over the history of ecology. Balance in the context of this work is a somewhat failed attempt to anglicize that which is an expressed sentiment of Indigenous understanding of our role with our Earth. It is not something that required objectification within our own languages as it is the very pulse of our existence. I name it here as we find ourselves trying to understand it within the constraints of our current context and the English language. Balance in this case is not a static condition, nor is it synonymous with the term equilibrium. In this context, balance acknowledges and accepts the dynamic nature our ecosystems. It honours the past, present and future. It recognizes and accepts that we cannot fully comprehend the complex number of and nature of the relationships within our ecosystems. It does not profess control over those systems. Instead, it puts forward a sentiment of responsibility to shape ecosystems into ways of being that meet the needs of our relations (animals, insects, fish, humans) and are consistent with community values. In essence, our role as balancers of ecosystems is a humbly accepted leadership role given to us by Creator. We are the shapers of the ecosystems that we live within to bring about the best possible

balance for the benefit of our communities at the time. Bracken and Wainwright⁷¹ provide the best-fitting example of this sentiment from the settler world that “...in geomorphology the notion of equilibrium exists as a metaphor for what we would like to exist in the environment rather than what is necessarily there.” Understanding the essence of this sentiment is fundamental to understanding our Indigenous ecology. How we think about ecosystems and our role in them is important as it guides the application of ecology.

The concept of balance in ecology is long debated throughout its history in scientific study. Since the contributions of American Ecologist F.E Clements, proposing a dynamic ecology which replaced the previous static descriptive work before him, came ideas of equilibrium and stability, the ‘classical paradigm’, or the equilibrium paradigm in ecology which persisted until the 1970s⁷². A paradigm that fed ideas in conservation and the wider environmental movement that there was a ‘balance in nature’, easily upset by inappropriate human action. That equilibrium is naturalized as a “pre-disturbance” state—that is, the state of balance that existed prior to the disturbance of human activity⁷³. A paradigm that mirrors that of the story of Adam and Eve.

Fear not. Enter the ecologist. A hero cast by the conservation movement, who would “external to natural processes, spanner in hand, ...put the balance right”⁷⁴ when human action upset the machine. “The scientific ideas and practices of conservation of this time were concerned precisely with establishing or recovering control, both over human impacts on nature (in stopping habitat loss) and over nature itself (in habitat management)”⁷⁵. While this was a role that recognized human responsibility to ecosystems, it differs entirely from the role of humans in the ecosystem from our Indigenous worldview. The ecologist is placed in a god-like role, above the ecosystem as external master fixer. David Livingstone⁷⁶ suggested that conservationists “...presented themselves as the ideal scientific managers of the environment, the engineers of nature”. Our Indigenous worldview casts us as an equal part of the ecosystem. A leader meant to shape the system over time according to the values and needs of the ecological communities. This was not a single person’s role to fulfill, the human community simply as Elder Luschiim put it, “lived it”. Given that Indigenous ecology is “lived”, there is no separation between it and its application.

⁷¹ L.J. Bracken and J. Wainwright “Geomorphological equilibrium: myth and metaphor?” Transactions of the Institute of British Geographers Vol. 31 2006:167-178.

⁷² W.M. Adams “Rationalization and Conservation: Ecology and the Management of Nature in the United Kingdom” Transaction of the Institute of British Geographers Vol. 22 No. 3 1997:277-291.

⁷³ S. Eden and C. Bear “Models of equilibrium, natural agency and environmental change: lay ecologies in UK recreational angling” Transaction of the Institute of British Geographers Vol. 36 No. 3 2011:393-407.

⁷⁴ W.M. Adams “Rationalization and Conservation: Ecology and the Management of Nature in the United Kingdom.”

⁷⁵ W.M. Adams “Rationalization and Conservation: Ecology and the Management of Nature in the United Kingdom.”

⁷⁶D.N. Livingstone “The polity of nature: representation, virtue, strategy” *Ecumene* Vol. 2 No. 4 1995:353-377.

In the passing decades as ideas emerged such as the importance of patterns of disturbance and resilience, a modern ecology, an ecology of chaos⁷⁷ emerged⁷⁸. Adams⁷⁹ said, “Non-equilibrial ecology suggests that nature itself is dynamic and highly variable: its patterns at one particular place and time contingent on preceding events; its trajectory through time open-ended and not tending to an equilibrial point. Human actions are part of the web of influences on ecological change, not external equilibrium-disturbing impacts.” While this departure from the early days of Eden-like balance may seem as though modern ecology has come closer to an Indigenous understanding of our ecosystems, I see it more that the pendulum swung right past us to the other extreme.

The absolutist nature of the foundation of today’s Eden ecology is understandable. The very nature of Christianity tells us that there is indeed a capital ‘T’ Truth. There is right and wrong. There is comfort in absolutes, in clear answers to tough questions. This worldview has influenced our understanding of ecology as it resonates through the terminology, research, goals, and in its application. Its guidance by dichotomies, notions of perfectionism, and hierarchies are hindering our progress in healing the land at this critical juncture of our climate history. Without a foundational change, doing enough will remain impossible. Every attempt will remain confined by the constraints of an unintentional, historic foundation.

“Your religion was written upon tablets of stone by the iron finger of your God so that you could never forget. The Red Man could never comprehend or remember it. Our religion is the traditions of our ancestors- the dreams of our old men, given to them in solemn hours of the night by the Great Spirit; and the visions of our sachems, and is written in the hearts of our people.”- Chief Seattle 1854

While ecology over time has pursued the question of an ecological Truth, the truth may be in the relational understanding of these Truths coming together. This is what placement of ecology upon a relational foundation would allow for. Our Indigenous, relational worldview releases us from a tether point, a linear view of ecological philosophy and its changes over time. Instead, it reveals the connections between the formational ideas of ecology to weave together a web of greater ecological understanding. We do not discard the wealth of knowledge that has been generated over the history of Eden ecology, we place it too, upon the relational foundation of an Indigenous ecology. With the freedom of a relational worldview, we have a greater chance of seeing anew how what we know weaves together, we are open to other knowledges and forms of knowledge acquisition, and provided the opportunity of illuminating new paths of inquiry and alternate understanding.

Our Indigenous worldview allows us to exist in a world of small ‘t’ truths. It is one that embraces the Great Mystery. We don’t have to have the answers as we are free of absolutes. Our stories are meant to evolve to fit our current reality. Our stories are not one size fits all. Their dynamic nature makes them very much alive. There is no need to double down on an old story to assert its relevancy, it is just time

⁷⁷ D. Worster, *The wealth of nature: environmental history and the ecological imagination* Oxford University Press, New York, USA. 1993.

⁷⁸ W.M. Adams “Rationalization and Conservation: Ecology and the Management of Nature in the United Kingdom.”

⁷⁹ W.M. Adams “Rationalization and Conservation: Ecology and the Management of Nature in the United Kingdom.”

for a new story as we learn more. In many ways, Indigenous story telling works similarly to the progression of science over time. Perhaps with greater humility.

Let us lay a new foundation for modern ecology. Or rather return it to its rightful, relational foundation.

We don't save the environment like it is some mission or hobby.

We are the environment.

It is time for Ecology to come home as the salmon do.

To rest upon our way of seeing.

Of knowing.

To rest in relation upon our wise Earth Mother.

The Path to an Indigenous Ecology

It is my professional life as an invasive species specialist that provided me the opportunity to “see” and understand the need for a change in how we heal the land, first-hand. This need for change was the catalyst of this research journey. It seems to have come full circle that this research journey, focused on the highly polarized field of invasion biology, has led us to finding our Indigenous Ecology.

Asking the question, “What do you think about invasive species?” to anyone involved in ecological restoration is akin to discussing politics at Thanksgiving dinner with your extended family. Passionately held positions on the issue reside mainly at either end of a wide spectrum that begins with “live and let live” all the way to “kill everything that doesn’t belong”.

That is, unless you ask an Indigenous knowledge keeper.

When I began this research journey, I knew that the research literature on the subject of Indigenous views about introduced species was relatively sparse. Trigger and Martin⁸⁰ found the same. A comprehensive inquiry completed by Bruce Rose⁸¹, found that Aboriginal people in Central Australia saw all animals as now 'belonging' on the country, partly through their presence over a substantial period of time. Rose's informants did not separate the environmental impacts of feral animals from those of native species, the contemporary ecosystem being regarded as an integrated whole, with no species 'belonging' more so than others. Trigger⁸² found that many Aboriginal responses to 'exotic' plants, animals and cultural forms seek to embrace them. At the least, this is a complex matter rather than any simplistic divide in traditional Aboriginal thought between natives and invaders. In some areas of Central Australia, cats for example, are hunted for food and celebrated as spiritually significant with a dreaming

⁸⁰ D. Trigger and R.J. Martin. “Place, Indigeneity, and Identity in Australia’s Gulf Country.” *American Anthropologist* Vol. 118, No. 4 2016:824-837.

⁸¹ Rose, B. “Land Management Issues: attitudes and perceptions of amongst Aboriginal people of central Australia.” Report for Central Land Council, Alice Springs. 1995.

⁸² D.S. Trigger, “Indigeneity, Ferality, and What ‘Belongs’ in the Australian Bush: Aboriginal Responses to Introduced Animals and Plants in a Settler Descendant Society.”

route similar to those of native species⁸³. Similarly, in the Gulf Country of northern Australia, the introduced water buffalo (*Bubalus bubalis*) has been historically celebrated with dances and songs mimicking the animal's features just as with native species⁸⁴. If 'Indigenous Australians' make intellectual room for non-native species, recognising their capacity to achieve a place in the environment and the nation, what are the implications for notions of 'ecological restoration'? At the least, this complicates any broad society-wide assumptions that symbolically link 'Indigenous people' with an exclusively 'native' ecology, and any related view that simplistically equates things 'native' with what is exclusively 'natural'.

My initial reaction to these few studies I found left me perplexed. My own experiences consulting and working with Indigenous communities on invasive species initiatives was that there was clear concern and action was warranted. I did not capture any of the sentiments that Trigger described of Indigenous Australians. After my "unseeing" ceremony, I came to the shameful realization that after years of working with many Indigenous communities, I didn't know what they thought about these topics at all. I had imposed what I thought upon them. "Scientist Jen" was a person in a position of expertise telling communities what they should think. It hurts my heart to admit that. The arrogance of it. As an Indigenous woman, I behaved as a colonizer. While I know that we did do a lot of important work for the benefit of our natural environment together, and I am not devaluing the role that expertise should play, there is a balance that I missed. I deeply regret what I now see as many lost opportunities to REALLY know the perspectives of Indigenous communities I worked with regarding invasive species and ecological restoration. I am left to wonder how that would have changed the work we did and the outcomes of that work.

I had always felt a hesitancy from First Nations' community leaders on invasive species issues despite my enthusiasm for action on what I saw to be ecological emergencies. I explained it away to myself that I was just not in enough of a position of trust as I was an outsider to the community. I realize now that was likely only a very small part of it. I can see now that **there is much wisdom in this hesitancy**. I am embarrassed to recall my feelings of frustration at the inefficiency of this hesitancy at the time. Back then I felt so sure about the cause.

Reflecting upon these experiences was a major part of my "unseeing, to see ceremony". These reflections have been vitally important to informing my methodology for the collection of perspectives from knowledge holders. I realized that settler-informed invasive species education campaigns had been specifically designed over the past several years to inform and assist Indigenous communities with the management of invasive species. I recognized the potential impacts these campaigns could pose to my study. Those that had received this settler-based education could have their perspective skewed by it. They may also feel inhibited to communicate their thoughts on the subject as the cause was communicated to them with such strength of hyperbole (a sentiment shared with me through personal communications). To avoid this potential pitfall, I set out to talk to knowledge holders (Elders or Indigenous knowledge holders acknowledged as such by their communities), who had not been directly involved in these invasive species education campaigns. I wanted perspectives as free from the influence of the colonial pressures as possible and given what I have learned, feel justified in this decision. This

⁸³ Cane, S. *Pila Nguru: the Spinifex People*. Fremantle Arts Center Press, Fremantle. 2002.

⁸⁴ D.S. Trigger, "Indigeneity, Fertility, and What 'Belongs' in the Australian Bush: Aboriginal Responses to Introduced Animals and Plants in a Settler Descendant Society."

was not a simple collection of Indigenous stories, nor did I begin with any lists of questions like a survey. True to Indigenous research methodology, I embraced the journey and let my teachers guide me through their own unique ceremonies.

Luschiim:

What is a knowledge keeper? Well, for me, some say I'm a knowledge keeper. But I say I know very little compared to the old people. But I remember. Children were shooed away when people were gathered together. Children were told, "Go outside and play". I'd go to the door, and I'd sit down, and I'd slowly come back. Slowly come back. I'd crawl under the table. I'd be listening to the words that were coming out so... Many times I'd just go up to an Elder and sit with them. Day like this, I'd see an old man sitting there. Especially [name of person in Hul'qumi'num] I'd go and join him. I didn't really know him. I knew him but not.... Of course after several times, he started to talk and he started to share stories with me. So it became quite broad what he shared with me. So I learned from just sitting with him. Not asking for it. Just being there. I find myself the same way if somebody comes in, joined me several times, I will share things with them. Maybe it's come from their own great grandmother. So that's how you become knowledgeable. Just by listening. That's a real important bit. Learn to listen. When I was talking about me crawling off the table, under the table, that's what I was doing, I was listening. So that's a real big thing. I keep quiet and listen. Sometimes, whether it's a child or an adult, I guess maybe adults especially. They're so eager to, to me, to show off their knowledge. You start to share with them, but they come in sharing that knowledge and it could be about the moon, could be about Mars. No. Oh. I don't need to hear that. Let's talk about Us. Talk to a scientist or someone if you want to talk about the moon.

So I listened. I sat with Elders and other knowledge keepers in offices, in oceanside camps far in the bush, in nature preserves, in sacred places, and in Tim Hortons. And I listened.

Listening meant that Indigenous research methodology unfolded organically. The relational nature of our knowledge means that we were not limited in our focus on only the minutiae of invasive species and their impacts. Instead, our conversations hovered around the inherently relational topic of ecology. Through my listening, I realized that the vast knowledge I was being given were like pieces of a grand puzzle and I was to put them together with my own experiences into something that would help us today.

An Indigenous Ecology

Asking my initial research question, "What are our Indigenous perspectives on invasive species and their impacts?" seems like a fleeting memory from long ago. I see it now as a legacy of the "colonized-researcher-me". Representative of just how far I have come along this research journey. The question itself would seem silly now if not for its significant role as the opportunity from which our Indigenous ecology was revealed.

What are our Indigenous perspectives on invasive species and their impacts?

It would be much easier, neater and tidier to say that I could provide a definitive answer to this question at the conclusion of this journey. Spoiler: there isn't one. This was the grand lesson of this entire research ceremony for me. There is no one answer. What I encountered was a series of answers found

at various places along the middle of the “philosophy of invasive species” spectrum. The answers were not static. Like the nature of our Indigenous stories, they could adapt and change depending on the context. There was a beautiful and reflective fluidity to it all. A vast departure from absolutes and dichotomies.

Our Indigenous ecology is relationality at its finest. It all depends on the connections between not things, but our relations. To understand this required profound humility. To step away from what I presumed to know and how I presumed I should come to know it. We must be open to the consideration of our relations and humble enough to change how we relate to space and time and knowledge.

We must begin with respect.

Respect: For How We Know What We Know

Our Indigenous ecology has a deep respect for how we know what we know. In a world where we put such value on the acquisition of knowledge through the scientific method, or through modern notions of trusted sources for expertise, this can be quite challenging.

Luschiim:

I observed when I was two years old. I was living it already. Wasn't that much but it was a beginning. Three, four, growing, growing. Names of things, names of places. And then I can see obviously more detail later on. My great grandpa died just before I was six. So in that, three years old to just under six, I learned a whole bunch off him, lived a whole bunch. And that just kept growing from there. How do I know it's [a plant] useful? We were shown different plants. One day somebody might come and want some.

How would we know would be useful to us? I think I explained that at the beginning. I live it. So. How do I know? I don't know how to answer. It's cause I live it. Yeah. I grew up with plants. Like I said several times, I can remember here things that I experienced or was told.

Our knowledge is so tied to place. In our modern global world, fewer and fewer people come from the place that their ancestors did. We do. Our land is inseparable from us. Our knowledges span thousands of years. Knowledges passed along through our ancestral lines. Knowledges older than knowledges acquired through the western scientific method. Knowledges that often informed and continue to inform scientific inquiry.

Luschiim:

He [his grandfather] described by metes and bounds where it's [a plant] growing. So my sister and I had to go running up. Up in the fields up the hill. To find that plant. He didn't show us where it was. He showed us one like it by the house. So a lot of the things I learned was done that way. I was shown locally or close by. Then time to harvest you go back there and some of what was described by metes and bounds. I think that's what it's called as to where it is. The location. Used to tell me it's beside this big rock. And the water's over here or whatever eh. Um hmm.

For me, respect of knowledge shared by Elders and community knowledge holders is easy. I have been taught this since I can remember. What I have been most afraid of, is how to fulfill my own responsibility

as a knowledge holder and eventually an Elder. While I can listen and hold as much knowledge as I can gather, I have often wondered, how do we continue to acquire important knowledge? How do we know things? At some point, someone had to somehow figure out this knowledge that we have continued to pass along. As we continue to adapt to our changing environment, it seems so important to not just know the knowledges passed down to us, but to know HOW we continue to acquire important knowledge. As a plant knowledge keeper myself, I am particularly concerned about this. Have we lost valuable abilities to assess plant use? Have I walked so long in two worlds that I do not have this ability or if I do, am I brave enough to have faith in it? I asked Luschiim about this:

Jennifer:

Luschiim what if, what if in this scenario you came across a plant that you'd never seen before that nobody knew? What would you do to decide whether it was something that was useful or something that really you wouldn't want to have around? How would you determine that?

Luschiim:

Couple of things there. I didn't like school. I had no use for it. How could I use this knowledge and learning at school? That's what I thought at that time. Why do I need to learn social studies? I don't need to learn about Germany or Australia or anywhere. Japan. So we used to play hooky when come time to sit in subjects. One was social studies. Other one was English. Other one was spelling. I didn't need that. So we'd jump out the two story window from the school. Go up the mountain. I see plants. I didn't know I was studying plants, but I'd see plants I didn't know. I'd describe them to grandpa or Granny or my mom or dad. And they'd kinda guess what it is. Eventually we'd find one and I'd say yeah that's what I saw up there. Then little did I know I was learning where they were. And when somebody needed it, I knew where they were.

School-age me would high five on this and take the lesson as one that said I didn't need to go to school. I know Luschiim well enough to say he certainly is not devaluing the importance of an education. BUT, what he is saying is that there are different kinds of education. In ecology, we need to ensure that we are embracing all types of education. How are we to research and describe relationships if we do not know them personally? Experiential learning, time with knowledge keepers, access to knowledge keepers, are all important pieces of education, not just ecological education, that we need to ensure our education system is providing. To this, academic institutions need to respect the important contributions these knowledge keepers make by providing space to them within these institutions so that students, Indigenous or not, have access to them. We must respect these knowledges by acknowledging their existence, valuing them equally to other forms of knowledge, understanding them in relation to the Indigenous worldview, and stressing their importance as the foundation of any study of ecology.

Our knowledge holders are not limited only to our human relations. There is much to learn from our animal relations. An Indigenous ecology embraces lessons from such teachers. To learn these lessons we must be open to them. We must spend the time with these relations to get to know them well enough so that we can see what they are trying to show us. We have to respect them as teachers, not simply research subjects. Animals hold valuable knowledge that can be shared with us if we listen.

Luschiim:

So here's one other story. This guy is walking on a trail. Way up the mountain there. There's a good trail. I mean a larger trail. Animals, people always used it. Elk. Someone or something stepped on this snake and it was injured. Just laying there injured. This guy picked up that snake, put it on the other side to get it out of the way, out of the way of the trail. Some time later he was coming back and he's like, "ahhh I'll go look". He's looking at that poor snake. Some chewed up leaves on the grass where it was. Looking ooohhh I don't know how much later, it was the next day or what, he's coming by to look and it [the chewed leaves] was there. The snake was gone. He looked at it several times. Then he got right down to look at it to see which kind of leaves they were. So that is one of our good medicines. She was showing what to use. So I learned that story early in my life.

Luschiim:

But sometime later when I was 15. I remember I was 15 cause that's when I got my big guns in my teens. I was up the hill and this big buck was crossing this opening. I shot it but I only wounded it. There was snow on the ground. So I trailed it. Quite a ways. There was blood on the snow. I got to the road. And the trail ended. No more blood. So after much looking around I went around. I started to backtrack on him. And I noticed that there was a track there was overlapped. He was walking backwards stepping in his exact same spot. So I kept going. Didn't see where he would have left his trail. So I walked back several times. By this time, I knew he'd done something. I was looking to the side. I see the speck of blood over there. So he comes close to his blood. And he jumped. But that one little speck landed there and then he landed down there and a whole bunch of blood. So I followed him. And uh I'd come to a spot where the other deer tracks come. There's a whole bunch of chewed up leaves down there. Then they leave and it continues on. Big buck. Then they come again and more chewed up leaves. So that's how we learn some of our medicines. Something showed us. Mm mm. Mm mm. So I was shown that. Mmm hmmm.

Mm mm. Other people got similar stories to that.

Mena Williams:

How did our people know these were medicines? They watched the animals right. They'd watch if they had a wound on their leg. They'd watch which plant they'd go for. They'd chew it and put it on, so they'd go and try it as well.

Respect: For How the Lands Are the Way They Are

Our knowledges are rooted in our deep connection with our land. Land now referred to as our traditional territories. These boundaries, lines drawn after colonization, outline where our communities largely resided and the land that sustained us. The very existence of these maps infer that we largely stayed within these boundaries but that is not the case. Indigenous people traveled. Sometimes great distances. It is critical to acknowledge this as part of our history as it is foundational to our Indigenous ecology.

Many of my non-Indigenous friends have taken a keen interest in my research journey. This has provided an excellent opportunity to discuss topics of my research so that I may better understand the influence of colonization. My non-Indigenous friends are indeed Indigenous allies. Watching their own lightbulb moments as their colonization has been revealed to them has been a most honest privilege. There is no other way to describe it. One particularly consistent lightbulb moment for my friends has been their realization that Indigenous peoples traveled extensively hundreds and thousands of years ago. They realized that they had this notion that we didn't go very far, and they didn't know why. This led to further discussion about versions of history that they had been taught in school. Versions of history that were more about fur trading and the Hudson's Bay Company than about the lives and history of Indigenous peoples before colonization.

These perceptions and their origins are important to acknowledge as they continue to contribute to the legacy of colonialism. Many are not even aware of their own colonial perceptions. For my friends, it has taken discussion with me, an Indigenous woman, to recognize it. It isn't really their fault. The dominant society educated them this way and continues to reinforce these perceptions. What they do with this realization is up to them. As it is now up to you. You can see how these perceptions, no matter how small or insignificant they may seem, inadvertently permeate and influence the structures we participate in throughout our lives. Whether they be in government, in our jobs, what we study, how we study. Colonization has infected many aspects of our lives. This is how it has had, and continues to have, an influence on our understanding and application of ecology. We need to make a purposeful choice to stop it.

Luschiim:

All I can say is we traveled. What I was told, we traveled to what is now called Kamloops, what is now called Chase, for trading missions. California. Off to the other side of the big river down that way which means the Columbia River. Sometimes we went way further. Sometimes it took two years to make a trip. So how far did we go? You know, Mexico has stories of people arriving. I have a Mexican son-in-law. His family has got some stories. How far do you travel? Depends on how strong you were... We traveled a long ways.

I got asked, did you guys travel to Alberni? Well we know of the trail that went from Kwalikum, which is Qualicum today. Over the hill and to Port Alberni. But also from Cowichan Lake, into Cowichan Lake down a valley into Alberni. And I'm told, I'm told that the oak over there, the DNA says it comes from Cowichan. I don't have back up to that but that's what I was told. Mm hmm.

Along with the movement of people, fish eggs, shellfish, plants, and seeds all went with them. Just like modern travellers, we also brought pieces of home along with us, brought gifts for our hosts, and participated in the exchange of goods through commerce. While it is true that the invention of more efficient modes of transportation since that time created a truly "global" existence, Indigenous peoples had an "international" existence long before colonization.

The global nature of our modern-day existence is often cited as a major factor in the spread of invasive and non-native species into new ecosystems. While modern transportation has certainly hastened and extended the reach of this, it does not negate the often ecologically forgotten fact that species were

moved around long before colonization. Species have been moved for thousands of years by Indigenous peoples. This calls into question our foundational notions of concepts such as nativeness, the very dichotomy guiding restoration Ecology. We must respect the true history of the land as our Indigenous Ecology requires it. Our Indigenous Ecology acknowledges the changes on the landscape as a result of our influences such as travels far from our own territories hundreds and thousands of years ago.

The history of the Garry Oak ecosystems is a testament to this. A friend doing Garry Oak preservation was telling me about a small population of Garry Oaks on the mainland of BC near Yale up the Fraser River that is a real outlier population. Garry Oaks reside otherwise in British Columbia on Vancouver Island. They are the ecosystems where coastal Nations grew bulbs for food. He shared that there had been debate about the origin of those Garry Oak trees. Why were they at this critical and prominent place along the river. The answer seemed obvious to me. They were given to the tribe there by a visiting Nation. Or, the tribe there visited the island and brought them home. Perhaps for as simple reason as because they liked them. A discussion with Luschiim about trading between Cowichan Tribes with my own nation from the Lytton area supports this.

Luschiim:

So Yale, Hope and Yale. Yale is the beginning of the canyon. Of the narrow part of the canyon. So I went to Yale one time to do an interview. I was working for a research outfit. And they were hired to go do interviews over there. So we're doing our work, oldest people up there over that time. We had a big meal. So during the meal, we're finished our work I asked the oldest man up there. I said to him, you know I'm told we used to go to Kamloops and Chase. And he took us down to the river to talk about the river in that place and I was looking at the river. How swift it is, and I'm wondering how we made it up. So he just chuckles, "Oh we knew when you guys were coming. We built walkways. Had them up the cliffs. When you guys arrived, you guys rested for a few days, and we would pull you guys up. You switched places. And everybody done it, all the way up." So that's what he told me. And then I, when he finished that part I said, "I understand that we got mountain goat wool." And he chuckled again, "Yeah, that's right. Your guys went up. Your young men went up and got 'em. We just sent our young guys to show you where the goats were. And that was that." Then he finished off by saying, "We looked forward to those times. You guys also fished and put away a lot of fish. Pink salmon, sockeye, but here's what we liked about those times. When you guys went home, you left us big canoes."

The concepts "natural area" and relatedly "natural environment" are colonial social constructs when we consider them within the context of Turtle Island. These concepts are rooted in the perceived "wildness" of the "New World" "discovered" by settlers. A perceived wildness that did not recognize the work that went into what were highly productive and managed landscapes.

These often romanticized notions of "nature" represent another piece of the foundation of modern ecology that has no place in our Indigenous ecology. Our Indigenous ecology respects the true history of our land by acknowledging our relations that shaped it.

Settler perceptions of the apparent "naturalness" of our forests in Coastal British Columbia is so deeply embedded in modern culture that our province's tag line is "Supernatural British Columbia". I know that

I am not the only Indigenous person who finds this somewhat amusing. While our province is certainly beautiful in a way that feels mystical at times, I have grown up knowing that our ancestors shaped this landscape to meet the needs of our people in many of the very places that people admire as “natural”. This perception of a natural state is fundamentally important as it is this notion that drives our modern day, Eden ecology.

While it is understandable that settlers more familiar with agrarian landscapes would see our forested lands as unproductive, nothing could be further from the truth. Indigenous communities worked to ensure that our land and waters were productive enough to support us all year long. We lived thousands of years this way. What we see on the land and water today, the various tree species, berries, rock formations in the inter-tidal zone, are in many cases the remaining legacies of that hard work on the landscape. Legacies often unacknowledged and taken for granted. In most cases, simple ignorance of the nature of our relationship with the land and our ingenuity upon it. I don't blame settlers for not knowing this. Even as an Indigenous woman I didn't know about some of our land practices. Almost every day I walk past a clam garden (midden) and a fish trap and I didn't even know it until my friend, Tom, showed me. Now that I know, they are blatantly obvious to me on my coastal travels. There is so much we don't know because we haven't wondered why things are the way they are, but instead worked off the colonial assumption of this inherently “natural” landscape.

Luschiim:

And we always transplanted, always hwteyqnuts-t, to move something from one place to another. So we hwteyqnuts-t anything. To uproot something and move to another place. So, our life, as people, was always like that. You gotta have fresh blood. You gotta have blood from not related. Not only us but our neighbors, other end of the island also lived that way. Every once in a while, we'd go get the fresh blood. Same as, same with plants and clams. You bring clams from somewhere else. To strengthen that blood line of the clams. Clams, trees, plants. Mmm hmm. We've traveled somewhere to get a wife or left a son over there somewhere to strengthen the blood. That's what I was told.

Peter Williams:

Well at the weir site, they dug holes in the riverbed. From each species, the spring salmon eggs would go in one hole. Then the coho eggs would go in another hole in the riverbed. And then uh the kw'a'luhw, which is the Chum Salmon. And then the steelhead. S-xuw'q'um'. They would put the milk from the male from each species where it belonged for each species. And uh, my dad used to be up there.

Care for our relations is essential to our Indigenous ecology. Our bringing balance to the ecosystem includes practices of preventative care for all relations (humans included). In this case, it was managing the genetic diversity of all our relations. A practice so common and important and that the word for it in the Hul'q'umi'num language exists today. “Hwteyqnuts-t,” a word to describe the movement of things for this very purpose.

Our relational worldview places us within the ecosystem. Our importance within it is demonstrated by these preventative land care practices, important acts of reciprocity. As we have lost our direct connections with the land, as our food systems have moved us away from the land and into grocery

stores, what becomes of our relations such as the salmon berry or the thimble berry? Our modern Eden ecology may take for granted the presence of these “native” species on the landscape but without a human relationship with them, what becomes of them? As many of these species disappear from the land, it becomes clear that these plants that reside upon the landscape, need us if they are to continue. Thinking relationally, we must take this even further, what becomes of the birds and the bears that rely upon them?

Luschiim:

So. You know one of the things is continuous harvesting. Aerates the land. So, what my Great grandpa said, "Your land will get sour." "Sa'yumthut". That's how he put it. You can tell when the land is getting sour. The berries will be getting small. You burn the ground to sweeten it. I guess the ash is like a fertilizer. And the berries will get big again. Then the those plants will start to grow. Yeah, lost it's name. It's like a miniature.....

Jen:

A sedge, a sedge or a rush?

Luschiim:

Yeah. So, when your ground gets sour that'll that come up. You've got to burn your ground and then it will go away you'll be able to grow what it is you want to grow. Is it alkaline? It's alkaline? Gets salty. When that grows.

Jen:

I think it's acidic when those plants grow up. And when you burn it becomes more alkaline.

Luschiim:

So in my travels, the more... I knew about burning. But when I started traveling for the tribes looking at different places. Uh mainly meeting areas. I walked in the mountains from place to place. Above the Vasuvias Bay up on the hills there. The fir trees are 40 years to maybe 100 years that were growing there we just thick. And I'm looking at it. Was it always like this? So I look for big stumps. Old stumps that were there when they first logged it out. There were really, really far apart. So to me that tells me that's a place we burnt often. To keep trees from growing. But you look at, look at it today. It's just really... the trees are really close together. Because of no more fire control. I went to Belcan Islands to look for some medicine that was said to grow there. No medicine. The old people said it's all islands were just full of it. This medicine. But it's full of Nootka Rose. So no more burning, Nootka rose took over. So wherever there's ground, meaning there's soil. Lots of rocky places, just rocky. Nootka's there, there's ground there. But no quxmin [consumption plant] So. So some of the, you know the vegetation control is done with a fire so you could grow what you wanted to grow.

Our history on our lands greatly influenced the landscape that we see today. Not just in our land care practices, but also in our need for technology from the landscape. Luschiim and I were discussing the declining Western red cedar tree populations. It became apparent that forest species populations were heavily influenced by us. I had never considered the ecological impacts of war.

Luschiim:

In your time of a war, it was a time of need for your war vessels. And one time here, there were two canoes that were up on the bank. So, Grandpa Ben as a young man, he asked the Elder of the day, probably in 1910, 1915 somewhere around there I don't know. He asked, "What's with those two canoes up on a bank between the two villages? And he was told. "Oh, one was 70 feet long and 14 feet wide. Other one was 65 feet long and 12 feet wide." And he was told, "Yeah, they made forty canoes all at once. And they came from the Kw'i'im area." So anyway, my question is why did we need 40 canoes all of a sudden? When we look back at our recent history, it kind of coincides with the last war. When we went to retaliate. Even though we killed them all off, we still retaliated by going up the ocean and killing them all. So was that the time? It seems to be about the same time. Mm. Mm. Mm.

Jen:

Mmm. You don't think about the ecological impacts of war. You know.

Respect: For Belongingness

We have found opportunity in species that arrived after contact and utilize them as both food and medicine just as we did with climate driven changes in speciation over the thousands of years of our existence along the Salish Sea. Western Red Cedar, arriving approximately 5000 years ago to coastal British Columbia, which could have been considered an invasive species by modern evaluation, is now foundational to our coastal nations' identity. Adaptation defines who we are as a people.

A story that Elder Luschiim told me about Scotch Broom, a species long known to be a pervasive invasive species on Vancouver Island, and one I have spent many hours managing over the years, demonstrates the fluid nature of our Indigenous worldview on belonging.

Luschiim:

You know, how did we acquire the knowledge about Scotch Broom? That's a very good medicine. It's beat medicines that the doctors gave. Some of the things that were bad that it was used for... a fertilizer or what they put on strawberry plants. A lot of our people ended up, their skin just kind of melted away and weeping. And that it would spread. Just started weeping. My aunt, she's still here. She was picking berries when she was young. That's probably in the thirties. Twenties or thirties. And it [her skin] got really bad. It was weeping and she couldn't pick anymore. We used to go to the states, Washington, to pick berries. Strawberries or raspberries. So she got sent home cause she was just costing money when they're just feeding her. Money was really scarce. Everybody had to earn their keep. She wasn't earning her keep so they sent her home. So the grandpa, one of the grandpas, heard about it, his granddaughter been sent home. He come to see her. He looked at her. Went and got that Scotch broom. Kept boiling water and cut that Scotch Broom put it there. Pour it. [motions with hands] Washed her up. Within a few days she, she started to heal. From that Scotch broom. How did we find out? I don't know. I couldn't answer that. But there are many medicines like that. That came by, by sight, or a vision of some kind. A dream. How do

you say that to somebody, like in a government? You know. Would they believe it? The things that some people can see. There is no explanation. Umm hmm.

It is not to say that we do not acknowledge the negative impacts that these species can have. This perspective is not one of “live and let live”. Luschiim shared with me some of the negative impacts of Scotch Broom and Daphne Laurel causing medicines to disappear in specific areas.

Luschiim:

It's wiped out a lot of our natural vegetation such as a flower, some of the flowers that we use either as food or medicine. Um hmmm. Like up on Mount Tzouhalem. Where the onions and where the chocolate lily is. You know, there's no more there. And some of the places where balsam root used to grow, it's all just Scotch broom. So yes, it does cause a lot of problem.

This demonstrates the departure from a strict belongingness dichotomy of an Indigenous Ecology. Indigenous Ecology has a more specific type of belonging. A belonging where we have the freedom to decide based on the species' relationships in a place. This is a demonstration of our worldview. That we see ourselves within the system and that it is ok to influence it to meet the needs of all the creatures in it. Our own needs included.

Luschiim's views regarding two species of what are considered to be the invasive blackberries on coastal British Columbia emphasize this point.

Luschiim:

So your two blackberries. The Himalayan and Evergreen. Is it good or is it bad? It depends. If you're a berry picker, then it's good for you. Make you a few dollars. Go sell the berries at a place that buys berries for wine. Some jar it. But if you're a landowner who is trying to get rid of them, it's a big problem. I know some of our fields are just totally blackberries now. So some are good and bad.

Mena Williams:

A lot of the invasives are used for medicinal plants. Not a lot but there are some that are used quite a bit.

Respect: To Give Back to the Land

Our Indigenous ecology, resting upon a foundation of relationality, means that acts of reciprocity are inherent within it. Our ecology is not separate from acts of stewardship but is in fact, lived stewardship. Our respect for the land and our acts of reciprocity are not for the greater good, but a fulfillment of our responsibilities within our role as the balancers of our Earth Mother. Our stewardship are acts of love between relations for all relations.

Our stewardship is not bound to definitive concepts of belongingness of species. It is not bound to aesthetic concepts of nature. It is practical and it is respectful. Its legacy has shaped what we see today and our departure from it shows a legacy being lost in real time.

Our lived stewardship saw us moving plants and other organisms from one location to another. Sometimes at great distances. Desirable species for food, medicine and ceremonial purposes from plants to fertilized fish eggs were moved between communities. Bentwood boxes of fertilized fish eggs were moved from one stream to another to both enhance fish stocks and as one knowledge keeper put it, “to set the table”. Plant communities were influenced by the manipulation of species composition, density, and production timing. All acts of reciprocity, so that all relations may thrive.

Luschiim:

Say we went down the river and scooped out the eggs. Into, into a container. To take it. “Punum” to go plant them somewhere else. Punum. Punum, to plant or sow.

Punum So there were two words. Punum and hwteyqnuts-t. So we go Punum eggs.

That's the word that we used for moving the eggs is Punum. And the old stories. This old lady told a lot of it. She was born in 1873. And she died in 1974 according to her head stone. She said, sometimes your daughter or son ended up in a place where there was no or hardly any salmon. And we punum. Take some from home, home stream somewhere. Mmm hmmm.

These acts of reciprocity, respect for our relations, fulfilled our role as balancers. They were not simple transactional acts. They were much more than “this for that”. The depth of our understanding of our relations made these actions of everyday life with cascading benefits. In modern times, we may have new ways to describe them. We may be inclined to point out how interesting it is that there was a recognition that genetic diversity was important. Many I have shared this with have done so. But to express that is to depart from the humility required to embrace our Indigenous ecology. We were not primitive people. Our terminology was and is different. Our methods of knowledge acquisition were and are different. Science may help us to understand the nuances of these acts we were once free to do upon our lands, but scientific discovery is not synonymous with knowledge ownership. Our living stewardship was and is purposeful.

Our Indigenous ecology, resting upon its foundation of relationality, provides us the freedom required for solving the ecological crises we face around the world. Within it we are free to embrace epistemic openness, work without absolutes, and value truth. We arrive back where we belong. A place where we may allow our Indigenous ecology to help us to fulfill the role we were intended to as balancers of the ecosystem. A place where we may be guided by our values and relations and are ok with the uncertainty of the Great Mystery. In this freedom we may work practically with the quiet and purposeful persistence of our ancestors and continue successfully adapting to our changing world.

Chapter 5

Applying our Indigenous Ecology

“It is said that the Creator came to the world and created the air, land, mountains, trees, and waters. Throughout his creation, he placed animals of all sorts that we know of today as well as the supernatural animals that are no longer with us such as Thunderbird. He left the world expecting that one day he would return and see that the animals lived in harmony and in their harvest they kept balance within the animal kingdom.

Creator was wrong. Upon his return thousands of years later, he saw that the animal kingdom was all out of balance. There were regions where there were too many creatures eating salmon and salmon were not returning to spawn. The animals that relied upon salmon, young and old, were starving. In some cases, some species went extinct.

There were areas where there were too many hooved animals and they were or had eaten all the greenery. The wolves were now starving and sickness spread through their ranks. Other animals in these regions had no grasses, shoots, buds, nuts, and seeds. They, in-turn, were starving. Their species becoming endangered or in some cases had disappeared altogether.

They say that there were so many wolf packs in some regions, they had eaten all the meat bearing animals and they were now suffering and warfare erupted between the packs. It is even said that there were so many bears, the makers of trails in the forest, that their trails intertwined and created massive labyrinths. The bears became lost and in their confusion they would come across one another and fight.

The whole animal kingdom was out of balance and Creator saw what he had done wrong. He had not created an animal to provide balance. So he decided that this animal he would create would be called ‘human’. The humans would harvest animals and plants for food, social and ceremonial needs. The humans would be the mechanism to help keep balance in the animal kingdom. The balance would be maintained through their mutual reliance and respect.

Creator, being out of magic, could not do this. He journeyed to the north end of the world where ice never melts. He landed and walked through the great doors of a Guk’dzi (Big House) made of ice. Inside he found his brother, The Transformer, sitting in a chair of ice.

He told his brother that he was out of magic and that it was up to The Transformer to help rectify the wrong he had made. He was to journey through the world and transform animals he came across into the first humans. These first humans would keep their crest animal of origin as their family crest. They would find another human to marry and they would have children. The humans would then harvest the

plants and animals to feed themselves and their children. In doing so they would help keep all animals in balance within the animal kingdom. This is how it was for thousands of years and we now know where the Kwakwaka'wakw and other coastal Tribes come from and how our lands and waters were always kept in balance insofar as all the animals." - Thomas Sewid, Kwakwaka'wakw knowledge holder

Humans. Balancers of the ecosystem. What an incredible responsibility this is. A role that we were once free to fulfill. A role assigned to us as the intention of our very creation, to be balancers. Understanding this may help settlers to understand what is at the very core of being an Indigenous person. Our very existence, as it was intended, essential to the health of all relations of the lands and waters on Turtle Island (North America). After contact, everything changed. The loss of ecological balance, a consequence of colonization. We were no longer free to fulfill our role as balancers. Our role now determined instead by the settlers. Settlers described in their letters home the abundance of resources they found in the new world. While in fact, what they observed was the bounty of purposefully shaped ecosystems. A 'balance' maintained through our intimate relationship with our land and waters and careful acts of reciprocity by us for our relations. A balance of mutual reliance for mutual flourishing. If only the settlers had realized that. As soon as the exploitation began of this perceived abundance, our Earth Mother was set on her current trajectory. Balance lost. The further we get from the time when Indigenous peoples were free to fulfill their role as 'balancers' of the ecosystem, the more the legacy state of that time fades. What is often presumed to be the natural state of the ecosystem is the unrecognized and taken for granted legacy of the purposeful relational balance established long ago by Indigenous peoples. We must understand the commitment and connection to our land and waters that was required for the balance to be shaped as such. Without the fulfillment of our role as 'balancers', the very balance required by the iconic coastal species to flourish, will be lost. The further we get from those purposefully shaped ecosystems that supported these species, the harder it will be shape the current states of these systems to sufficiently support them. We are experiencing the consequences now as we witness our salmon populations collapse and our Southern resident killer whales starve.

People celebrate the increase in humpback whales to our waters in the Salish Sea these days. They say, "Isn't it amazing to see these wonderful animals in our waters?!" Same with all the sea lions. But I don't share that sentiment. It worries me. We have never seen so many here. Why are there so many and yet so few resident orcas? So few salmon? It is an indicator of change for me. It is a change in balance in the ecosystem. Not necessarily the change we want. - Thomas Sewid, kwakwaka'wakw knowledge holder and fisherman

While ecosystem collapse is a complicated equation with many contributing factors, at the core of it is this very simple explanation. We collectively have ceased to fulfill our role as the balancers. The settlers did not know that this was our role. If we continue only to address environmental degradation, we will continue to only treat the symptoms of the greater problem. We will work only within the confines of the current balance, or imbalance depending on your perspective. Perhaps this will help to make sense

of how our current environmental reality is possible when we live in a time of great scientific knowledge, sophisticated technology, and increased environmental awareness. It certainly made it clear to me why countless attempts at restoration projects I was involved with failed, especially over the long-term. The current balance will not support all of our relations that functioned within the ecological balance that existed before contact. I refer to the ecological balance prior to and at the time of contact as the “legacy balance” as it is now a legacy of the time when we Indigenous peoples fulfilled our role as balancers of the ecosystem. It was the balance that the settlers arrived to and took for granted. It is the ecological balance that our resource economies began upon. One operating under the false assumption that this was the permanent natural state.

This is why Indigenous ecology places us in the role of “balancers” when addressing ecological challenges as opposed to the common role of “fixers” that the application of Modern ecology does. The difference between these roles completely changes our approach. The “fixer” is trying to simply put a system back the way it was at some arbitrary point in time. This role is much simpler than that of a balancer as the action of the “fixer” is clear as it is largely pre-determined.

There is much more responsibility in taking on the role of the balancer. There is greater responsibility for our relations, all inhabitants of Turtle Island, as we accept our role in the determination of their fate through purposeful action. We accept that we must be accountable to them. Both for how they have been harmed post contact and now as we take back our role as the balancers. Our decisions will have an impact on them all. The impact will not necessarily be positive for all of them. In every situation, difficult choices lay ahead. We can choose to accept a new ecosystem balance. Embrace different relations making new homes and accept the consequences that our legacy relations (those relations who inhabited a specific area at the time of contact) may play a lesser role, move elsewhere or disappear altogether. We can choose to attempt to regain the legacy ecological balance (that of the time of contact) and hope that this is possible within our current context. We can choose somewhere between those two options. Whatever we decide, we must be prepared for the challenge of evaluating these options and work carefully as we determine the desired relational balance. Deciding what the balance will be is an immense responsibility. Which relations stay? Which relations go? Who do we need? For us to make a meaningful difference we face a reality of answering these difficult questions. Which relations can the current climate support? Who can the future climate support? What are our values?

Our departure from our role as ecological balancers and the consequences of that to our Earth Mother has given rise to the attempted course correction in the form of adopting the role of ecological fixers of Eden. Our widespread destruction has required extensive responses to environmental disasters in ‘Ecological Ghostbuster-like’ fashion. It is as though the more scientific ecological restoration has become, the further we have gotten from Indigenous ecology. Science demands the detachment of objectivity and is often separated from its application. While we have gained understanding of important processes and ecological functions, they have contributed to the application of ecology that is detached from place. An ecology that classifies ecosystems, assigns generalized planting lists and plant densities and creates prescriptions as though the ecosystem can simply take a pill and be returned to its former self. Ecological restoration has taken scientific understanding to create rules for ecological restoration such that it can be executed in a cookie cutter fashion. While this can be helpful in some contexts, the lack of relational understanding can lead to widespread, common responses that contribute to further imbalance such as secondary invasions of invasive species. While I am certainly not devaluing the importance of scientific discovery or action informed by quality science, I am pointing out

that there is great risk in allowing what should be a relational field of study to become one of generalized processes creating guidelines that become absolutes. Instruction manuals for environmental fixers should at least come with the warning- “Use at the risk of your relations”.

“Ecological Restoration Plan” is the common terminology when referring to a plan written to direct ecological restoration projects. These plans have a common format. They will describe the target area geographically and perhaps describe the reason that the area to be restored was degraded. Many have generalized stated goals such as “restoration of the natural environment”, “removal of invasive species”, and planting “native species”. These are well-intentioned documents and I have helped to write many of them. However, they are written largely from the worldview of modern Eden ecology. As I have embraced the application of the Indigenous relational, worldview to ecology, when reviewing ecological restoration plans from this new lens, I am taken by just how impersonal they are. Their prescriptive and yet unspecific nature seems incongruent with their intent to bringing healing to the land. Most make no mention of Indigenous knowledge. If they do, they certainly make no mention of our relational worldview, the very foundation of our knowledges. There is often no mention of the history of the land or the origins of the very systems targeted for remediation. For the purposes of this book, I reviewed several Ecological Restoration/Invasive Species Management Plans and invasive plant risk assessments from Canada and the USA. What I found through a simple online search mirrored my own experiences in the creation of similar documents. For professional reasons I will not single out any particular plans but encourage you to do such a search yourself. Not one that I found mentioned Indigenous knowledge, adaptability, or history of the land. Where Indigenous communities were mentioned, it would only be within the context of mention as a stakeholder. Most lacked specificity in their statement of goals. This brief examination quickly made apparent to me just how far we have strayed from truly being effective in healing the land. These plans have become so technical. So full of a terminology that objectifies our relations. So strangely aseptic. For a field of study that is supposed to focus on relationships, the plans are so deeply impersonal. This illuminates just how applied science can inadvertently pull us away from that which we should be focusing on as it pulls us into the minutia and objectification of complex relationships, neglecting the nature of relationships and the big picture.

At the heart of it, I believe that anyone that cares for Turtle Island in whatever respect are all united by good intentions. Modern ecology has just made it difficult for our good intentions to come to fruition. Paradigm shifts can be difficult. History has shown us this. The difference in this case is that the intentions of those of each worldview are not in opposition. We are united in our desire to bring healing to our land and waters. I believe our shared intentions and experiences where Modern ecology has failed us (despite our best efforts), have brought us here together. We are all ready for something that will finally close this ever-widening gap between our intentions and the efficacy of their application. It is time to make the old new again by transforming ourselves from the ‘fixers’ to the ‘balancers’.

As we commit ourselves to working from the relational foundation of our Indigenous Ecology, how do we fulfill our role as ecological balancers? How do we inform these difficult decisions for our relations? How do we make decisions based what we have learned through western science and through Indigenous research methodology? What is the path forward to apply our Indigenous ecology?

The application of Indigenous research methodology requires reciprocity. The reciprocal act of this research journey was to provide, at the desire of my research partners, Cowichan Tribes, a framework that would guide environmental decision-making based on our values. A framework that would be

reflective of both Indigenous and community values and allowed us to work in our way. The intention was that this framework could be shared to help other communities as well. The remainder of this chapter is the reciprocal piece of this research journey. The path forward that we hope empowers everyone to be able to apply our Indigenous ecology to bring healing to our land and waters.

The Path Forward

Before answering the “how to apply Indigenous ecology” question, we must begin by establishing a new terminology that will ease the transition of approaching ecological issues from our Indigenous worldview. To do this, we return to Robin Kimmerer’s book, “Braiding Sweetgrass”. Specifically, how she so beautifully illuminates the difference between Indigenous languages and English and provides what I believe to be the most effective way to make tangible our Indigenous worldview. English, being a noun-based language, objectifies. Our Indigenous languages, being verb-based, bring life. Modern Eden Ecology objectifies both our relations and relationships as it is restricted by its development within noun-based language. This restriction has resulted in a terminology of Modern Eden Ecology that makes it almost impossible for it to be relational. Its current terminology allows us to assert parameters in absolute terms. It makes it easy to dismiss the importance of specific context and creates systems thinking that devalues nuance. The objectification of our relations and their relationships has led to generalizing ecological processes that can then be misapplied in other contexts.

We are all different. We have different histories. Different families. Different experiences. Different support networks. Different roles to play. So do the trees. So do the fish. So do the birds. So do the plants.

The power of language is not to be underestimated. Simple changes in our language can completely change our perceptions, ways of thinking and knowing, and our actions. A new terminology will help us to consciously transition toward our Indigenous ecology. It will provide the freedom we need to shift into the relational worldview. New terminology, like new glasses, will help us to see that which we may not have been able to see before.

I thought it would be difficult to depart from the language of Modern Eden ecology. It is the very language I have used to describe and conduct my own work. It is also the language I used when communicating and promoting environmental awareness initiatives to the public and government. The transition felt easy for me. As I began to test the new terminology for Indigenous ecology with my friends, colleagues, and other knowledge holders, I was overwhelmed with how openly it was embraced. It was as if there was a collective sigh of relief. A colleague said to me, “It’s as if we finally have permission to use words to express what we were actually trying to do without the fear of seeming unscientific.” Yes! This was my own experience as well. It was finally okay to use words that captured the very essence of this deeply personal work. It was as though we felt that we needed to legitimize our work by making it sound more scientific intuitively knowing that this only made us more detached from it. Feeling permission to use the terminology of Indigenous ecology transformed our work to become deeper, actionable, and meaningful. It immediately felt more effective. As we piloted some of the newly proposed terminology in a land healing project meeting, the change for me, made tangible what was really at stake but for the first time in a long time I felt empowered instead of defeated.

What is it about this change in terminology that makes such a difference? The language of the application of modern Eden ecology is transactional and the language of our Indigenous ecology is reciprocal. Simply put, Eden ecology is business and Indigenous ecology is personal.

Many unhealthy relationships could be described as transactional. Transactional relationships allow for short-term transactions. In ecological restoration, we often find “this for that” guiding our work instead of finding a path that honours our mutual dependence. Such transactional relationships make inequities possible. The characteristics of transactional relationships are not congruent with the spirit of ecological stewardship, yet somehow we find ourselves operating in this way and accepting it as our reality. It is evident in our language, approaches, compromises, and funding models. I believe that by consciously moving away from transactional language, we will quickly find ourselves resting upon the relational foundation of our Indigenous Ecology and at last, finding the consistent, long-term successes we have been longing for.

To develop terminology that will help us to apply our Indigenous ecology, I consulted friends and colleagues involved in ecological restoration. This included staff at environmental non-profit organizations, academics involved in various aspects of ecology, and government staff (Indigenous and other). It is their openness to listen to my ideas and share their own thoughts and ideas, along with my review of Ecological restoration plans from across North America, that helped to develop a list of commonly used terms from Modern ecology. From this list, we identified and discussed the terms that reflected transactional relationships. We then identified those that presented the greatest opportunity to shift worldviews by being replaced with relational terminology. This exercise was not intended to change the entirety of commonly used terminology of ecological restoration. It was about finding those cornerstone terms that would provide a foundation for new understanding. Terms that would challenge our conceptions and perceptions of that which we have studied and worked on over our careers and have the ability to permeate other terms to bring new life and understanding to them.

Like our Indigenous ecology, the terms I am about to introduce are not absolute. They can adapt and change as they need to. I am not asserting this list to be anywhere near complete. It is the beginning of what I hope to be the further development of **our** Indigenous ecology. It is a demonstration that words matter and have transformative power. This shift in terminology creates the context for us to use Indigenous ecology to guide our stewardship of our land and waters.

As we consider commonly used terms of Modern ecology and the possibilities of how they can be shifted into relational terminology reflective of our Indigenous ecology, we must remember the principles of our Indigenous ecology. Our Indigenous ecology:

- Rests upon a foundation of relationality.
- Is accountable to all relations.
- Is dependent upon the humans’ fulfillment of their role and responsibilities as balancers (as defined in Chapter 4) of the ecosystem.
- Embraces all relations equally.
- Is based upon reciprocity.
- Is focused on relationships.
- Does not objectify our relations.
- Is free from categorization, labeling, and dichotomies.

- Is respectful of all worldviews and their knowledges.
- Acknowledges the history of relationships with land and relations.
- Accepts all forms of knowledge acquisition.
- Embraces uncertainty.
- Adapts as it needs to whether it be over time or within a specific context.
- Is pragmatic.

Shifting to Relational Terminology

From Restoration to Healing

Changing terminology begins with changing the very label of the application of ecology, ecological restoration. ‘Restoration’, is defined by the Oxford Dictionary is “the action of returning something to a former owner, place, or condition.” Mills⁸⁵ defined it as “the art and science of repairing damaged ecosystems to the greatest possible degree of historical authenticity”. This term describes activities related to the repair of damage to ecosystems caused by some sort of disturbance such as development, pollution, deforestation and an often-forgotten reason, loss of human relationship. The question we must ask is whether restoration is the right term for what we are trying to do?

Restoration implies that we are putting something back to the way it was. It was often the stated goal on many of the funding applications I wrote in my work with environmental non-profit organizations. Having embraced Indigenous ecology now, I can see that ‘restoration’ stated as a goal is too general, speaking only to the intention of the work. An intention that fails to acknowledge both the dynamic nature of our planet and the legacy of the relationships my ancestors had with the land. The term ‘restoration’ can limit the scope of our actions by its very definition. It casts us solely in the role of fixers in our application of ecology. It creates the context for work with goals based on aesthetic notions of a non-existent natural state. It allows us to forget ourselves, the human relations, in the ecological equation. The terminology places us outside of the system. It creates an impersonal dynamic, one only between fixer and project.

The definition of Indigenous ecology that I feel summarizes all of what we have learned on this research journey is,

“Relationally guided healing of our lands, waters, and relations through intentional shaping of ecosystems by humans to bring a desired balance that meets the fluid needs of communities while respecting and honouring our mutual dependence through reciprocity.”

We need terminology that reflects this definition in describing its application. Funding applications, regulations, academic teachings etc. all describe the act of modern ecology as ecological restoration. We need a term that replaces ‘ecological restoration’ in the many contexts it is used that is powerful enough to bring awareness to and encourage the shift to Indigenous ecology. We need a term that can bridge our worldviews.

This first change in terminology is to shift from the term ‘restoration’ to ‘healing’.

⁸⁵ Mills, S. *In service of the wild: Restoring and reinhabiting damaged land*. Boston Mass., Beacon Press 1995.

There are several definitions that can be found for the word ‘healing’. The Oxford Dictionary⁸⁶ defines it as, “to make sound or whole; to cause an undesirable condition to be overcome; the process in which a bad situation or painful emotion ends or improves; and finally, the process of becoming well again”. While the definitions of restoration and healing may seem similar, there is a fundamental difference in their connotation. ‘Healing’ does not infer an automatic intention to returning something to a particular state. I see these definitions of ‘healing’ offering greater flexibility, scope, and most importantly, offer a feeling of hope through caring actions. We are not limited by a predetermined notion to put anything back the way it was. It allows us to respond to the needs of the relations of the day and determine the appropriate balance for the relation or place.

I began suggesting to friends working and volunteering in the field of ecological restoration to begin using the word ‘healing’ where the word ‘restoration’ is used. It has been a well-received change. A good friend of mine who has worked in the field for almost 30 years said, “It makes my work beautiful.” I agree. The word healing immediately places us in relation with what we are doing. An act of kindness and caring as opposed to assuming the role of a fixer, like a mechanic. We are not doing something to an object, we are helping a relation or relations. It immediately transforms our work into the relational worldview. To heal our relations provides freedom in our intentions and immediately places a responsibility upon us as healers to consider our relations we may be trying to help. We are moved away from transactional relationships and into reciprocal relationships.

Relatedly, when referring to those doing the work of *land healing*, we should refer to them as *Land or Water Healers*. We know them mostly as volunteers, stewards, stream keepers, and government employees. The people out there often in the pouring rain, freezing cold, trying to do the right thing for our planet. Using the term *Healer* commands respect. Healers in our Indigenous communities take care of physical and spiritual wellness. They are valued advisors in bringing healing of all types to a community. We need to offer the same respect to our *Land and Water Healers* that we often reserve for other types of healers in our lives such as doctors. For the many great *Land Healers* out there doing their best, I hope that you take this new term with great pride and are treated with the reverence you deserve as another important *Healer* of our communities.

The word *healing* is important because there are different kinds of healing. There is physical healing, spiritual healing, and cultural healing. Healing spans time and space. We can heal old wounds, we can heal newer wounds, and we can find healing as we evolve and flourish. We can find healing in creating promise for the future. Healing can be both specific and continual. It can be a manner of tending to a specific harm or it can be nourishing a relationship. To use the word *healing* as in *land healing* or *water healing* allows us to move beyond the limits of objectifying the components of generalized transactions to embracing the boundless potential of relationality.

From the Native/Non-Native Species Dichotomy to ‘Relationally Preferred Species

Our Indigenous ecology departs from the use of dichotomies. It does not vilify species through categorization processes with roots in colonialism. While there are many species that have been historically present within certain ecosystems that are important, we must remember the dynamic nature of both our ancestors and the planet. While we have already addressed the issues with the

⁸⁶ Merriam Webster Dictionary. “Healing,” Accessed April 2, 2019. <https://www.merriam-webster.com/dictionary/healing>

native versus non-native species dichotomy, it is important to acknowledge just how deep seeded these terms are within the application of modern ecology. In particular, the presence of “native species” has become the gold standard measurement of success for ecological restoration. This dichotomy has become the north star for ecological action. A change in terminology will help us to move away from this dichotomous guidance in our land healing efforts.

As we work toward the desired ecological balance of a particular place, there will be species that we do and don't want and everything in between. In placing ecology upon a relational foundation, we must consider species in terms of their contribution toward the desired balance of a particular system. We do this by considering their relationships with other relations as opposed to assigning generally applied positive or negative labels to them. This reminds me of what I was taught once in a parenting course. We should never label a child as good or bad. We should not assign such a label or attribute to the child directly. Instead, we assign an attribute to the action or behaviour they are exhibiting. For example, Billy's behaviour was bad. It describes the nature of the relationship between Billy and his action. Billy is not inherently bad. Billy is not a bad child. Perhaps Billy just has tendency to behave in certain ways in certain contexts. If we are to embrace our Indigenous ecology, we need to apply a similar approach when it comes to species evaluation.

Before we go further in providing terminology to help us shift away from the native/non-native species dichotomy, we need to address a related need for a shift in terminology. The word *assessment*. Within the invasive species management world, *species assessments* are commonplace. Many levels of government have different species assessments that are frameworks for the assessment of species to determine the potential they may have to do harm. Harm may be economic harm, harm to human health, and/or ecological harm. After evaluating several examples of species assessments obtained from our federal and provincial governments, it was apparent that these assessments did not provide consideration for the potential good a species may provide. The term *assessment* suggests determined parameters for which species are measured against. In this case, negative impacts. These assessments limit us from working within Indigenous ecology as they are not based on ecological function instead focusing on attributes which may influence invasion potential. They do not consider species potential or changes in speciation or ecological function that may occur due to climate change. The term *assessment* should be replaced with the term *consideration*. If we consider species, it allows us to evaluate them with an open mind. It also allows us to consider a plant's potential contributions and/or what changes they could bring to a specific system. Again, this is about maintaining the epistemic openness of our Indigenous ecology. Thoughtful or sympathetic regard for our relations, wherever they may be from, honours them by focusing on their relationship potential and behaviours.

Utilizing “relational species consideration” as we work to balance relations in an ecosystem frees us up to make relational observations that are otherwise difficult under the guidance of the dichotomy (native-good/non-native bad). The first being able to provide fair consideration of the relation themselves. When we apply labels to certain relations, it is difficult to see them as anything different. It is that simple. If Himalayan Blackberry is a “bad plant” and you find it in your yard, you are more likely to think, “I need to get rid of that bad plant.” I have provided examples earlier of plants that became part of the traditional medicines of many of our Indigenous communities. Many of these plants even now, considered “bad plants”, St. John's Wort and Burdock, are examples. When we are considering ecological balance of systems, we need to transition toward plant species consideration based on relationships. There have been many invasive species projects that I have been involved in where we

came into an area, removed an invasive or non-native species, in some cases replaced those species with “native” species, only to find a brand new plant (often also labeled non-native) having taken over the area. Once such example took place in an area with very little human exposure within a marine access only park. We controlled an infestation of Himalayan Blackberry that was spread in patches on the edge of and within alders and cottonwoods. I had been going up to this area for at least 10 years and things looked relatively the same over that time. Funding had allowed us to finally take action on this “bad plant” and so we did. The next year we were alarmed to find an explosion (totally accurate term) of a new plant in the “bad plant” category had replaced it entirely. The new “bad plant” had not previously been seen there before and there was very little of it in the region. Where did it come from? How was it that controlling small patches of Himalayan Blackberry suddenly gave rise to this? The question then was, “Now what?!” I don’t deny that we had good reasons for controlling that blackberry to begin with. The thought was to prevent its spread in an otherwise “pristine” wilderness area. It was a preventative measure. It may have even been the right one. I do wonder, if we had given *relational consideration* to the plant community there, would we have made the same choice? The population was quite stable and contained. It provided food for the bears and birds and people who ventured there. The rise of the unseen population of a new “invader” really threw a twist in things. That population then needed extensive control work that was not entirely successful. It’s all tricky. I think it points out that perhaps species evaluation and action that is guided by dichotomy may not be the right determinates. At the very least, *relational consideration* could help us to prioritize our actions better when working with limited resources. Perhaps in these types of cases we would know that it best to simply as Johnny Cash in “The Gambler” said, “know when to walk away, know when to run.” This is certainly consistent with the approach of Elders I have worked with on invasive species issues.

Relational consideration will make it easier for us to better heal the land. Dichotomy-guided ecological restoration inhibits us from freely considering species. As an invasive species specialist, I have found it frustrating that even considering possible benefits of an invasive species is in some way undermining our field of study. We need this freedom as it opens up new pathways of scientific understanding. For example, now that we have greater understanding mycorrhizal networks, could it be possible that there are species contributing to forest health? This notion, prior to more recent ground-breaking research, was likely to be dismissed. It is now a meaningful area of research. Elder Luschiim said to me, “Well why is that plant (as in an invasive species) there? What is it doing?” Good questions. Questions we’ve not been freely able to ask.

Relational consideration also allows us to find relationships that could help to contribute to the presence of a plant and to find out how to perhaps discourage plant presence. At a time when herbicide resistance is becoming so problematic and when herbicide use is also becoming less acceptable, *relational consideration* of plants, regardless of perceived nativeness could help us to find better solutions to establish the desired ecological balance.

Relational consideration provides us the freedom to manage species considered “native”. Working in the non-native/native species dichotomously guided modern Ecology can limit our ability to manage species that may be dominating an area. I have personally experienced this a few times during ecological restoration projects for government agencies. Government policies, funding parameters, and in some cases, regulation, prohibited us from managing species that needed to be. Native species were not allowed to be managed under an invasive plant program even if they were behaving invasively. “Native”

species have become almost untouchable even when they need to be reduced for the benefit of other desirable relations (examples will follow in the next chapter).

Dichotomies make ecological restoration easier. A good friend of mine who has worked for twenty years at an environmental non-profit doing such work raised the interesting point that approved plant lists and planting guides designed by various levels of government have contributed to restoration guided by dichotomy. We have needed to create systems for ecological restoration to be completed by those who are not plant scientists or ecologists. The intention of such documents is to make ecological restoration easier. For example, trying to make things like development more environmentally responsible. Unfortunately, this has led us to cookie-cutter approaches that could be doing unnecessary harm to other relations in these areas and could be taking away relations that do in fact contribute to overall system health. They could be wasting limited resources for land healing through processes meant to alleviate a guilty ecological conscience. While this may seem like a major hurdle in the ecological restoration world, I again believe that simple changes in language would make positive change toward our Indigenous ecology. *Relational consideration*, as a phase of site assessment for above mentioned development projects, is such an example. A simple pause before action to really SEE what is happening at a specific site. Considering species on their own merits and moving away from the automatic action associated with the native-non-native dichotomy.

The term, “**relation consideration**” is defined as:

The fair and neutral evaluation of all relations and their relationships within a specific area for the purposes of land healing that is used to inform values-based action to achieve the desired ecosystem balance.

Giving consideration to a fellow relation will free us from limiting the potential of land-healing as we have been experiencing in a dichotomously guided ecological restoration. We will not fear making decisions to establish the desired balance if we have to decrease the presence of a plant that is ordinarily in the “good plant” category. It allows us to embrace our Indigenous ecology upon its relational foundation by recognizing the dynamic and evolved nature of ecological balance and ensures our ability to adapt in the wake of our changing climate. So how then do we describe our relations within a system without dichotomy? It’s simple. We give up the dichotomy.

If we are giving *relational consideration* to species in order to establish the desired balance, then we shall shift terminology to describe species as those that are **relationally preferred**. I have begun referring to *relationally preferred* species as **relpref**, for short. As achievement of the desired ecological balance becomes the new gold standard for land healing, we are free to give ‘relation consideration’ to species to determine the relpref species that meet the balance objectives for a particular place. In some cases, we may not know much about the contribution of formerly vilified species and thus this change of language may even open up research into their potential contributions to systems. Species vilification created the perception that research on these species wasn’t needed at all and/or influenced the nature of research questions regarding those species. Such a departure could bring new and exciting research. What learning have we now opened ourselves up to?

The term **relationally preferred species** or **relpref** shall be defined as:

Species identified through a process of relation consideration that will contribute to the desired ecological balance of relations for a particular area at a particular time for the purposes of land healing.

From Natural Areas to Legacy Areas

The problem of the assertion of naturalness was addressed earlier in the book. If we are truly working to heal the land, we must honour its true history and the deep relationship between it and the Indigenous people that have lived and still live there. We need to move away from this assertion of naturalness or a natural state. Period. Not just when we are discussing *land healing*. Instead, let us refer to these areas as they are and acknowledge them as *legacy areas* or the *legacy state* (of balance). The definition of “legacy” in the Merriam Webster Dictionary⁸⁷ is, “something transmitted by or received from an ancestor or predecessor or from the past”. *Legacy areas* are a gift. One that may have been carefully tended to be some of what remains today. The term *legacy* to replace *natural* helps us to keep our connection with our relations past, present and future. The term is inherently relational as it spans space and time. We can honour the legacy of the past and work together to create our own legacy to pass on to our children. There is nothing accidental about that. Asserting a natural state takes us out of the picture. It is highly offensive to Indigenous peoples as it is a colonizing practice that permeates modern ecology. We must honour the purposeful relationships of Indigenous peoples with the land by acknowledging it. *Legacy state* makes sure we never forget and that we work to honour it. There is great responsibility that goes with creating legacies. This change in terminology ensure we never forget that.

From Stakeholders to Human Relations/Partners/Balancers

The term *stakeholder* is frequently used when gathering relevant humans together who have a shared interest in a particular place that may be destined for land healing. This terminology is more commonly used by government agencies (eg. consultation with stakeholders) to describe such gatherings and related processes. This is a term that has always made me cringe. I know many of my colleagues involved in caring for a place or waters have a similar response. *Stakeholders* is a very impersonal term that transforms the land in some sort of commodity. It is meant to take the personal relationship out of the process so that rational decisions can be made. It is sort of like the “It’s not personal, it’s business” of the land/water healing “business”. Stakeholders can have unequal interests in a place or be affected unequally in the impact of decisions that may be made. This *stakeholder* worldview of the carers for our lands and waters makes room for inequity and places those with “stakes” at odds with each other. The terminology feels oppositional. Those who have stakes in an environmental issue (other than economic ones) often lose to those with the greatest economic stakes as this terminology passes the greatest power to them in determining outcomes.

We need a term that emits a sense of equality among all who gather with shared interest in a place. We need a term that acknowledges the relationships that exist to the place to be healed. A preferred term that is already frequently used is that of *partners*. Another term that I have begun using when gathering interested people together to discuss land healing issues is that of *human relations*. While I know that some folks feel that a bit strange, it is a concrete reminder of relationality and unites us as humans. As we apply our Indigenous ecology, addressing groups coming together as a gathering of *human relations*

⁸⁷ Merriam-Webster Dictionary. “Legacy.” Accessed April 2, 2019. <https://www.merriam-webster.com/dictionary/legacy>

brings a reverence to our responsibility in coming together as balancers. Regardless of what term is used to describe those coming together for the purposes of land healing, it must be a term that unites, equalizes, and brings relationality to the forefront.

From Enhancement to Empowerment

The term *enhancement* used in the contexts of land and water healing refers to manipulating habitat to allow a selected species to exceed its historical population levels in an area⁸⁸. Enhancement activities attempt to change a habitat type or species to outside its natural range of variability, usually for the benefit of humans. This term can be a stumbling block to working relationally. While a land healing goal could be to increase the presence of a relation, it is not a term that should be generally applied. Enhancement could contribute to establishing an unbalanced system that cannot be easily sustained and cause challenges for other relations. Fixating on increasing numbers could ignore the complex relationships that could be causing decreased numbers of a relation to begin with. Working relationally, we should instead ask the question, what can help this diminished relation to thrive? Moving from the term ‘enhancement’ to the term ‘empowerment’ immediately places us into the relational worldview as it focuses on the relationship. As balancers, we can support a relation so that they can thrive and ultimately fulfill their role in creating the desired balance.

We are empowering the trees. We are empowering the salmon. We are empowering the orcas.

Additional Terminology and Suggested Relational Shifts

Following is a list of additional commonly used terms in ecological restoration with suggested replacement terms that are reflective of our Indigenous ecology. I have not provided additional explanations or justifications as overlapping themes will become repetitive. Having provided several fully justified term changes should provide you with an understanding of the suggested changes below. I have left some of these blank as they require further discussion and I hope provide an opportunity for your own contemplation. The purpose of this list is to demonstrate what more work is needed to be done and the type of consideration we must give to how we have ordinarily completed land healing projects.

Table 5.1 Suggested changes to common terms in ecological restoration to reflect Indigenous ecology

<i>Common Terminology of Ecological Restoration</i>	<i>Suggested Terminology for Indigenous Ecology</i>
Ecosystem function	Ecological balance
Ecosystem health	State of desired ecological balance
Ecological disturbance	Ecological balance disruption (imbalance trigger)
Restoration target	Desired ecological balance
Community dynamics	Relationships of relations
Ecological stability	Balance resiliency
Species diversity	
Ecological integrity	
Biodiversity	
Management	Caring, stewarding, balancing
Conservation	

⁸⁸ Grayton, D.V. “Ground Work: Basic Concepts of Ecological Restoration in British Columbia.” Kamloops, BC Southern Interior Forest Extension and Research Partnership, SIFERP Series 3, 2001.

Values-Based Land Healing

Earlier discussions about the nature of our relationships with our land and waters, and the need to shift to relational terminology, were all meant to lead and prepare us for this point in our journey. At last we find ourselves sitting on the relational foundation of our Indigenous ecology. Seeing land healing anew. So now what? How do we make decisions as Land and Water Healers? How do we determine the desired balance? How do we establish the balance?

My act of reciprocity for this research journey was to develop a framework for land management decision-making consistent with our Indigenous worldview and values. Like many of my intentions that I set out with at the beginning of this research journey, this one also needed to change to reflect what I learned along the way. The term *framework* no longer felt appropriate. It became clear that such a structure was not congruent with guiding a process from a relational worldview such as the application of our Indigenous ecology. The definition of *framework* according to the Merriam Webster Dictionary⁸⁹ is, “a skeletal structure designed to support or enclose something; a frame of structure composed of parts fitted and joined together; work done in, or with a frame.” I am sure that it is clear to you now, as it is for me, that this is far too rigid, constraining, and linear to result in something truly reflective of our Indigenous Ecology.

Frameworks are ordinarily used to assist with guiding a process. A good framework provides a clear path to navigate complicated processes. Just as we needed to shift some of our ecological terminology to ensure we are working from a relational worldview, we need to shift the way we guide our decision-making processes. It is important that we not impose a colonial structure upon our use and application of the Indigenous worldview. For too long, Indigenous academics and knowledge holders have had to try to make our work fit into processes that are not designed to fully embrace it. The full benefit of our work cannot be realized if we allow it to continue to be compromised in this manner. It was clear that our act of reciprocity would have a dual purpose. Not only would we design a guiding process for the application of our Indigenous Ecology, we would design a new guiding process for relational decision-making.

Using Webwork for Values-Based Land and Water Healing

It seemed a natural choice that the application of our Indigenous worldview to science, in this case, Indigenous Ecology, be guided by a process grounded by circular symbology. The circle is deeply significant to us. While there is variation in its use within different Nations and different communities, its foundational significance is similar. The circle symbolizes our connection to the cyclical nature of life. The lives of people, the seasons, the sun, the moon. It symbolizes the four directions and the elements (air, water, fire, earth). Circles symbolize harmony, balance and peaceful interaction among all living beings.

*“Love settles within the circle, embracing it and thereby lasting forever, turning within itself.”
—Luther Standing Bear, Oglala Sioux*

The work of land and water healing should be guided by a process that is not only reflective of the relationality of the Indigenous worldview, but also one that acknowledges the extensive and intricate

⁸⁹ Merriam-Webster Dictionary. “Framework.” Accessed June 5, 2019. <https://www.merriam-webster.com/dictionary/framework>

nature of relationships we are attempting to balance. We have called this guiding process *webwork*. *Webwork* is not a noun to describe a guiding process as *framework* is. As we embrace our Indigenous worldview, we embrace the nature of our Indigenous, verb-based languages. *Webwork* is a verb (or what I like to call, an Indigenous noun) which describes relations being guided by the process of creating relational webs and weaving them together for the purpose of bringing healing. Each *webwork* process guides those coming together in circle who are linked by their shared values and intentions to create a path forward toward a desired balance.

A Webwork Guide

Instead of explaining what *webwork* is and how it can be used in step-by-step fashion, I am going to share examples from the process of its development to help shape your understanding. This process was born out of opportunities to introduce friends, students and colleagues to the Indigenous worldview and its application to science. In this case, its use in land and water healing efforts. Encouraging others, especially well-seasoned professionals in a field of study, to shift worldviews can be very difficult. I figured out quickly that this process must begin with generating enthusiasm and interest at the prospect of what the opportunity offered. The enthusiasm I was met with, which was completely surprising, made it less an attempted sell at the potential of something outside-the-box, and instead became an exercise in bringing people alongside the development of the process itself. As we experimented with how we could apply the Indigenous worldview to aspects of land healing together, I paid close attention to how the process naturally unfolded. It was the unfolding that revealed common themes of what the process of *webwork* would be.

Before bringing anyone alongside a process, it is important to ensure that there is foundational understanding of the topic at hand. In this case, I worked hard to ensure that everyone coming into the circle (meaning those intending to use *webwork* to apply the relational worldview to their work) was comfortable with both what our Indigenous, relational worldview was, and the principle concepts of Indigenous Ecology (since this was our example). It became clear early on that investment in this part of the process resulted in increased enthusiasm to explore the possibilities a new worldview would bring thereafter. Whether I was beginning multi-stakeholder environmental meetings, or just talking one-on-one with a colleague, I began with the same approach. Starting out with relational exercises such as the “putting on glasses to see connections” example I used earlier in the book both helped to solidify understanding and increase comfort level with working relationally. Creating scenarios for visualization helped them practice seeing relationally. For example, having them imagine themselves somewhere outside where they often go. Perhaps where they walk their dog everyday, or a favourite place to hike or fish. Somewhere so familiar that they feel like they know it well. I would then ask them to put on their “relational glasses” and tell me what relationships they see in that place. The enthusiasm was infectious. One fun example was a friend who said, “Hey there are the birds I see on the grass every morning. They are aerating it as they peck and scratch for food. Hey that helps the grass! Oh, but those poor worms that become their breakfast!” How quickly we can see the relationships between all the relations through our imagination if given the opportunity. I asked most people who did this exercise what that experience was like. Many shared that it seemed like an entirely new place. This was exactly the goal. To show them how they can completely transform familiar surroundings by seeing relationally. Step one of *webwork* completed, unleash the power of relational thinking.

With the power of relational thinking unleashed, we would practice wielding this power by working to transform concepts within our regular lexicon. To gain comfort with Indigenous ecology, I presented the changes in ecological terminology (Chapter 4) to demonstrate how this assists our transition onto the relational foundation. I then provided opportunities to practice changing terminology from modern ecology to Indigenous ecology encourage those participating to come up with their own substitutions. This was met enthusiastically each time. In a couple of cases participants pulled up one of their own existing ecological restoration plans or policy and we went through as they changed the wording to become consistent with Indigenous ecology. I'll say that many laughs were had through these processes as experimenting with new terminology is quite fun (there was certainly some entertainment value) as it was something that most said they had never thought to try before. It also provided an excellent example of the contrast between work done from the dominant paradigm and the Indigenous worldview. Suddenly it seemed wrong to call plants simply "weeds". Instead options such as "opportunistic of damaged ground relation", "preventer of soil erosion", "relation that will grow where no one else will", and "sole provider of food for pollinators" emerged. We renamed projects from "Enhancement of the xxx forest area" to "Forest xxxxx fortification" and "Environmental Assessment of xxxxx" to "Consideration of Land Relations of xxxxx". These are not necessarily profound examples, but it does demonstrate important changes in thinking. This exercise created a lot of discussion around how a project would change if we utilized some of this changed terminology. It is difficult to deny that outcomes would change. These types of exercises have some so much to solidify understanding and help those new to this idea of relational science, feel empowered to enthusiastically commit to the process. Step two of *webwork* completed, practice the power of relation thinking.

This preparatory work brought us to the important point of connecting the outer circle of our web that would form the "foundation" from which we would weave our *webwork*. This is the formal bringing together of participants (perhaps in this case called stakeholders) into the circle from which we would begin our *webwork* process. I discovered early on that if we were to have meaningful discussion about difficult and sometimes controversial topics, we would need a strong outer web that would hold us together as we began weaving the connections. A weaving process that could test the tensile strength of the thread at times. I try to strengthen the connection between those sitting in the circle to each other and to the issue at hand. It was a good friend of mine, Genevieve Singleton, the person for whom I thank for my connection to Cowichan Tribes, and incredible teacher of all things nature-related, whom best demonstrated this concept at a gathering she had organized to discuss Knotweed (an invasive species) management on the Cowichan River. She began introductions of all who had gathered by having each of the people there not only say their name and affiliation, but also to name their childhood river or waterway and what they loved about it. It seems so simple, but was so incredibly transformative. It completely changed the room. We were there to work on an historically contentious issue and this single act brought everyone together. It made everyone relatable to each other. It connected each person with a memory that took them to a special place that they care about. It deepened their connection to the river we would be working on. It put them into the ecosystem. Every land healing meeting or planning session I am part of now, I do this. Step three of *webwork* completed, bring the circle together.

Now that we have connected those in the circle, we can begin weaving what can be a multitude of webs. This is what *webwork* is about. Strengthening our recognition of the multitude of connections each relation has and then figuring out what connections are required for the desired ecological

balance. We must deepen our connection to the circles within the circle we have formed to help heal the land. This leads us to the first question of *webwork*, who are our relations in this place we wish to bring healing? Remember, Indigenous ecology requires us to honour the nature of our Indigenous languages even if we do not speak them. We therefore do not objectify our relations. All are equal. The trees, the soil, the insects, the birds, the plants, the nurse logs. We must acknowledge them as living and equal.

To show our respect for our relations, I have Healers in the circle acknowledge all the relations they can think of by naming them. Instead of objectifying them as nouns, they must be named as “Indigenized nouns”. Similar to the examples provided by Robin Kimmerer in *Braiding Sweetgrass*, our relations will be “bearing” instead of “bears”, “salmoning” instead of salmon, “rivering” instead of river, as examples. This is important as it acknowledges them while helping us to think relationally of our relations as it brings to the forefront of our consciousness their roles in our ecosystem balance. While we do this, we create a web with yard between us. You may be familiar with this string/web concept. Each person who speaks holds a ball of yarn. As they name a relation, they then take hold of the yarn with one hand (point of the web) and toss the ball of yarn to another person in the circle who names another relation. The circle keeps going so long as relations can be named. As you go on, a web forms. I use this tangible demonstration of relationality at each step of *webwork*. I encourage each web to be photographed with a label. These tangible demonstrations of relationships can be powerful to share. They also provide an opportunity to promote Indigenous Ecology in a report for such a gathering. Step four of *webwork* well underway, the weaving has begun.

Now we begin the circles within the circle. We choose a relation. The humans, the soil, the salmon... and we create a web for them. This time the web is formed based on acknowledging their relationships with the place to be healed. A web of their relations. Let us use salmon in a riparian area and stream as an example. We may speak of their relations such as the invertebrates in the stream that they eat, the oxygen in the water that they need, the nutrients in the water from the vegetation along the stream bank, the shade the trees provide.... This is meant to be both broad and specific. It is almost always surprising to those participating. It is meant to bring to the forefront the density of our mutual dependence and our inter-relatedness. I will repeat this for a number of our relations. It helps to continue to ensure that we remain in an Indigenous worldview. It ensures we are giving appropriate consideration to our relations as we work together toward finding the desired ecological balance.

The acknowledgements and consideration that *webwork* accomplishes leads us to our most important question for values-based land healing, **what is the desired balance for healing the land in this place?** This may seem as though it would be an obvious question to ask before embarking upon land healing efforts. In the case of ecological planning that I have been part of, it is often forgotten. To be honest, I’m not sure I’ve ever been part of a project that asked that question. Upon review of numerous restoration plans from across the world to inform this research, I found the same. At first it seemed to me that this really should be the first question that we ask as we begin any land healing journey. What I have learned as we began to pilot *webwork* was that the question of what the desired balance should be, or generally put, what they desired solution to the challenge at hand should be, is final question of *webwork*. The *webwork* is the preparatory journey that acknowledges and considers all of the relations and relationships. The preparatory work we must do before making difficult decisions.

As I mentioned in Chapter 4, often the overall goal of “restoration of a natural area” becomes the default goal of ecological restoration projects. It is another example of how our modern ecology leaves humans outside of the ecosystem instead of fulfilling their role as balancers. Our modern ecology has reached a place where “live and let live” for those that belong and a militaristic approach to those that do not, seems to have become the dominating force shaping environmental action. If modern ecological restoration is simply trying to put things back to the way they are “supposed to be”, then I suppose it makes sense that there is very little need for discussion of land healing goals. **This is so fundamentally wrong.** This is why projects fail. This is why we are losing species at risk. This is why ecological balance, balance that we have relied upon for our survival and based our economies upon, are being lost. This is why precious resources are wasted on projects doomed to fail in the current context. I cannot stress enough that this is about purposeful balance. This is about humans stepping up and taking the responsibility for that balance. This is not about everything having a right to survive. That is the easier path. Being a balancer is a huge responsibility. It requires very tough decisions to be made. It requires accountability to our relations. This is what makes ecology through the lens of the Indigenous worldview so incredibly different.

Webwork exercises have prepared us to come together to meaningfully ask the most difficult question,

What is the desired balance?

We may feel pulled first toward the question, “what can we do to create the desired balance?” but that is an easy question. This answer to this lay within all of our knowledge and experience in restoration ecology and all of what we know of ecological processes and systems through western science comes into play. Once we know what the desired balance is, we can easily inform the action piece or target research at it.

Prepared by *webwork* we have completed thus far, we now sit in circle gazing at all of the weaving we have completed so far. It is within that that we may find guidance in answering the questions that will guide us toward choosing the right balance. I continue to use the “making tangible relationship-wool-web-making exercise” through these questions. The tangible reminder of relationality is important. Even if tossing the wool is only a connection from one person’s response to another to the question at hand. Following, is the list of questions we used as we piloted the final steps of *webwork*. Questions changed based on the land or water healing project or the issue at hand. Again, these are meant to assist with guiding the process as we sit with all that we have woven together thus far.

What are the stories of this place?

What are our values of this place?

What is the current story of this place?

How are the relations of this place doing?

What connects us to this place?

What do we want the story of this place to be from this point onwards?

At this point, reflecting on the webwork completed, I ask the Healers to imagine the final weaving they created as an intricately woven three-dimensional tapestry of relationality. A representation of making

whole this place we wish to heal. The question, “what is the desired balance of this place?” should be revealed. These final questions bringing the image to light. One *webwork* participant likened these final questions to old fashioned film development. “It was as though, through these processes, an image slowly began to emerge. Almost suddenly, there it was. Clear.” I loved that analogy. It was a beautiful demonstration of relational learning. There was not a single instance that what seemed like should be the most difficult step, was in fact the quickest and easiest. The weaving told the story already.

The emergence of the desired balance can be recorded or drawn. Having used graphic artists in the past for workshops, I could see great potential in using that as a tool. What emerges varies by projects. Sometimes it is agreement over an otherwise contentious issue. Sometimes it is a purposeful, new vision for a place. Sometimes it is acceptance of a change. I encourage participants to either draw or write a story of the new balance of this place to be healed. Let that be a final decolonizing act of the process. The tendency of conventional land management processes is to list priorities, or develop some sort of hierarchical structure. Be mindful. Express the desired balance in a way that is reflective of the relational foundation of our Indigenous ecology. Use Indigenous artists. Be brave enough to present your work in a new, relational way.

Learning Through Lessons

Circles are foundational to our communication and decision-making. Sitting in a circle allows us to bring our collective energy together to respectfully communicate. They are by design, interactive. They are meant to connect us. They ensure respectful interaction as we can see the whole person and better read their feedback. The connections between each person criss-cross the circle forming an elaborate web. I imagine all our relations; the bears, the trees, the salmon, all forming their own circles, creating webs with their own connections. I see our Earth mother made up by all of these circles. Circles woven together with the thread of relationality to form Her sphere. Her very being made up by this three-dimensional depiction of our inter-relatedness and mutual dependence.

This imagery, for me, embodies exactly what it is that we are trying to do. By fulfilling our role as balancers, we make whole our lands and waters. Every land or water healing project coming together in *webwork* has the power to unite unsuspecting allies by shared values. The formation of their circle, a symbol of their commitment to being guided by the relational creation of a balanced web. The result, “Values-based Land Healing”, the fulfillment of their *webwork*.

Just like Indigenous Research Methodology, *webwork* provides the freedom needed to weave connections together without a predetermined pattern. Our only goal is to create a web for the challenge at hand that is guided by our values so that we may consider our relations and relationships. The pattern of the web will emerge as it needs to be to reflect the desired balance. The flexible strength of Indigenous Research Methodology is reflected by the flexible strength of *webwork*. Webs are never meant to be permanent. They can change or even be abandoned to create a new one. Much like our Indigenous stories, they too can adapt and change as the needs of our relations, ourselves included, do. *Webwork* empowers us to embrace change and adapt as we need to. This is the very essence of who we are as Indigenous people.

My teachings on *webwork* are meant to empower others to take our Indigenous worldview and use it to do its good work. It would not be reflective of our worldview or how our Elders teach us if I provided step by step instruction on how to use and apply it. That will differ depending on your subject area. I am

only providing my own experiences as a “prepared beginner” that happens to work in invasion biology and ecological restoration. Our *webwork*, that I have called, “Values-based land healing,” has provided an opportunity to gain new insights through a profound change in ecological philosophy. A return of ecology to its rightful, relational foundation. *Webwork* provides us with a guiding process to strengthen understanding, reveal connections, and bring to light that which we may not have otherwise been open to see. The completion of *webwork* positions us to fill in knowledge gaps and reveal connections to bring about desired solutions.

In the case of *Webwork for Values-Based Land Healing*, we now have a guiding tool for working on land healing issues applying Indigenous Ecology. It provides a way for all to come together as land and water Healers and work in a way that will ensure the fulfillment of our role as ecological balancers. Whether it be policy issues or planning important action on-the-ground, *webwork* will help to make the old new again and bring to light new paths leading toward ecological balance. At last we have permission to put ourselves into the ecosystem. We are free to find ways to honour our mutual dependence with our relations outside of the confines of dichotomies and concepts of naturalness. Acknowledging the true history of our lands and waters, embracing our role as ecological balancers, and working from our relational worldview will give us greater assurance that we and our relations will have the resiliency and adaptability needed as we face a changing climate.

As our journey together comes to its final stage, I will return to storytelling to provide opportunities to strengthen your learning of our Indigenous worldview and its application to science through Indigenous Ecology. I encourage you to think about relationality, reciprocity, and *webwork* as you read. I hope you will see yourself in my own transformative experience working to embrace our Indigenous ecology. At last I will introduce you to my greatest teacher of this journey to finding our Indigenous ecology, an ancestral site of the Cowichan people.

Chapter 6

Ye'yumnuts, My Teacher

You are walking on sacred and hollowed ground to our people and you come on here and bring in whatever it is. You gotta remember that not even a foot and a half deep, someone's soul is sleeping there. So don't forget that. - Harold Joe

Ye'yumnuts is the place where I found Indigenous ecology. I am purposeful in my word choice when I use the term “found” rather than the term “discovered”. There are two reasons for this. First, the connotation of the word “discovered” rattles me to the core of my Indigenous being. “Discovered” is a word that has been used by settlers to erase the true history of Turtle Island. I refuse to use such a term to describe my contribution. Second, what I have done, applying an Indigenous worldview to ecology, has been done before. It is not new. It is how we lived before contact. Other Indigenous knowledge holders are aware of this and have done work in a similar vein. My contribution is in expanding its reclamation through my examination of what it means, how it changes our approaches to land healing and applied science in general, applying terminology to it, and to provide guidance on how others can use it themselves.

While we are currently in this decolonizing space, I also need to bring to your attention just how difficult it is for an Indigenous person lay claim solely to our accomplishments. Our relational worldview makes it apparent to us ALWAYS just how all that we do in the world was born out of our connections to others. I am who I am and think how I do because of my family, my friends, my mentors, knowledge holders, Elders, and the list goes on and on. I am the product of my relations (Indigenous and non). My accomplishments are theirs. When my supervisor suggested I make more apparent and lay claim to my accomplishments within this research journey, I expressed how this was not culturally congruent for me. While academic achievement is often based on credit for individual contributions, I'm going to have to raise the decolonizing flag on this one. Knowledge ownership is not who we are. I hope that my role in this is apparent in what is to follow.

Ye'yumnuts is an ancestral site of the Cowichan people. Revealed by the archaeological remains of their ancestors, seems a fitting place for our Indigenous ecology to be revealed too. Ye'yumnuts quickly became not simply a research site to me, but one of my greatest teachers. I learned in the company of the Cowichan ancestors resting there. Their presence made known to me in ways that would go beyond the comprehension of most. I cannot help but feel that they very much had a part in the many revelations along my research journey. For me, it could only be their guidance from the other side that could have steered me in the direction I ultimately took. A gift, it turned out, far greater than any results I would have received from the original intentions I set out with. For me, a tangible demonstration of relationality spanning not only space, but time too.

My dad used to say to me, “There is always the right teacher for the right moment.” My hope is that Ye'yumnuts is the teacher who helps you to bring together your webs of understanding of Indigenous ecology and our relational worldview. That what Ye'yumnuts shows you, intrigues you enough to

consider how our relational worldview can change how you see and approach your own work. This is the recipe, I believe, that will help to illuminate new paths of inquiry as we face increasingly complex problems in our world. The gift of a new way of seeing is to truly make the old new again. In this case, I hope that what we have done here can help chart a course toward meaningful and lasting ecological reconciliation.

How I Came to Meet This Teacher

It was at the suggestion of renowned Ethnobotanist Nancy Turner that I became connected with Cowichan Tribes and the work happening at Ye'yumnuts. For that connection I must express my gratitude to her. Nancy, and her good friend, environmental educator Genevieve Singleton, changed my life forever. Their trust and faith in what I wanted to accomplish lead me to Dianne Hinkley and Tracy Flemming in the Lands Department of Cowichan Tribes. While I had set out with the intention of studying impacts of invasive species on traditionally important plant species and provide a decision-making framework for approaching ecological restoration of sensitive Cowichan Tribes lands, it turned out that Ye'yumnuts had much more to teach me.

Ye'yumnuts and the Cowichan People, A Brief History

“Our ancestors touched the lands, rivers, and oceans in our territory lightly and with respect.”- Luschiim

The Cowichan people have been upon their lands since time immemorial with archaeological evidence dating back to 4500 years. They are the Hul'qumi'num people. A group part of the larger First Nations groups referred to as the Coast Salish People. Their territory follows the shores of the Salish Sea of mid-southern Vancouver Island and includes the lower Fraser River on the mainland of what is now referred to as British Columbia, Canada. More specifically, their territory includes the regions of Cowichan Lake, the Cowichan and Koksilah River drainages, the regions around Cowichan Bay, Maple Bay, Shawnigan Lake, the southern Gulf Islands, and the south arm of the Fraser River. The Cowichan Nation was a large population with estimates of 15,000 people. It was a nation feared as they were the most powerful tribe of the south coast of British Columbia. They moved seasonally throughout their territory to harvest food and trade. Summer villages included Lulu Island at the mouth of the Fraser River (the location of Vancouver International Airport) and a large village located where what is now referred to as the Steveston area of Richmond (Tl'uqtinus). This is where most of the salmon fishing and trading with other Nations (including my own) occurred. Winter villages were located in Cowichan Bay and the Cowichan Valley on Vancouver Island where Roosevelt elk, deer, bear and a variety of plant foods such as speenhw (camas) were hunted, gathered, and preserved. Many of these practices continue today and many more are being reclaimed. The Spring called much of the Nation to various Gulf Islands where fishing included other species such as herring, skate, and marine mammals such as seals. Deer were hunted and camas harvested as well.

Cowichan Tribes was part of the Cowichan Nation before the arrival of Europeans. The colonial government broke up the Cowichan Nation with their creation of the reserve system and the Indian Act. Today, Cowichan Tribes refers to Cowichan Nation communities who trace their ancestry back to the communities with winter villages on the Cowichan and Koksilah Rivers and Cowichan Bay. The history of

the Cowichan people is rich, prosperous and a testament to the resiliency of Indigenous peoples in the face of indescribable atrocities. Two books that provide an excellent background into the history, lives and culture of the Cowichan people include *Two Houses Half Buried on Sand: Oral Traditions of the Hul'q'umi'num Coast Salish of Kuper Island and Vancouver Island*⁹⁰ and *Those Who Fell From the Sky: A history of the Cowichan peoples*⁹¹. Both of these books were recommended to me by Cowichan Tribes Lands Staff at the outset of my research journey and provided background and context that was important preparatory work prior to my engaging with Elders, knowledge holders, staff, and Ye'yumnuts.

Before we get into the lessons that Ye'yumnuts taught me, I must provide you with a summary of its incredible and complicated history. This history will not only help you understand the reverence of this place, but also provide a tangible example of the impacts of colonial rule. The impacts of colonialism run deep. So deep that they have both interrupted and prevented our ability to care for and heal the land our way.

Ye'yumnuts is an important place to the Cowichan people. Part of the broader Quamichan Village, it was connected to Tl'ulpalus (Cowichan Bay) via S'um'amuna' (Somenos Creek). The Cowichan people lived prosperous lives there connected deeply to their lands and waters that provided for them. Abundant rivers nearby provided salmon, deer, ducks on the creek, and camas growing on the hills shaded by Garry Oaks.

Ye'yumnuts is located in what is now referred to as Duncan on Vancouver Island in British Columbia, Canada. It stretches alongside meandering Somenos Creek with slowly rising hills and a meadow, that south facing, captures the sunlight perfectly. In recent history, it was simply another site of neglected land slated for rapidly expanding residential development in the area. It would have become another piece of the suburban neighborhood that now surrounds it had it not been for the uncovering of archaeological evidence of the ancient village site as development began.

Since then, extensive archaeological work has occurred on the site revealing signs of human presence that spanned over 1300 years, from 2080 years before present until approximately 800 years ago. I am so grateful for the opportunity to learn about Ye'yumnuts from the archaeologists that worked on site. They provide important pieces of Ye'yumnuts' story that helps to fill in our gaps in knowledge about this place and the lives of those who lived there. Learning from them was a demonstration of the value and importance of interdisciplinary work. Their work helped to paint a picture for me of the village site that Ye'yumnuts once was. Now, as I look across the landscape, I can see the hub of activity of the people living here. The importance of this place in its role in sustaining the people and the mutual reliance required for that, made much clearer.

Archaeologists have used radiocarbon dating to create a chronology of Ye'yumnuts. This chronology revealed three natural divisions in how the site was used across the time period. The first was a time when Ye'yumnuts was a large settlement where many Cowichan people resided. Extensive shell deposits far from the ocean are evidence of this. You can imagine that shellfish and fish would have been brought

⁹⁰ Beryl Mildred Cryer, Edited by Chris Arnett. "Two Houses Half Buried on Sand: Oral Traditions of the Hul'q'umi'num Coast Salish of Kuper Island and Vancouver Island" Vancouver, BC, Canada Talonbooks 2008.

⁹¹ Daniel P. Marshall. "Those Who Fell From the Sky: A history of the Cowichan peoples" Cultural and Education Center, Cowichan Tribes Duncan, BC, Canada 1999.

to the village to feed the people, a distance of more than 5 kilometers inland. Possessions of the many people that lived there were found including tools and blades. Evidence of Ye'yumnuts being a hub of commerce include possessions made from imported materials such as obsidian microblades, dentalia shells, chert lithics, and a celt made from nephrite. The Cowichan people who lived here travelled extensively and traded with other Nations near and far.

One of the most interesting features found at Ye'yumnuts was a very large oval concentration of fire altered rock. It is likely a large cooking area for large amounts of food such as the camas bulbs that were grown and harvested there. This feature had charcoal from hemlock, cedar, and crabapple trees in it. Radiocarbon dating of some of the charcoal in this pit dated it at approximately 2800 years ago. A great relative time comparison provided by the archaeologists was that this pit was used during the time of the Roman Empire. Another cooking pit that was found on the site was one that used hot rocks for cooking. These finds are incredibly helpful to our web of relational understanding regarding the diets of our ancestors and which plants may have been present on site. This particular pit, found within what may have been a house dug partially into the hill (it is known by the archaeologists as a cultural depression), was 0.7 meters wide and 1 meter deep. Remains inside it included berry species such as thimbleberry, blackcap raspberry (species we continue to enjoy today), as well as red goosefoot and sedges. Other remains came from a wide variety of fish such as herring, salmon, skate, flounder, anchovy, perch, dogfish, sculpin and greenling. It is clear that the ancestors that lived in the village had a wide variety of foods from the surrounding areas in their diets.

From approximately 1250-1850 before present, Ye'yumnuts was used as a cemetery. Work completed on the site confirmed that more than 30 ancestors were found to be resting there. This is why protocols are in place to ensure that we work respectfully at Ye'yumnuts. Protocols for cemeteries are commonplace for Indigenous communities. These protocols include not being there in the afternoon, brushing off when leaving the site, and not consuming plants growing over the burial areas.

Additional findings from this time period included an obsidian microblade. The chemical structure of this small volcanic glass blade was tested, and it was found to be from Newberry Volcano in Central Oregon over 594 km away. This is just another demonstration of how far we travelled from our home communities and how important trade and commerce was. It is my hope that knowing these bits of information helps to reshape understanding of how we lived prior to contact. It is time to leave behind the colonial constructs of who Indigenous people were before contact that have been shaped by governments and the education system. I was fortunate enough to be able to hold some of these blades and tools in my own hands as archaeologists showed them to Elders. It was honestly one of the most emotional experiences of my life. It was to be teleported to those times and feel and hear what the lives of our ancestors would have been like. It was to see the ties of relationality reaching across lifetimes hearing the Elders talking about what their grandparents had told them about these tools, where they came from, how they were made, and how they were used. Remembrances coming back in real time.

As we reach the point in history closer to recent times, we must acknowledge that this sad and traumatic time period is just as important to informing our land healing as the archaeological record. To honour this place is to speak truth. While the archaeological remains from these times were likely lost due to farming practices that eventually became the primary use of the area, we know much about these time periods as oral histories are fulsome and strong.

Cowichan lands remained free of settler control for much longer than southern Vancouver Island. In 1852, James Douglas came to Cowichan Bay by way of canoe, but it wasn't until 1853 that a formal attempt at European invasion was made. Three ships of more than 130 men sailed into Cowichan Bay to demand the surrender of a Cowichan man suspected of murder. He was eventually surrendered in an attempt to placate the Europeans. This was only successful for a short while until Cowichan territory was stolen beginning in 1858. At that time, 19 settlers purchased 9880 acres of land in the Cowichan Valley from the colonial government for 2470 pounds. An 1859 land survey laid out reserves for the Cowichans while claiming that the best land now belonged to the government. It is important to point out that no agreement or treaty between the colonial government and Cowichan Tribes authorizing the sale of their lands was or has ever been made. Imagine if someone showed up to your house and just told you it was no longer yours, but you can have patch of dried up grass down the street instead where there is no house or food. Imagine there was nothing you could do about it.

In spite of the resistance of the Cowichan people, the government continued to survey land. Cowichan reserve areas shrank as prime land was allocated to settlers. It was the equivalent of thieves sizing up that which they were about to take. The resulting theft left Cowichan reserves at 2075 acres and settler lands at 45000 acres. The Hul'q'uminum' people were robbed of their villages, spiritual sites, graveyards, hunting grounds, fishing areas, clam gardens, planting areas, and berry patches. On their way to areas they had accessed for thousands of years, they met fences. Again, please imagine that your family home, passed down through generations, was suddenly not yours. That as you go to enter your own garden, you find a large fence with a "No Trespassing" sign. Imagine. Please.

Ye'yumnuts was one such place. In 1876 it was sold to Herbert Worthington by the colonial government for \$470.40. It was quickly sold in 1877 to William Kingston whose family farmed the 100 acre parcel for many years. Much of the Garry oak meadows served as pasture for livestock. Other portions were cleared to grow grain. The family owned the land for almost one hundred years. The legacy of their farming is still found here in its soils which have clearly been enriched by farming practices as well as by the continued invasion of the prickly English hawthorn trees they planted there.

In 1971 the land was sold to a development group who had planned to build a subdivision in the area. Driving to the entrance of Ye'yumnuts today, you wind your way through a typical suburban neighborhood decorated with the beauty and shade of towering Garry Oak trees. It is a startling reminder of this invasion upon sacred ground that crept down the hill toward Somenos Creek. It is important to remember that the boundaries that exist today are artificial. They do not delineate between that which was an ancestral village and that which is not. They delineate where the development was finally stopped after a lengthy battle to protect what was left. In 1992, as the final parcels were prepared for development, Cowichan ancestors had their resting places disturbed and were unearthed.

This was the catalyst for the process that led to the site being protected. Emergency archaeology was initiated while development was temporarily halted. Early studies completed using soil conductivity surveys revealed that excavations were needed. Shortly thereafter, they began as the developers, archaeologists, and Cowichan Tribes partnered together on the study. Once the items I mentioned earlier were unearthed, and a better understanding of the site's history was obtained, Cowichan Elders requested that the Ancestors be allowed to rest and disturbed no longer. Extensive negotiations resulted as the developer wanted to continue some of the building while Cowichan Tribes did not want

development to occur. Developers wanted Cowichan Tribes to buy the area they wanted protected. A suggestion that baffles the mind as the land was stolen to begin with. Archaeological studies continued and more artifacts were found. Negotiations continued until in 2011 when the developer gave a portion of the land to the province of British Columbia to be protected and an additional piece close to the burial site was purchased by the regional government (District of North Cowichan). This marked the end of what remained of Ye'yumnuts from being developed. I cannot imagine the angst of the community throughout such a lengthy process. Can you imagine the cemetery where your great grandparents rest being slated for development? Imagine the public opposition to such a notion! It seems impossible to fathom that such a situation could possibly occur. Yet it continues to occur for Indigenous communities. It is still ok to disrupt the resting ancestors of Indigenous peoples if their resting place is inconvenient to modern notions of land ownership. While great strides have been made to remedy this, we have a long way to go. I ask you, as our ally, please sit with this notion and feel it. Please use this opportunity to see how colonialism continues to erase us to this day. It should not be difficult to process the deep relationship between Indigenous communities and their land at this point in our journey together. To enter Ye'yumnuts is to enter a sacred place. Just as sacred as any place of worship or any other important historic site. Ye'yumnuts is older than St. Peter's Basilica. Ye'yumnuts is older than the Colosseum. Why is it that our sacred places do not get equal respect? So much so that we have to fight tooth and nail to reach some sort of compromised version of respect. I have so much respect and love for the people that worked so hard to protect Ye'yumnuts. They are a testament to the resiliency of our people as well as the importance of our allies.

Following is a collection of what I consider to be most important lessons I learned from my time with Ye'yumnuts. A time when I was free to explore and practice Indigenous research methodology and began to realize its potential for addressing complicated issues in scientific research. Complicated issues such as invasion biology, ecological restoration, food security, and climate change adaptation. Ye'yumnuts provided the opportunity to experiment with my newly acquired, "prepared beginner's mind" to see what the application of our Indigenous worldview to invasion biology and ecological restoration revealed. The lessons I learned from Ye'yumnuts, along with my time with knowledge holders and Elders, shaped what I came to define as Indigenous Ecology. The lessons addressed the wider scope of the research (application of the Indigenous worldview to science), provided lessons in the practical application of land healing, and the interpretation of research using Indigenous research methodology. While not all of the lessons may speak to you directly, they all certainly contributed to what I presented in the previous chapters. I hope they offer you the precious insights they provided me.⁹²

⁹² History of the Cowichan People and Ye'yumnuts was written using the following references in addition to oral history shared with me by Dr. Brian Thom, Dianne Hinkley, Tracy Flemming, Genevieve Singleton, Luschiim, and Mena and Peter Williams:
Commemorating Ye'yumnuts. Accessed March 10, 2018. <https://sites.google.com/view/commemorating-yeyumnuts/>
Cowichan Tribes. "History" Accessed March 10, 2018. <https://www.cowichantribes.com/about-cowichan-tribes/history>

The Lesson of Permission

The first and most challenging lesson Ye'yumnuts taught me was about permission. In relational fashion, permission is woven into every other lesson of our time together.

It is difficult to leave behind all that you have been taught and how you have always seen things. It is risky to step out and away from all that you and perhaps your colleagues are comfortable with. I have already written about my own experiences with this on my research journey. It was Ye'yumnuts that taught me that it was okay to leave behind what I thought I should think and what I had been taught. Ye'yumnuts taught me the lesson of permission through the provision of a safe context to push the boundaries of the Indigenous worldview. I was free to practice using the lens I had denied myself the permission to use for so long. This gift of the lesson of permission is one I think that every academic could use. We find ourselves so confined by the rules of research, the norms of our subject areas, and the deference to the thoughts of others as opposed to our own. Even if we are aware of these tendencies and want to change them, where can we safely do so without fear of reproach? Perhaps we all need a Ye'yumnuts in our lives.

As I walked around what was to be my research site for the first time on my own, I took in the landscape. A quick scan of my surroundings made me shake my head at the mess of weeds. "I could teach a Weed Science course standing still", I mumbled to myself. As I continued to wander, I made my way over to a group of Garry oak trees whose feet were smothered by the vines of the invasive species, English Ivy. I shook my head in disapproval thinking, this will have to go. I looked up in awe at the mighty oaks stretching their giant arms out above me. I imagined they were reaching up as an expression for help as the invaders attempted to smother them below. Lost in these thoughts I was interrupted by the sound of a loud hiss. Confused, I stepped back. Nothing of our usual fauna would make such a sound. I must be mistaken. It was then that I saw movement in the ivy that could only be that of a large and very long snake slithering quickly toward me with ever increasing speed. Overcome by fear and a feeling of dread I had never experienced before, I staggered backwards and turned running from the area. When I reached the main trail I stopped, doubled over, trying to regain the feeling in my legs and catch my breath. What the heck was that? My analytical mind ran through the possibilities. Someone's escaped pet snake? My wild imagination? The jolt of the experience made me feel as though I needed to leave immediately. I was already well-aware of the spiritual power of the site. I decided to heed the message and returned to the entrance where I sat on a concrete barrier to collect myself and my thoughts. All of my attempts at rationalizing what I had experienced failed. I knew deep down what it was. Just like I had suppressed my own Indigenous worldview in my work, I attempted to suppress the acknowledgement of the profound spiritual experience of the vision I just had. It was not an escaped pet snake. It was Sisuital. The two-headed serpent. While normally considered the water serpent of supernatural powers, I knew there were stories of it appearing on land. It is why some Kwakwaka'wakw drawings depict it with hands that helped it to climb trees. Sisuital, a spirit of revival and transformation, was bringing me a message from the ancestors. A very serious message. You see, to look at Sisuital in the eyes is to mean that you turn to stone. It is why I had to get away so I would not see it if it showed itself by emerging from the ivy. It was a message that came to interrupt my reflexive thoughts regarding the landscape. It was a shock to the system meant to stop that "invasive plant specialist" reflex... forever. From then on, I would honour the land by seeing it from our relational worldview. I would not be so quick to judgement. Upon this realization and still feeling terrified, I called an Elder to relay what had just happened and to get advice about what I should do. He said, "You have learned the lesson. You are safe. Now you must go back in

with the fresh eyes you have been given.” I hung up. Took a couple of shaky, deep breaths. And I walked back into Ye’yumnuts transformed. The ancestors with me.

Just like that, I stopped working reflexively. I could set aside the automatic categorization and characterization I had learned to apply to the landscape and all the things within it from my education and work experience. I no longer considered it a “landscape”. It was a being made up of many relations. Many of whom I had never even noticed before. With the permission to see relationally came the freedom to work and think differently. I no longer opened my iPad GiS program and placed a grid over the site from which to systematically work. I stopped bringing my field notebook to Ye’yumnuts at all. I would simply wander and talk to the insects, plants, trees, birds, and the occasional dog walker. Occasionally I would find a place to sit and be still. Sometimes I would close my eyes and just listen. I had permission to simply experience being with Ye’yumnuts. We could take the time to get to know each other. There was nothing else on the agenda other than that. I think it important to point out that the old me would be completely stressed out by this notion. I am a self-described, type A go-getter. I am all about an agenda, action-items, and timelines. There must be a purpose/objective to everything I do. A nagging urgency has always fuelled my work. Efficiency being the ultimate prize. No more.

There was a strange familiarity to this new approach as I embraced it. I realized upon reflection that I had done this once before. There was one other place that I worked where I had the opportunity to be in relation in this way. It makes sense now to me as it is a place very important to my Tsleil-Waututh Nation friends. It was the very place that planted the seeds of doubt upon my work as an invasive species specialist. It was my first glimpse of land healing from our relational worldview that at the time, I did not have the words or understanding to articulate as such. It is clear to me now that the relational worldview was how my Tsleil-Waututh Watchmen friends worked. They didn’t need permission to work in this way. They lived it. They knew every square inch of their land. They knew all our relations there. Right down to where they would be and when. It was amazing. While I worked with them, assigned to my specific invasive plant management task, I remember at first feeling the pressure of time. I felt as though I needed to quickly get what I needed done. Why were we spending so much time looking around, taking in things as though we were tourists, and talking instead? I see now that the time I felt was wasted was in fact the time that we need to take. I felt conflicted by this pressing need to rush to get my job done and how much I absolutely loved taking the time to really connect with the land and waters. These are among my favourite work memories. I honestly learned so much from them. I wish I had a chance to tell them that. Perhaps I am now. The Watchmen were catalysts to this entire journey. It was beautiful to come to the realization that this experience I had, so many years ago, had come full circle such that these important teachers of mine were indeed connected.

Luschiim talked to me several times about how we don’t listen enough these days. We are too busy thinking about what we want to say ourselves. Filling the air with our voice. Luschiim’s reminder about listening was not only about having a conversation with an Elder or knowledge holder. I realized that we need to give ourselves the permission to take the time to “listen” in our work. What do our relations have to say? I realized that I largely didn’t know because I spent most of my time assuming what they had to say based on my experience and knowledge. It is the curse of the “expert” that we stop listening. We come into a situation as an expert and begin sharing what we know. It is an excellent example of the loss of relationality with our work. It demonstrates how quickly we objectify these “places” we work and reflexively apply templated solutions.

Ye'yumnuts said, "Shhhhhhhhhhhhhhh....."

The drive, in today's world, for productivity makes it difficult to believe that we can slow down. I needed the lesson of permission so that I could not only listen but release myself from the belief that taking such time was unproductive. What is the tangible deliverable for spending the day "listening" to a work or research site? I say this to highlight that there is indeed a systemic problem in society that will make adoption of this practice a difficult sell. My hope is that with experiences such as this, we may illuminate why it is important to provide ourselves the required freedom to explore our surroundings such that we are really able to take them in. To ensure that we do not devalue the taking of time to consider and ponder. To work carefully. To step lightly.

Ye'yumnuts had much to teach me and would show me what I needed to see if I let it. I realized that if I clung to my original, specific research question, I would not be able to hear or see her message. I needed to open the door for possibility. I embraced the words of Kovach⁹³ and Wilson⁹⁴ on Indigenous Research methodology whole heartedly. The battle between that which I had been taught in western science and what applying the relational worldview offered was over. I was free to be on a journey where the research question may not stand. I was free to be on a journey without a specific destination. Instead I was on a journey to explore the various twists and turns needed to find lessons where I could learn from my Elders, knowledge keepers, the plants, the trees, the waters, the soil, the birds and the insects. That this was what was needed to make sure that my work was "good". Good work did not lay in a direct answer to a specific question, good work was to pursue a meaningful journey that would help the community. So off I went in ceremony, to learn about land healing from our Indigenous worldview. I carried with me the hope that I could help us to reclaim our relational foundation in caring for our land and our relations upon it. I wanted to find a way to share these lessons with those inside and outside of our communities so that they may have permission to heal the land, our way, too.

The lesson of permission gave me a newfound freedom to see and work in a way I never had before. This opened me up to so many incredible experiences to understand the relations on the land and where the opportunities were to fortify the land. As I embraced this freedom and gathered so much information through observation, oral history, stories and knowledge sharing opportunities, I did not know how to bring together this newfound relational understanding.

The Lesson of the Recognition of the Power of Story

Storytelling has always been part of my life. It is one of the primary ways we share and learn as Indigenous peoples. Stories can be of mythical creatures or simply personal stories of lessons learned. There is great power in storytelling. The power of a great story compels the listener to lean in. To pay attention. Stories give us a way to escape and be able to perhaps see ourselves in them in a way not possible with our own introspection. Stories are one of the great teaching tools of our relational, Indigenous worldview. To learn, we must in some way relate to the lesson. Teaching through story telling is the way that Indigenous peoples have been passing on and preserving knowledge for thousands of years. As an Indigenous knowledge keeper, it is a tradition that I uphold. While many may think it a method of knowledge mobilization reserved only for traditional stories or traditional

⁹³ Margaret Kovach, *Indigenous Methodologies: Characteristics, Conversations, and Contexts*.

⁹⁴ Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

knowledge, it is the way I approach every teaching opportunity that I have. No matter how technical the topic, I will always find a story to reach, teach, and engage each audience.

The more time that I spent with knowledge holders, the more I realized the importance of story tied to place. In addition to my own observations, my data collection for this research journey was largely a collection of stories about Ye'yumnuts' history, the Cowichan people, and the flora and fauna in the area. I found myself sitting with all of these stories, looking at the land, overwhelmed as I attempted to analyze all of it like I would review data collected within the Western scientific method. I was trying to fit the stories and my observations together like pieces of a puzzle. It didn't work. What each knowledge holder shared often provided different lessons. Lessons about plants, soils, spirituality, learning, history, and governance. I felt like a child forcing unmatching pieces together with my fist. I kept trying to fit them into the construct of the dominant worldview. To examine this "data" in such a way, with the hope of finding instruction on how to move forward with healing the land at Ye'yumnuts, was to hit dead ends too numerous to count. I felt frustrated.

Feeling like I needed to spend more time with Ye'yumnuts, perhaps hoping for some sort of divine intervention that would bring it all together, I decided to shake things up a bit and bring my children along with me one morning. I felt as though I needed a fresh perspective and cleansing of my torment of what to do with all of these stories. The freshness of the air hit us all at once as we got out of the minivan. We took a collective deep inhale and exhaled in a way that I could tell connected us all with the earth beneath our feet. The dew was plentiful upon the tall grasses and the early morning sun illuminated the countless webs that decorated the Himalayan blackberry bushes lining the path below. We could hear the soft murmur of ducks on Somenos Creek along with the occasional splash of someone landing in the water. I had not yet brought the kids here before though they had heard plenty about this place that I was disappearing to frequently for research. As we walked in, I began telling them the history of Ye'yumnuts. I continued on in story-like fashion. Telling them about kids that lived in the ancient village that once stood there and what the daily life may have been like. The foods they would have helped prepare. The excitement of a canoe coming up the stream bringing fresh clams. Of our relations that also lived there and how they would have cared for them.

We talked about what happened to the village since that time. I told them that now there were many people, myself included, working toward healing Ye'yumnuts. I wondered aloud what Ye'yumnuts could be next. We found a place to sit where we could overlook the site, and the kids, having caught onto the spirit of storytelling, continued onward with their own versions of what may well lay below us one day. Who would come there and what they would learn.

Over there, a place where kids can sit and hear the stories of the Elders and learn songs and drum. And over there, berries to pick. And over there, a place to learn how to make our fruit rollups with the berries. Over there, a patch of Camas that a class is responsible for. And there, a pit to cook the camas.

Their excitement to create a story for Ye'yumnuts was infectious. They could see what I hoped to see too. It made me laugh. Peter Cole wasn't kidding when he said to find lessons from my children when I was first setting out on this research journey. Ye'yumnuts just used the kids to show me the way. Story telling isn't just for teaching about something, it is for figuring things out too. Relational data analysis IS story telling.

I have used storytelling to reach students, the general public, colleagues, and politicians on topics such as weed science, invasive species management, and environmental policy. It is something that I know has made me an effective and compelling teacher. What I came to realize through my time with Ye'yumnuts is that despite storytelling being my "go to" teaching pedagogy, it was not something that I used within my work. What I mean is that I used storytelling to teach ABOUT my work but not as a tool to use myself AS I worked.

Robin Kimmerer⁹⁵ raised the point that no one asked the plants when approaching them, 'What can you tell us?' as the fixation was on how they worked. I propose taking that a step further and asking the question "What is your story?" to not just the plants but all of the relations there including Ye'yumnuts. What was the story of the camas that remained there? The garry oaks? The creek? To ask, "what is your story?" is to honour the past by acknowledging its truth and learning from it. To ask, "what is your story?" is to honour the now by acknowledging the relations as they currently are and acknowledging the web of relationships they currently have. To ask, "what is your story?" is to honour the future of each of our relations here now. To ask Ye'yumnuts, "what is your story?" as we consider the future is to give potential for the relations that could join us here in the future. This question acknowledges the role that we humans relations play in providing the necessary balance for the story this place will tell our children and our children's children. In providing balance we must first continue the story. To heal Ye'yumnuts we would need to author the story from this point onwards and take on the responsibility of providing the balance required for that story. I realized that the stories and knowledge shared with me and the observations I made were not meant to tell us how we move forward. They were not going to be instructive. They were meant to connect us with the land, with lessons learned, with each other, and with our values. This was the preparatory work for the ceremony of continuing the story here.

I returned to Ye'yumnuts the following day without the kids. I said my prayers and thanked the ancestors for this lesson of the power of storytelling I had not realized before. A new type of storytelling for me. One that would help me to bring our journey together and plan a path forward. By this time, I had a routine I followed with which I would move about Ye'yumnuts. Before I learned this lesson, I had begun moving through this routine with angst. Desperate to figure out what to do next. Now I stopped at each point, sitting down for the conversation that was to happen next. I sat at the top of the hill, running my fingers through the soil said, "what's your story?" The soil told me about how they had changed over time. How care of the soil had changed from the time of the camas fields of the village to the time when dairy cows dotted the landscape to now. The soils very much were anthropogenic. But in a way that suddenly felt far deeper than in any other context I had used that term before. These soils had been cared for and worked long before the agrarian intrusion upon this landscape. What did this mean for our story from this point onwards? An interesting notion that in all of my years of choosing plants for restoration projects that had never really entered my mind.

I walked next, down the hill to one of the many thick patches of Canada Thistle and asked, "what's your story?" Canada Thistle tells a similar story to that of Soil. Of how soil changed over time and became more receptive to their presence there. There didn't seem to be any opposition to their presence and the bee relations seemed to like them and so they stayed and multiplied. There were so many pollinators on them you could hear the gentle buzzing. I knew that the story for Canada Thistle would be one that would hopefully see their rise gently fall away. I knew that this would or could have an impact

⁹⁵ Robin Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*.

on the story of the pollinators there and so the story for the bees would require perhaps the introduction or reintroduction of other relations they needed. Would I have thought about that before Ye'yumnuts? No. I would have thought only of Canada Thistle not belonging and thus only of their demise. I realized that the value of knowing the stories of our relations in these ecosystems was more than honouring and acknowledging them so we could continue writing their stories. Their story connects us thus that we know them relationally. Their story offers us a window into their world that reveals their own webs of relationships. A view that provides much more than what a simple yes or no question of belongingness would yield. Mistakes that I had made in my own career, restoration failures, or re-invasion of a new species upon the eradication of another, may well have been prevented if we had been working from and towards the stories of our relations as opposed to being guided by the seemingly simple question of belongingness. That is what the bees on the Canada Thistle revealed to me. To know one's story is to know it. To cast judgement was to make oversimplified assumptions and perhaps harm an important relation.

I made my way over to a small grouping of young Garry Oaks who by all appearances would have been swallowed up by the reed canary grass and perhaps eaten by the deer had it not been for the caging placed around them. I asked them, "what's your story?" They told me of just how hard it was to be a young Garry Oak tree. That many of them don't make it to adulthood. I replied, "well it is a good thing that someone has tried to protect you." The young Garry oaks merely shrugged, as teenagers tend to do. They told a story that this attempt to help them was part of a shifting story where the humans were coming back, but what they were doing wasn't quite enough. They wanted a deeper connection with their human relations. One where the nutrients once brought by the shellfish and fishbones discarded there returned. One where the grasses and shrubs attempting to swallow them would be burned. "There must be a way to write our story so that this can happen" the Garry Oaks said to me.

I felt as though the Garry Oaks spoke for Ye'yumnuts. This lesson of the power of story was one of writing a story for the future that brought the people back to the land. That a story like the ones that my children made up, looking upon the landscape, could in fact be written. That the community could write a story inspired by the past, aware of the current, and hopeful for the future to bring healing to this place and to us all. Such a story would be so much more than the simple list of appropriate plants that I had put together at the beginning of this research journey. Such lists and prescriptive instructions were largely recipes for long-term failure. We needed relationality and it could be accomplished with storytelling. Storytelling written to match the needs and values of the community. Storytelling that would create the relationship with the land so desperately needed to ensure the long-term success that would come if we placed ourselves as balancers of the ecosystem. We had the ability to bring these stories to life.

To write together, to be authors of Ye'yumnuts story, would be to bring all who cared for her together. To create a story with deep ties to cultural learning, to history, to a future where our children would know our stories, know our medicines, know our foods and to be able to find new medicines, new foods, and new relationship with the land.

The Lesson of Mutual Reliance

“I went to Belcan Islands to look for some medicine that was said to grow there. No medicine. The old people said the islands were just full of it. This medicine. But it's full of Nootka Rose. So, no more burning, Nootka rose took over. So wherever there's ground, meaning there's soil. Lots of rocky places, just rocky. Nootka's there, there's ground there. But no quxmin. So. So some of the, you know the vegetation control was done with a fire so you could grow what you wanted to grow. But no more.” - Luschiim

I sat within the boundary between Ye’yumnuts and the Garry Oak Conservation Area. It is a wide trail, more like a road, that is the boundary between that which has been conserved and that which has largely been neglected. Neglected due to no fault of its own, Ye’yumnuts sat without human relationship for a long time while its future lay in waiting for development, then contested, and eventually protected. Behind me, up the hill, Garry Oaks towered in the conservation area. My old inclination would be to compare the two. Likely to assign positive attributes to the conservation area and negative ones to Ye’yumnuts. With the permission to see relationally and work differently, what I saw couldn’t be further from that. In fact, what I was able to see now was that both places needed human relations. Both were suffering without that.

The Garry Oak preserve was by all accounts, beautiful. A beautiful south facing warm slope with the eerily beautiful Garry Oak trees dotting the meadow. It is said that these were the very trees that Walt Disney chose to model the trees after that appeared in his movie Snow White. While I don’t necessarily agree with his characterization of them as frightening, they do have a magic about them with their giant limbs appearing like massive arms reaching every which way. No two alike.

Resources and a lot of volunteer time go into conservation areas like the Garry Oak preserve that sits above this arbitrary line drawn by government that I was currently sitting upon. The line drawn cuts in pieces that which was at one time, entirely part of Ye’yumnuts. A line that now provided a comparison between land with more human relationship (much time and care had gone into the conservation area) and that largely left alone. This line provided a unique opportunity to see why Creator placed us in the role as balancers of the ecosystem. It would have been easier to focus only on the stark contrast between the two areas. The conservation area with more Garry oaks, native grasses and bulb species and what is now referred to as Ye’yumnuts with far fewer Garry oaks and invaded with weeds. The story based on the contrasting level of human relationship of each side of the line provided a tangible lesson on what a difference this makes. While an important lesson and example, a closer look revealed a truth far greater than what was obvious from the aesthetic. This was Ye’yumnuts lesson of mutual reliance. These two areas though contrasting aesthetically, were united in their call for their human relations.

In the conservation area, the meadows that should otherwise surround the Garry Oaks were being lost to the force of plants both considered invasive and native. Snowberry (*Symphoricarpos albus* (L.)) crept toward, and in some cases, completely surrounded the Garry Oaks. They created tall and impenetrable thickets. Attempts had been made to rescue young oaks from being smothered completely by this “native” species by cutting the snowberry around them. Varying degrees of snowberry presence in certain areas remained as evidence of control trials of the past to deal with an issue that would have

been handled by controlled burning as was done historically. What was happening here was something I had seen so many times before. It was predictive of what would happen to Ye'yumnuts if we allowed the same application of Modern Ecology to occur. A restoration without the foundation of relationality that placed humans as the balancers. A restoration that was based upon an aesthetic notion of the past but neglected to plan for the long-term human relationship needed for the desired result. A situation made worse by limiting the required land practices due to fear and a lack of resources for creative solutions to replace those land management practices. A restoration without the mutual reliance needed to ensure the success of all relations. Humans included.

Sitting and considering the site, I began the practice of envisioning myself watching what would have been happening there in the past when it was once a Cowichan Village. The purpose of doing this not to act as a guide to reconstruct the past, gain a clearer understanding of what we see today. I imagined the busy nature of the work involved in managing what I came to see as the Cowichan version of modern-day farming. Meadows burned when required to ensure the sweetness of the ground and to keep the meadows open from the intrusion of canopy closure for what were essentially "bulb farms". Camas and lily bulbs provided important sources of starch for the community. Carefully tended to through harvesting practices that ensured that bulbs remained large and healthy. Some moved around to maintain the populations needed to feed the village. I connected this to the cyclical nature of the activities on my own farm over a growing season. Purposeful work over each season that ensured an abundant harvest. As with my own farm, the shaping and care of the land to provide food, attracted relations who then also called it home.

It was perplexing to me that the Garry Oak system seemed to be treated as though it was a natural phenomenon instead of the example of human ingenuity it really is. It made me wonder that as we approach the restoration of these areas, why wasn't the human relationship put at the center of the plans beyond the pulling of undesirable species and the planting of those that have been found to occur in Garry Oak systems? If I left my farm to its own devices, it would be no surprise that I would eventually find myself standing in a sea of weeds. Human relation with these places could not end simply when the pressing of the "reboot" button was done or even down the road when the money ran out as it seemed to here.

Like so many of my other professional experiences at restoration sites, this was not a failure of intent. This was a failure of execution. This failure of execution was not in the initiation, it was in its continuation. This is what I mean when I said that I could see that both the conservation area above and Ye'yumnuts below were both calling for human relationship.

Garry Oak systems rely on reciprocity. Not just the human labour that goes into planting species that may have once resided there or pulling the scotch broom that has invaded. They need the intimacy of human RELATIONSHIP. Mutual reliance is what made these systems thrive. Their existence provided sustenance. Our reliance on that sustenance meant that we nurtured these places. Conservation models lack such reciprocity. There is no mutual reliance. There is maintenance of an aesthetic for the benefit of our other relations, but we often leave ourselves out. A maintenance that may only last as long as the funding. A maintenance that may not know all of the land practices used to shape it long ago.

Obviously, we no longer rely on the land as directly to provide our sustenance and thus cannot return to that part of our history (though in some cases our communities are reclaiming our food security and food sovereignty). It struck me as I sat in ceremony, considering the nature of human relationship with

Ye'yumnuts and its future, that the critically important issue of food security had never entered into any invasive species or ecological restoration project I had been involved in beyond impacts to agricultural area. The colonial concept that our food system is strictly agrarian is a haunting reminder of the perceived notion of settlers that our pre-contact lands were unproductive and "wild". This continues to permeate our perceptions and consideration of food security issues and how to improve them. Foods produced in "naturalized" areas could be a way to fortify not only ourselves but our relationship with the land too. By addressing food security outside of the agrarian setting, we can establish the mutual reliance needed to ensure mutual thriving. What if instead of adopting a section of highway, we instead adopted a camas patch?

Even though these two landscapes that became arbitrarily divided by jurisdiction looked so different as a result of their differing levels of care over the past few decades, their contrast made clear to me that their challenges were united by the same need for deeper human relation. I realized that our primary goal in healing our land and waters should be to deepen our relationship with them. We become so focused on things like choosing the right plants and targeting plants that "don't belong" for removal that we forget about the greater role we need to fulfill as the balancers of the ecosystem. Many of the challenges we face with long term success of restoration projects seemed as though they could be resolved by ensuring our relationship with our land and waters is sustained over time. The question I pondered as I looked over Ye'yumnuts in the misty morning light had gone from "how do we fix this?" to "What can we do to strengthen human relationships with this place?" While food security was one possible way to do that, it could not be the only opportunity to deepen our relationship with this place for mutual benefit. Focusing on the deepening of relationships could ensure the mutual reliance required. It is interesting that we expect the results of our mutual reliance with the land in the past as the results of today's restoration goals. To put things back to what was forgetting that what was, isn't our context now. For all that we try to do the right thing by our Earth Mother, without human relationship, success will remain limited.

If there was a message that Ye'yumnuts was trying to give us all, I really believe it to be this:

"We need each other."

The whole system with which we attempt to do ecological restoration with government agencies dooms us to fail. There. I said it. The money will always run out. The budgets for environmental projects will always be the first to be cut. The volunteers will always burn out. Deliverables for funding always have to be sexy. Long term care isn't sexy. The work of relationships isn't sexy.

As I walked up the hill into the conservation area, I turned around to look at Ye'yumnuts below. I breathed in deeply and I smiled. What I saw down there was an opportunity. An opportunity to work in a new way. To focus on the depth of relationships. To create relationships of mutual reliance where the land and the people needed and cared for each other. It would not be an attempt to return back to a time that existed before, or a context for which we no longer reside, but a focus on the potential of the relationships of now. What do we need? What are our values that determine that? What do our relations need? How can we deepen our relationships?

Work was already being done to strengthen relationship with Ye'yumnuts. Perhaps it was the relational intuition of those involved in the Ye'yumnuts project that began that. The work that the University of Victoria students were doing had somehow become siloed as cultural education project but really they

were deepening the relationship with it by providing cultural ties to the community. The work that would ensure mutual reliance had already begun. This work was not separate from restoration plans. It was all part of land healing. Through this mutual reliance we heal ourselves and the land.

“Chocolate lily, tiger lily, were all part of our food. We didn't have modern potato and other fruits and vegetables. If you didn't have them put away, you wouldn't have food for the winter. You had to look after it and make sure it thrived. We were all part of it. Sometimes we would leave it alone for awhile. Several years. To let it replenish for ourselves. We grew up with caring for what today is called “the environment”. Caring for our land. Our stores. It was all part of our learning.” - Diane Modeste

The Lesson that Healing the Land is More than Ecological Restoration

The potential of Ye'yumnuts to demonstrate land healing done “our way” excited me. The notion that our values and our relational foundation could guide us felt as though we could finally resolve the challenges many such ecological restoration projects faced. Land healing was more than just fixing habitat for our other relations. It was about the interconnectedness that Luschiim talked with me about.

“Everything is what sustains us. Everything is interconnected on this land. Even though we don't eat the grass, the deer eat certain grasses. Even though we don't eat that worm, they keep the ground aerated. So everything's got a purpose. That quote is from my mother. My mother said it perfectly. Everything is interconnected.” - Luschiim

My time at Ye'yumnuts helped me to see that this interconnectedness was not just about connections between relations. It was also connection between concepts, categories, and understanding. All are required for healing of the land. Being balancers of the ecosystem is more than a balancing of the trees and weeds and animal relations. It is a balancing of connection to history and culture. It is to balance the mental and physical health of our people. Even the balance is interconnected. The interconnectedness of this collective and connective healing would be what would drive and sustain what Ye'yumnuts was to become.

One of my first visits to Ye'yumnuts with my friend Harold Joe helped me to recognize this. Harold plays the very important role as Cowichan Tribes' archaeological cultural consultant. Harold also fulfills the role in the community as a self-described grave digger and death worker. Harold is deeply connected to our ancestors through this work. Ye'yumnuts being a burial site made it important that my work there follow the proper protocols and honour the ancestors there. It was from Harold that my conventional thoughts about things like ecological restoration really turned upside down. As we talked about what the site was to become and which plants we might plant there, Harold spoke of what the ancestors resting at the site needed. I had never really thought about that consideration when thinking about planning a restoration project. What did the ancestors need? Harold suggested that it would be important to plant things that the ancestors would recognize. He also pointed out the protocol that food plants cannot be harvested over the burial site. We would also need to be mindful of deep-rooted plants

and trees that could disturb the archaeological remains. While it would have been easy to just take these as simple instructions, they really started to shape how this land healing effort would be different. Honouring the ancestors was fundamentally important. Our consideration of what would be done there was far more significant than a simple planting plan. What we did here connected us with the very people who had lived there over a thousand years ago. What we did here was about relational connection that spanned time. In all my years working in ecological restoration, I had never made such considerations.

Projects were well under way at Ye'yumnuts when I began there. Graduate students from the University of Victoria were working on a number of projects meant to provide Indigenous-related curriculum for the local school district. Being within walking distance to Ye'yumnuts, the site provided an incredible opportunity for place-based learning. Anthropologist, Brian Thom, graciously welcomed me into the fold with the students taking the Anthropology course he taught as they partnered with Cowichan Elders, knowledge holders and school district staff to develop what can only be described as incredible interpretive opportunities for students. Their skills and imagination literally brought to life what life in the village may have looked like and what it would have been like. It was clear that the work they were doing was just as much a part of land healing as was the creation of a planting plan. Without establishing connection to place, how could we possibly establish the connection needed to care for the land into the future?

It was this idea of cultural connection to the land that greatly intrigued me. For so long I had seen restoration plans fail over the long term. I wondered if this was part of the solution. To take on the responsibility of balancers of the ecosystem, we would need to understand that responsibility. Understanding that responsibility meant knowing the place with which we were to bring balance. The balance was more than the populations of our plants and animal relations. It included the balance of human need too. Again, we needed the balance of interconnectedness of topics or things that we ordinarily assign to separate categories. Social sciences. Applied sciences. These projects could have run in parallel, and ordinarily they may have, but suddenly it became blatantly obvious to me that they needed each other. The mutual reliance required of Indigenous Ecology.

Planting plans had been made earlier in the project process by architecture students from the University of British Columbia. Preliminary plans had also been made by the provincial government and their contractor. Plans that you would expect from a normal restoration plan. The direction given by the provincial government was largely to restore what should reside within a Garry Oak meadow and to suppress weedy species. Plans consisted of lists of appropriate meadow habitat plants and weed suppression techniques. The plans were quite comprehensive. I was impressed by the depth of knowledge. The goal was to accomplish largely what had been done in the Garry Oak conservation area up the hill. While there was no doubt in my mind that the experience of the native plant nursery would lead to an initially successful planting plan that would look amazing and provide a number of relations improved habitat opportunities, I felt like to look at the failings of what was up the hill in the conservation area, was to see Ye'yumnuts future. Without continued human support, successes initially gained would be lost. I also felt like there was a misunderstanding of what the desire was of Cowichan Tribes for what the area was to be. To plant in this typical way and treat the site as only an ecological restoration site was to create a missed opportunity to strengthen community connection to culture, history, and to traditional plants used for food, social and ceremonial uses. The plan may create that which was there before, but in this way, it would not ensure the connection to and perpetuation of

important cultural knowledge. It would not strengthen connection to place beyond the admiration of the aesthetic.

The work that the university students were doing was focused on providing curriculum opportunities for the neighboring schools. Being responsible for the development of Cowichan Tribes invasive plant management plan and replanting list myself, I could see there was opportunity to do the same with plants that went beyond simply planting meadow habitats. There were opportunities to choose appropriate locations to plant food, medicinal, and technological plants in concentrated areas mimicking things like berry patches that would have been tended to by a family to whom it belonged. Opportunities for plantings that would provide interpretive and hands-on educational opportunities about specific plants and their uses. Opportunities for demonstrations on using specific plants including their harvest, maintenance, preparation, and preservation. I saw this as more of a connecting opportunity than a planting plan. Lands staff agreed and I continued to feel excited about the opportunities that working in this way could provide. This would be working to ensure continued cultural connection and perpetuation of this important plant knowledge into the future. Such that perhaps we may come to rely on our old “stores” at least partially, again. The gaps created by colonialism in the passing of our knowledge and resulting disconnection from culture, needed the opportunity to be filled. We could create the context for a deepening of relationship that would help ensure the needs of all relations, human and land, would be met.

This cultural connection to the land is an equally important and unrealized part of land healing. We must find ways to deepen and strengthen our connection to place for land healing to be successful over time. The land needs us. The trouble is that we believe that we don't need the land. Perhaps this is somewhat true. We may not need the land as directly as we once did. When we relied upon it more directly as the caring hands that tended to it for foods, medicine, and technology, our lives depended upon it. Now we can purchase all of these things at the store. Our modern lives have been filled with the activities of our modern economy and ways of being. While we can shift back somewhat to reclaim many of these practices and work toward the improvement of things like food security and food sovereignty, we will never have this sort of mutual reliance in the modern world. We need to find other ways that we can need the land that will restore our connection. This is where finding the relational ties between our modern-day selves and the land is critical to successful land healing initiatives. In this case, bringing together the meeting of educational needs with the ecological ones. The bringing together of cultural needs, learning opportunities, with ecological ones. That through these new versions of mutual reliance we may then reclaim some of these practices so that they may be integrated into our daily lives again. Practices we can make part of our lives as we recognize and commit to our fulfillment as balancers of the ecosystem. Greater cultural understanding and learning opportunities through projects such as Ye'yumnuts, strengthen connection to the land, heal our spirits, and strengthen a relational connection that was always there. It became so incredibly clear to me that healing community and healing the land went together. We are the land. If we heal ourselves, we heal the land. The land can provide that opportunity for us. This was a beautiful example of reciprocity. Never again will I approach an “ecological restoration” project without addressing community needs alongside planning actions toward land healing.

My daughters and I walked along the creek that winds its way through our neighborhood in search of cottonwood buds. It was spring and it was time for this annual family activity to gather one of our medicines. I watched with pride and admiration as we broke apart and the girls began searching on their

own for the fallen branches with the buds we would pick off. We had been doing things like this since they were very little. For them, this is simply their lives. Each season marked by another gathering opportunity, the observation of certain plants flowering, and of where the bears and salmon are and what they are doing. Each season of gathering, I talk to the girls about reciprocity toward the plants and trees we receive gifts from. As a parent, you never really know how much they take in. Parents go on about all kinds of things that seem to fly over their heads. They are 12 now, almost 13. Where does the time go I wondered as I continued working on my own, watching them downstream. They ended up working together. One finding branches and bringing them to the other at the container to pick the buds into. I was further up the creek, perched up high, and able to overhear their conversation without them realizing I was listening. They were talking about the medicine tree. The name they had given to this one immense cottonwood tree that every year dropped many, many, branches. They were talking about the medicine she helped to make. Then I overheard one say to the other, "You've taken enough from over there. We need to leave some for the bees." My heart swelled. They remembered. The cottonwood buds are a first food for pollinators. It is what they use to make propolis. They continued working and finally stood up and called for me. I came down and we realized we had harvested enough. Hands on hips, one of my girls said to me, "Ok, so what should we do for the medicine tree this year?" Again, my heart swelled. Reciprocity was automatic for them. The medicine tree had given to our family to make healing salves from her dropped buds and now it was our turn to give to her. I said, "what do you think we should do this year?" Last year we had pulled the scotch broom that had begun overcoming the area. This year we noticed a few daphne laurel appearing as well as what seemed like a lot of garbage that had flowed downstream onto the banks. The girls decided we would go back to the house, get the appropriate protective gear (daphne laurel is toxic) and garbage bags, and come back and pull the daphne and collect the garbage. When we finished, we said good-bye and thanks to the medicine tree. The girls said together, "see you next year!"

I share this story because what my children have taught me, as well as the children I have had the opportunity to share plant knowledge and traditional medicine making with through my kids' schools and Girl Guides of Canada, is that both they and the land have much to gain by finding ways to deepening their connection. This is not about just by having them spend time on the land and making them learn the names of trees and plants (which they will often forget). This is about providing opportunities to deepen their connection through things like teaching plant uses. Finding ways for them to see and experience how these plants and trees can provide for them and be integrated into their everyday lives. If we do this, children will maintain that connection and return the favor to the land. One of my favourite Guides, a super keen and spunky character, said to me, when talking about what reciprocity was, "Well it's only good manners! Duh!" Another time I took the Guides out for a return trip to a place we visited before where we talked about plant medicines and technology and I shared some traditional stories about the standing people (the trees). We had made some salves with what we collected the following week. On our return trip, I had the girls do a scavenger hunt to find the plants and trees based on the plants based on their uses and stories that I taught them on our first trip. I asked them to write the actual names of the plants and trees if they remembered them as well. What was fascinating is that they completely remembered the plants and trees based on the uses and stories. They remembered around 25% of the actual names. Knowing our plant relations through their relationships with us and our other relations placed them directly into a relational worldview. They were no longer simply part of the green background of being in "nature". They were our helpers. They were the helpers of other animals they liked. They won't forget them. We created a relationship such that when I took

them back a third time to remove some scotch broom (an activity that had created much belly aching previously), there wasn't a single complaint. They were going to help the forest that helped heal their skin. "Seemed like a fair deal" one of the girls said to me when I asked why they weren't complaining this time.

The children show us that by healing other parts of our lives, we can heal the land. We can create meaningful relationships with the land by simply getting to know the land in a more personal way that compels action. These may no longer be our stores, but they can provide for us in other ways that fit into our modern world if we let them. They may just provide the answers we need to improving community well being. Our approaches to land healing must go beyond plant lists and tactics to remove weeds. They must include approaches to deepen human relationship so that the reciprocity needed, will be there. In creating these relationships, a mutual reliance, we create long-term opportunity for the land to be cared for, and the opportunity for us to be balancers once more.

The Lesson of Rising Up for Our Indigenous Ecology

Upon expressing my frustration about failed ecological restoration projects and government hurdles to taking appropriate action to manage our lands, our way, I asked Luschiim, "What can we do?"

What can we do? What are we allowed to do? It seems like every time we turn around there's rules and regulations and laws that prevent us from doing things. Yeah. And that's where we are.

Yeah. So what is our role? Can we bull our way through and make our role be heard?

That's pretty well where we've gotta go.- Luschiim

This is where it gets complicated. Indigenous communities find themselves in a jurisdictional tangle over lands that are acknowledged as theirs and yet they have little control over them. I have sat in many multi-stakeholder meetings about issues of ecological restoration over the course of my career. Mainly as an independent expert to provide guidance as the stakeholders work together to figure out what they may want to do. It was an entirely new experience for me as I sat in such a meeting about Ye'yumnuts, as part of the "stake" that Cowichan Tribes represented. I was invited as I was to address the invasive species issues and determine the appropriate plants to plant based on my experience and the research I was doing. At least that is what we thought my role was.

This was a transformative experience. I felt frustration. I felt dismissed. I felt unheard. I finally understood the throwing of hands up in the air that comes with the feeling of powerlessness. All things I had only ever observed in this type of context, but not personally experienced before. I was no loner protected by the shield of "expertise". In this case, I was just another Indigenous stake at the table.

Now I need to say up front that I don't think any of what I am about to describe is anyone in the room's fault. Everyone sitting there is caught in the context of the legacy of colonialism and probably doesn't recognize that their work continues to perpetuate it. But it does. Ye'yumnuts is currently under the jurisdiction of the provincial government in spite of it being Cowichan Tribes' ancient village. While

there is an attempt to allow Cowichan Tribes to provide guidance as to what they would like to have happen with the site, this opportunity still exists within the hierarchy of colonial governance.

I sat in the meeting and tried to focus less on the back and forth between parties and more on the feelings the conversation was creating in me. Frustration is the best descriptor. I could hear our ideas come forward only to then be shown what they (the government) had already decided they wanted to do with the land with their contractor. It felt like more of a presentation of what we were to accept as opposed to actually working together toward creating a plan based on what our (Cowichan Tribes) goals for the site were. It felt disorienting as we didn't even know that a contractor had been hired. I tried to understand what had happened to get us to this point. It seemed to me that we, and those involved long before me, had made clear what we wanted for the site. It felt confusing to me to be treated this way as I have long done work for this ministry that I found to be dismissive in this context. I bit my tongue for as long as I could.

Then I could hear Luschiim's voice in my head. "Can we bull our way through and make our voice be heard? That's pretty well where we need to go."

I tried to resist being the bull, but she broke free and charged right in. I cut off the direction of the conversation which was heading into logistics of that which wasn't going to achieve our desired result.

I asserted our concerns regarding the plans which had the potential to further introduce weedy species to the site and added that their plan was not what was desired. Perhaps it was my own ego, used to being yielded to when sitting in these situations in the "expert" seat, that I felt completely taken aback by the instant and assertive dismissal of my comments. I don't think I have ever felt so minimized professionally. It was hard to take. As I looked around, my Cowichan friends did not seem surprised or shocked. I got it now. I understood.

I let myself feel sad for only a brief moment. Be the bull, I thought to myself. Be the bull, as Luschiim said.

After much back and forth, an agreement was struck that I could work with the contractor hired to complete the native planting plan. I really felt for the contractor as she was so clearly caught in the middle and clearly unaware of the entire context. Meanwhile the preliminary work would begin by the ministry which was to protect archaeological remains. Drawings were made of what this should look like. More back and forth that felt unclear. Then the meeting was over.

Time passed and I had heard that the early work had been completed by the ministry. I decided to visit Ye'yumnuts to check it out. I couldn't believe what I saw. It was nothing like what we had drawn at all. It wasn't what we wanted. I felt confused and disappointed and frustrated and sad. What had been lost in translation? Sadly, I didn't feel surprised at all by what I saw. The dismissiveness I had experienced in that meeting was a hint of what was to come. I left that for my Lands Department friends to address. We would just have to find a way to make it work.

This was a humbling demonstration of what Indigenous communities face in these types of situations. Some will say, we've come a long way as now we are actually included in the conversations and "consulted". That may be true. Sometimes we luck out and get listened to. I have seen demonstrations of government agencies and staff that really do make it work the best they can. In fact, I have heard many of them complain that the entire system is set up to fail Indigenous communities. In this case, it certainly felt that way. Here we are, a site of such importance to the community, and the community

doesn't have full control of it. How is that right? Again, not my fight, but my duty to point out the injustice of it. This is most certainly not reconciliation.

I carried on with my part of the project having been invited by the native plant nursery contractor to help with the planting plan they had been charged with creating. I had already compiled lists of plants to serve the multiple purposes of relationship building that was to form the plan. Plants for ceremony, technology, food, and medicines. I was actively engaged in the writing of the plan. I remain grateful to Saanich Native plants as we collectively found ourselves caught in the middle of the strangeness of the situation. They are exemplary Indigenous allies trying to do the right thing.

The planting plan that we wrote for Ye'yumnuts together resulted in a plan that is probably the most decolonized version of such a plan I have yet to see. We incorporated the hulq'minum language and used some of the terminology I had developed to that point that reflected Indigenous Ecology. We included the cultural learning opportunities to deepen connection with the land. I was still mid-journey at this point so the document did not receive the full benefit of all that I learned up to this point in time (as I write now). I realize that the purpose of the entire exercise was to inform what I share with you now. I am grateful for that process and the openness and inclusiveness of the contractor that most certainly went out of their way to do the right thing. The plan reflected the values and goals of the community and made use of the incredible expertise of all involved.

One of the objectives of this research journey set by my co-researchers, Cowichan Tribes, was to develop a framework for environmental/ecological decision-making for the community that could be shared with other Indigenous communities. This objective was set long before I ever sat in the meetings with other government agencies as I described. Those experiences really made it clear to me that meeting that objective was more important than ever. Clearly, they were very familiar with these types of experiences. I knew they were problematic but experiencing it for myself made it clear that we had to provide a tool not just for our own communities but also to provide to non-Indigenous government agencies. A decision-making framework for land healing that made clear how we approach decision-making from our relational worldview, guided by our values. This gives us the power to say, "This is how we work on these issues and this is what you are going to use to work with us." The development of the "Webwork for Values-based Land Healing" is meant to provide just that. As it was developed through the lessons Ye'yumnuts taught me, I wish we had it to begin the process with.

Having a new way to see and approach land healing is one thing. The reality of the context of implementing these is quite another. Existing colonial governance structures, notions of land ownership, funding models, and modern ecology are examples of what can feel like a multitude of hurdles Indigenous peoples must overcome as we move toward ecological reconciliation. Ye'yumnuts made me remember that resilience is who we are as Indigenous people. Our existence is resistance as the common saying in my world goes. With Luschiim's words in the back of my mind, I embraced a newfound confidence in asserting our way of healing the land. This was not about disregarding other knowledges. This was about moving land healing onto our relational foundation so that those other knowledges can be applied and assured a more successful future. Resisting the way things have always been done is to rise up for our Indigenous Ecology. I came to realize throughout this process that this was less a battle of wills and more a battle for the opportunity to be teachers ourselves. Ye'yumnuts introduced me to so many allies excited by the possibility of doing things "our way". Upon disrupting these regular "ways of doing", there was a captive and receptive audience. Many of whom expressed

the same frustrations that I had with poor, long-term outcomes. They too wanted a new way to approach land healing. I came to realize that we cannot rise-up on our own as the journey is difficult and long. We need our allies but they cannot help us with that which they do not know. We must disrupt these processes in a way that creates the space we need to bring our Indigenous ecology to light. Our relational worldview is about building connections. We can rise up as teachers to help them work with us relationally. We share values and frustrations. We may not win everyone over, change is hard, but we need to share this gift of our relational worldview so that we may bring healing to the land.

There is an Indigenous Ecology

In the beginning, I felt as though my research journey was failing as I had not received a clear or definitive answer on the impacts of invasive species on important food and medicinal plant species. For all of my discussions with knowledge holders, any time I directly asked the question, “What do you think about invasive species?” I received stories about an instance when one species provided something important and then another when that same species made a medicine disappear entirely from a place where they had collected from for as long as they could remember. Ye’yumnuts, like any other good teacher, refused to make it easy and provide a clear answer for me too. I would have to take what was shown to me and figure it out. I had to do the work. Sometimes it felt as though I was being given a riddle. Like it was some sort of test I was supposed to pass before I would be given yet another. I recall one of Luschiim’s first meetings with me where he seemed to get frustrated with me. He made it clear. His job was not to give me any answers at all. His job was to share what he knew. I had to do the work to decide what came next. At first this responsibility felt heavy. Like there was some great answer that I may possibly get wrong. After the lesson of permission, I let go of the heaviness. I was free. I trusted my teachers. I let the learning unfold in the process. Slowly but surely, by sitting, watching, and listening, the lessons became known. The connections woven together. Just like the artifacts that emerged from the earth of Ye’yumnuts, so too did our Indigenous ecology.

Chapter 7

Conclusion: The Frog Finds Our Indigenous Ecology

“When the first white settlers arrived in Montana, the native Salish people warned them not to settle the West side of the Bitterroot River.

Ignoring these warnings, a small group of people colonized that side of the river. Three quarters, 75%- died of a mysterious disease.

The Bitterroot river carves out a 75 mile canyon in Western Montana. It’s not deep at all, averaging only about 3 feet. Animals and humans cross it very easily, and it’s not really a barrier to any kind of travel.

The Salish believed evil spirits lived in the area.

Saint Mary’s mission, founded in 1841, was the first permanent European settlement in Montana. The European settlers weren’t very nice to the natives, and the poor relationship caused the mission to close.

A trading post which mostly serviced trappers, Fort Owen, popped up about 10 years later. When the owner, John Owen discovered gold in the area, this set off a gold rush in the area.

Unfortunately, the disease on the West side of the Bitterroot river made life difficult. Not much was known about this disease until the early 1800s, when the state board of health brought in Louis Wilson and William Chowning to investigate. They did a lot of research on the disease, eventually creating a map of the cases. At the same time, a few other doctors were sent to investigate along with Williams and Chowning.

Together they found out that the disease was caught outdoors in the spring time and that the Salish rarely got the disease.

The more these early researchers found out about it, the more mysterious it became.

People became really sore, and developed a fever. A rash of purple spots dotted the body. Some would go blind or deaf. Loss of balance was pretty common.

It didn’t appear to be contagious.

The disease remained mysterious, until two doctors, L.P. Macalla and H.A. Bereton had a patient who was bitten by a tick. That patient later developed the symptoms described in the post above. So they took the tick, and allowed it to bite another healthy person. They got the disease So they fed a tick on that person, and that person got the disease as well. Unfortunately, they did not publish these results until much later.

At the same time as this was going on, a young microbiologist by the name of Howard Taylor Ricketts set up shop in the area. With few laboratory supplies, all of his experiments were done in a tent, he began to look for the cause of this perplexing disease.

It didn't take too long before he met a local family living in black measles territory. Their son, William, 10 years old, had caught the disease. When Ricketts came to visit, he found ticks. Lots of ticks. Everyone in the family had been bitten by them.

So he drew blood from William. Langdon, stained it with a chemical called Eosin, and found bacteria. He dissected ticks in the area, found the bacteria. He also found that he could pass the disease to guinea pigs. He also found bacteria in tick eggs. He named the bacteria after himself, Rickettsia rickettsia.

The disease would go on to be well studied, and go by a few other names. However, over time, the scientific community settled on a name originally published in 1903. Rocky Mountain Spotted Fever.”⁹⁶

My tweeted reply to this story by @BugQuestions was, “Thanks for sharing. Yet another example of settlers’ disregard for our knowledges and of scientists describing our knowledges in a mystical way that allows them to then take credit for another “discovery”. It got some likes. Clearly my sentiment resonated with others. I spent an entire day ruminating on why it was that this story spoke to me. It went beyond the usual fact that for an invasive species specialist like me, these types of origins-of-invasion stories are really interesting.

It was the familiarity of the devaluation of Indigenous knowledges that made me unable to stop thinking about it. I found myself down a rabbit hole researching the story further. As I read the report from Surgeon Cobb who was sent to the Bitterroot Valley in 1902⁹⁷, I felt disappointed that over one hundred years later, I could so strongly connect with the disconnect between Indigenous knowledge and Western science.

There is an established tradition of mystifying the advice and information provided by Indigenous peoples. While it would be easy to attribute it to both the attempted erasure of our communities and assertion of the exceptionalism of settlers and move on, I think we have a collective responsibility (settlers and Indigenous people) to dig deeper and understand how and why this happens. Mystification of our knowledges and advice has long been a strategy of those working from the Western scientific worldview. It is an easy way to devalue and ultimately disregard it. I believe from my own experiences and observations there are two distinct reasons that motivate this. The first is that in our modern world, the advice and knowledges of Indigenous peoples may not be convenient to the goals and intentions of those receiving it. The second is that devaluation and disregard of related information makes it easier to lay claim to a “discovery”.

This tradition carries on today and while things are getting better in some respects, our knowledges are being sought in a variety of contexts, we are still merely included in processes of decision-making and research that we do not quite fit within. Our knowledges cannot be copied and pasted into colonial structures. Space must be made for the application of our worldview for the full benefit of it to be realized. Inclusion within a context we do not quite fit stifles our potential. I cannot help but grieve the loss of the potential of our knowledge and stories to influence the trajectory of knowledge acquisition

⁹⁶ Ask an Entomologist (@BugQuestions) 2020-06-08 7:31PM Tweet.

⁹⁷ J. O. Cobb, The so-called "spotted fever" of the Rocky Mountains—A new disease in Bitter Root Valley, Mont. Public Health Reports (1896-1970) Vol. 17, No. 33 (August 15, 1902), pp. 1868-1870 Published by: Sage Publications, Inc. Stable URL: <https://www.jstor.org/stable/41470772> Accessed: 10-06-2020 01:45 UTC

past and present. How many of our stories could have spared lives? What solutions do we hold that cannot be uncovered?

The research journey I have taken has at times felt incredibly lonely. While the work of Indigenous academics is becoming more commonplace in fields such as education, law and the humanities, there are far fewer of us to be found in the sciences beyond the graduate student level. Indigenous students in science present additional challenges to the academy. In addition to the lack of available guidance from experienced Indigenous scientists, the research approaches of Indigenous scientific inquiry are not congruent with the parameters of common scientific funding agencies such as the National Science and Research Council of Canada. Our science straddles the natural sciences and humanities by common academic definition. This is just another reminder, that as an Indigenous academic, you do not quite fit. By profession, I am a weed scientist, but have a fellowship from the Social Sciences and Humanities Research Council of Canada. It was difficult to find a supervisor with related expertise. It was difficult to find committee members that felt comfortable sitting on my committee as my work was largely outside of their expertise. I was told by a mentor that embracing my Indigenous side may discredit me as a scientist. I experienced challenges with ethics processes that do not recognize Indigenous students working with their own community and do not recognize how Indigenous research methodology works.

I mention these challenges as an Indigenous graduate student in science to bring to your attention that my contribution to the academy does not lie solely within the pages of this work. My presence and journey in this institution resulted in my acquisition of an unintended and badly needed area of expertise. That of an Indigenous scientist successfully navigating the academy. There is considerable additional load carried by Indigenous graduate students in science over and above non-Indigenous students. Additional work is required to navigate a system based on achievement that is not congruent with our worldview. While we work to educate ourselves within our respective areas of research, we are working to provide education to our well-meaning allies trying to support us. I am proud of the time I have spent to support other Indigenous students needing the help of someone like me. I wish I had had the same support available myself. I want to make sure on behalf of others like me, that this additional burden does not go unnoticed as a contribution. To my Indigenous brothers and sisters in STEM, to our brothers and sisters of colour in STEM for whom we share many burdens within the academy, I see you. I could not let this opportunity pass without helping the people of privilege within these institutions to see you too.

This newfound expertise has led to additional opportunities to teach non-Indigenous members of the academy how they can be a strong Indigenous ally for students. While I have been very fortunate that my own supervisor and committee have been fairly intuitive in their abilities to do so, I have learned much from them. What I have learned has contributed to the development of structured guidance and seminar opportunities for professors across Canada. Allyship in academia is an area of research I hope to build upon in the future as there is a clear and demonstrated need from both students and professors. Never before has the concept of allyship been more important.

I wrote the following story as a submission to the Social Sciences and Humanities Research Council of Canada's Storytellers Competition in 2020. The purpose of the competition is to "challenge postsecondary students to show Canadians, in up to three minutes or 300 words, how social sciences and humanities research is affecting our lives, our world, and our future for the better." I felt compelled to enter the competition as its purpose resonated deeply with me and it is not often that an opportunity

for the dissemination of research that is consistent with decolonizing practices comes from a conventional research agency.

I could hear the water lapping upon the shore. I felt drawn to it, but the Elders told me to pay no mind. It wasn't my time yet. There were lessons this tadpole had yet to learn from my relations in the water. In the water I learned of the Great Mystery, relationality, and reciprocity. I learned from the salmon, the herring, the rocks, and the tides. To be enveloped by the water was a constant reminder of my connection to, and potential impact upon, my relations that shared this world.

It came time for me to follow the sound of the waves breaking upon the shore. Feeling the sand beneath my new feet, I hopped toward the forest. Here I would learn the lessons of my land relations. Upon the land I learned of Western Science, of the scientific method. I learned from the bears, the wolves, and the humans.

My land relations told me their world was changing. I already knew. We could taste it long ago in the water world. We tried to warn them, but they could not hear us. They were trying to fix our Earth mother but what they knew was not enough. I could see that they needed the lessons of the water world, but they could not swim.

As a frog, it was clear to me that we needed the lessons of both realms, the water and the land, to heal our Earth mother. It was clear to me that we frogs could not do this alone.

So I led my land relations to the shoreline. I taught them to swim as I could. I taught them the lessons of the Great Mystery, of relationality, of reciprocity, as they had taught me of Western Science. I taught them of their role as the Balancers of our ecosystem. To be guided by the values of all our relations, on the land and the water.

Together we learned that we need each other to heal our Earth Mother. To learn to swim and to walk so that we may cross realms for wisdom and knowledge as we need to. For the benefit of all. We called it our Indigenous Ecology. And with its power, no challenge will be too great.

The story of the frog finding our Indigenous ecology was meant to synthesize my research journey through our Indigenous tradition of teaching through storytelling. My contribution within the pages of this dissertation came from a very personal space. The coming together of an Indigenous woman and a woman of science. The frog was chosen as it symbolizes the ability to traverse two worlds, water and land. Frogs are used by shaman as they represent adaptability and are powerful givers of knowledge. My research journey was one focused on becoming the best frog I could be.

I began my research with the intention of examining the impacts of invasive species and ecological restoration on Indigenous food security and food sovereignty. An intention that arose from my many years of experience in the field as an invasive species specialist. As preliminary research began, additional areas of possible inquiry surfaced such as answering the question, "What do our coastal Indigenous communities think and what do our stories and oral histories tell us about invasive species and the related field of ecological restoration?" The literature had nothing to offer on this subject other than a few studies completed by Trigger⁹⁸ who worked with Indigenous Australians.

⁹⁸ Trigger, D.S. "Indigeneity, Fertility, and What 'Belongs' in the Australian Bush: Aboriginal Responses to Introduced Animals and Plants in a Settler Descendant Society."

I felt that the best way to examine Indigenous perspectives on invasion biology and ecological restoration would be to utilize Indigenous research methodology to guide our inquiry. I learned all I could from the few existing resources on Indigenous research methodology⁹⁹. As I scoured the pages, it became clear that this research journey would serve an additional purpose. To explore and demonstrate what an Indigenous worldview offered complicated fields of scientific inquiry. The merging of these purposes resulted in the research question, “What does the application of an Indigenous worldview to ecological restoration tell us about the impacts of current land management approaches on Indigenous food security and food sovereignty in the context of our changing climate?”

As I worked to learn and embrace Indigenous research methodology, I realized that I should include my personal journey in this dissertation. This was both a decolonizing practice and provided an important part of the narrative. My unique position as an Indigenous woman trained in western science offered a credible and relatable perspective that contributes to the authenticity of this work. It has enabled me to reach and motivate scientists working in the dominant worldview with the possibility of utilizing the relational worldview in their own work.

Embracing Indigenous research methodology to study topics such as invasion biology and ecological restoration would not be a straight-forward process. While the limited resources on Indigenous research methodology provided foundational epistemology, ontology, and axiology, they did not speak directly to its application within scientific disciplines. I wrote with as much transparency as possible in hopes that including accounts of my personal struggles to shift worldviews, conduct research from a new worldview, and analyze the findings from that research, would provide guidance to others attempting similar work as no such instruction is available in the current literature.

Work with knowledge keepers and Elders revealed much more than perspectives on invasive species and their impacts. What emerged from this work was an environmental philosophy that rested upon the relational foundation of the Indigenous worldview. While much has been published about Indigenous knowledges pertaining to studies of the environment and environmental management, there has been little work on the origins of that knowledge, the Indigenous worldview, in this context. Trigger and Rose gathered perspectives on invasive species from the Indigenous peoples of Australia which provided insights on questions of belongingness, where no species belonged more so than others, and in some cases, exotic species were embraced. While early on in our work it seemed that we were coming to a similar conclusion, the emergence of what I called, Indigenous ecology, provided deeper insight that made clear that questions of belongingness were too simplistic. In some cases, stories shared with me put the same species in contrasting light. In one story Elder Luschiim shared, a species considered invasive, *Cytisus scoparius* (Scotch Broom) provided an important medicine. In another story he shared, *Cytisus scoparius* was causing the loss of a different medicinal plant species. There were several examples like this and yet they did not evoke a strong opinion on the species in question.

This collection of important oral history and plant knowledge of the Cowichan people and unheard-of perspectives for the field of weed science are valuable contributions themselves. The emergence of

⁹⁹Margaret Kovach, *Indigenous Methodologies: Characteristics, Conversations, and Contexts*.

Sean Wilson, *Research is Ceremony: Indigenous Research Methods*.

Robin Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*.

Indigenous ecology and the demonstration of the use of an Indigenous, relational worldview in applied and biological sciences are in my mind the most important contributions of this work. Understanding and contrasting the foundations of modern Eden ecology and Indigenous ecology has given valuable insights into modern understanding of important ecological concepts. The work I did alongside my co-researchers, Cowichan Tribes, made it possible to examine what an Indigenous ecology is and how it changes our understanding of our role in the ecosystem. We revealed foundational concepts such as legacy states of the environment which challenged modern concepts of “nature.” We addressed issues of belonging and dichotomies that apply to plants and animals that could contribute to food insecurity and the ability to adapt to a changing climate. All contributions that I hope will assist others in furthering our understanding of and ability to apply Indigenous ecology themselves.

As I continue to expand my personal network of Indigenous peoples working in academia across the world, I have noticed that our relational worldview is what unites us. It is a worldview that focuses on the interconnectedness of all relations and our land. It is important however, to acknowledge that the work I completed was certainly limited by its regionality. It is a common mistake to assume that all Indigenous communities think the same way and have the same opinions. It is that mistake that leads to the tokenism of Indigenous peoples. Indigenous communities are different. We come from different Nations and thus our histories, stories and cultures are different. Our lands and waters are different. Within Indigenous communities you are likely to find a spectrum of opinions on a myriad of topics, just like any other community. Given this, I must clearly acknowledge that the work I have done is most certainly not representative of all Indigenous peoples. The work I did was largely completed with Cowichan Tribes with the influence of other knowledge holders that are kwakwaka'wakw and my own Nlaka'pamux teachings. I may have come to different conclusions had I conducted this work in a different community (within British Columbia or even further afield). This is something that I would like the opportunity to explore further in the future.

As I pulled myself up the rocky bank in pursuit of a new and concerning invasive grass making itself a home in the traditional territory of Cowichan Tribes, I sat down. I looked out over the lake and breathed in deeply. I looked at the map on my ipad that marked the boundaries of this new invader and then sharply closed the cover. I looked over the land I had surveyed earlier. I could see where I had been going from one target to another. I sighed in disappointment at myself. Had I learned nothing?

It is so easy to slip back into the familiar. I justified my approach by telling myself I had a job to do. I shook my head at myself. This was an opportunity to do things differently while still getting the job done. I had a responsibility to make my work different. How could I take a relational approach?

I realized that I already moved through the area as I worked in a relational fashion. I pointed out the countless trails, pushes, possible dens, and food caches that had been created by our animal relations in the area: elk, cougars and bears. Things my colleagues barely noticed. I thought about the countless skeletal remains of elk I had walked by. I thought about the other plant species in the area and whether this was the desirable balance. I opened up my ipad and began creating a new map to guide our survey approach. A map inspired by the paths of our animal relations. I created additional data fields beyond simple plant identification, infestation size and density. I added fields intended to capture relational measures of ecological balance.

Who else might be using this grass? Were insect relations upon it? Were the birds eating the seeds? Had someone been taking bites of it as they browsed through the area? Was it laying down where animal

relations had bedded down? When mixed with the grass species considered native to the area, were our animal relations selecting only for that one?

I paused for a moment, worried what the powers that be would think. I let it go.

I said out loud, “We could really learn something here!”

I rose. Stretching in the remainder of the sunlight, I watched the approaching storm come up the valley on the other side of the lake. The game had changed. It was no longer plant “gotcha”. It was “Hello plant, how can I get to know you better?”

I went back to work without taking my relational lenses off.

I cannot answer the question of whether incorporating relational considerations will alter the outcomes of this invasive species project over the long term. I do know that it is likely that at the very least we will better understand the specific impacts of the presence of this species. We might also be better able to predict where it will go next. We are likely to gain insights into new solutions to contain it. We might not. What these considerations accomplish is opening the door to other paths of inquiry. Taking this extra time with the plants and other relations is a commitment to relational science. This change in the game also made clear the importance of connecting with place-based knowledge holders to get more information that could be used for comparative purposes. Information such as changes in migration patterns and populations of our animal relations in the area. Changes in plant populations. Changes in weather. Changes in the behaviour and activities of the humans. And finally, a long conversation to bring about a clear understanding of the desired balance for this territory so that our knowledges can come together for the greatest possible good.

Luschiim, early in my research journey responded to my question, “How do you know if a plant is of value to us for food or medicinal use?” by saying, “I live it.” His response weighed heavily upon me for a long time. I felt worried about meeting the responsibility as a plant knowledge keeper. In the future, how would we find the foods and medicines as our plant and animal relations change with the climate? I would have preferred some prescriptive direction to follow. How would I “live it” in this modern world? I finally got it. Sitting up there on that hill in the traditional territory of the Cowichan People two years later, I got it. The ancestors whispered in the wind across the lake, “This. This is to practice living it.”

I had at last allowed myself to fully embrace the freedoms that come with our Indigenous worldview. As we worked to heal the land, Indigenous research methodology was giving me the time to get to know our plant relations. Time that conventional approaches to weed science and ecological restoration did not provide. To live it was to embrace different methods of knowledge acquisition, to see relationally, and push the boundaries of science.

At this realization, the wise words of my friend and mentor, Dr. Michael Lickers, came directly into focus,

“Have you ever seen an Eagle fly with one wing?”

No.

You have to always remember where you come from (your dominant wing)

and because you live in this world,

you will need to learn to live and work here (the other, supportive wing).

*Only when you have a balance in both worlds-- both wings,
will you be able to soar to great heights.”*

I leave this journey excited by the potential of what our Indigenous world view offers other areas of science. Helping others to understand and apply our Indigenous worldview to their work may very well answer the question of what comes next for me. The potential of the Indigenous worldview to reveal new paths of inquiry that could lead to solutions to complicated and important fields of study is a fulfilling prospect.

It is not up to me to tell you what conclusions you should come to as we arrive at the end of this journey together. To do so would not follow the tradition of how we teach. As we part ways, it is now up to you to sit with this work, ponder it, try out parts of it, adapt the story to meet you where you are at. The very things I continue to do with it now. I leave this journey profoundly grateful that I have found the freedom to connect my head and my heart. I find myself on the other side of this journey changed forever. A relational scientist. I leave you with the words of Luschiim,

Everything is what sustains us.

Everything is interconnected.

On this land.

We are all connected.

Even though we don't eat the grass, the deer eat certain grasses.

Even though we don't eat that worm, others eat that worm and keep the ground aerated.

So everything's got a purpose.

Everything is what sustains us.

Everything is interconnected.

Huy ch q'u

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