

Anguilla Rostrata, Our Teacher: Addressing Anishnabe Epistemicide Through Eels

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Abstract

Epistemicide is proposed in global social theory to describe the deliberate decline of pluralistic knowledge that results from sweeping processes of assimilation and coloniality, including the introduction of settler colonialism as a way of being in place throughout North America. Attention to ontological pluralities demonstrates that individuals and groups are living in and from different *Lebenswelt*, or lifeworlds, a concept that supports different understandings of constructed and overlapping places and spaces to include epistemological foundations, phenomenological orientations, behaviours and institutions.

Anguilla rostrata, also known as eels, are migratory fishes with a deep saltwater origin who can traverse an aquatic path over two thousand miles; they migrate to and enter some freshwater environments across the North American continent. *Anguillid* species have been historically crucial to Indigenous societies and cultures around the world and are presently threatened by human behaviours. *Anguilla rostrata* has experienced massive decline in recent decades throughout North America, evoking an uneven response in multiple sectors. This dissertation seeks to align with methods and conventions in Anishnabe studies, informed by concepts in critical Indigenous geography and Indigenous environmental justice scholarship. The methods develop an embodied lifeworld that inquires about *Anguilla rostrata* through Anishnabe epistemological framing. The research is informed by an emerging Anishnabe geography along with Indigenous legal traditions for the revitalization of Indigenous lifeways as viable methods by which to frame possibilities for improved relationships with ecologies where *Anguilla rostrata* migrate.

Using place-based research, digital surveys, and interviews, the research offers possibilities for an enhanced understanding of eels through pursuit of epistemic justice. Approach of relationships with *Anguilla rostrata* involves temporal, environmental, and cognitive justice that argues for the eel's right to be and for amelioration of an inverted, destructive social and environmental order. The research demonstrates that violence rendered against eels must be acknowledged as a tangible effect of imposed governance regimes installed through brute force and ignorance in settler colonial modes of land seizure and occupation.

Dedication

For my grandmothers, the doorways between worlds
And my grandfathers, heart and fire
Apane – Gaagige

Acknowledgments

My foremost allegiance and gratitude will always go to *Kzhemnidoo*, the source of all things. I rely on my creator alone and I am thankful to the helpers and the mystery. Meegwech kete-Anishnabeg meenawa nayabishkawangwa; kzhe megwetch gaaige migizi, ginew, mushkodey bizhiki, myengun, gayeh. apane, maymayginebig. Respect to the many Elders, Grandmothers and Grandfathers, scholars, thinkers, teachers, misfits, chain-breakers, and ogimag (leaders) who came before me and flattened the grass where Anishnabeg carve our places in the world. To the Earth herself, may we all learn to respect and honor you for the powerful, majestic, selfless teacher, giver, and mother that you are. Meegwech ninmama aki shkakamikwe. Special and eternal love to the Eastern Doorway Mide family and the many Midemawgunidoog who are part of my close circle and the expansive spirals of all our relations. Meegwech to each and every one of you for those ways you contribute to my life and thinking, whether you have known it or not. Respect, acknowledgment, and thanks to those who we have lost in recent years, most notably my beloved gram, Odaymin Kwe-ibun, who is missed every day, along with friends, cousins, and extended relatives who have departed this Earth—especially grateful for the guidance and influence of Carol Edelman Warrior, Harry St. Denis, Edward Benton-Banai-ibun, and many others. Gigawabimin meenaw nekonisidoog weweni.

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Notes on Terminology

It is worthwhile to define and clarify the ways in which I understand some of the terms that frequently appear in this thesis, why I choose specific spellings, and so on. *Anishnabemowin* is a complex, dynamic, orally transmitted language that, in my view, is sacred and alive, and is best spelled phonetically, though there are conventions and established systems including syllabics and the “double vowel system.” These set recordable and legible linguistic norms for the language in written English. By sacred, I mean that Anishnabemowin has a spiritual origin and holds the capacity and potential to activate multiple forms of communication and understanding outside physical reality and is connected to the spiritual universe of the Anishnabeg. The double vowel system is “currently used in over 200 Anishinaabe communities in and around Quebec, Ontario, Manitoba, Saskatchewan, Alberta, North Dakota, Michigan, Wisconsin, and Minnesota” (*Gidinwewininaan*, 2022) and frequently appears in literature: i.e., the spelling of “Anishinaabe” and other vocabulary words. Where cited in text, I quote the double vowel system as it appears in original texts and elsewhere use the spellings I describe below.

In working with the language, I lean toward a phonetic spelling. I learn and reclaim my language primarily through hearing and listening, and my written practice is an effort to retain “how I hear” with less focus on how things look on the page. My spellings may differ from others; for example, Benton-Banai (1979) spells the term for the Great Mystery/Creator spirit as “*Gitche Manitou*” which I spell as *Kzhemnidoo* and others have spelled it in other ways. There are regional and philosophical differences based on dialect and history in terms of how people record and work with *Anishnabemowin*, the language. I hear the sound of “*Kzhemnidoo*” with the initial sound arriving somewhere between the pronunciation of “g” and “k” leaning more toward “k”,

but the sounds of those two letters in the spoken language are “practically interchangeable” (McGregor, 1987, v).

Algonquin-Anishnabeg at present-day Kitigan Zibi (which was formerly called the River Desert Band of Algonquin Indians) where I am a member have formed a written language lexicon in collaboration with linguists and fluent speakers; it has been in ongoing development since the 1960s. The lexicon is printed as books. Interestingly, one of the linguists who worked with the community and fluent speakers to develop the orthography had a “specialty in the Odjibway¹ dialect of the Algonkian language; this dialect differs so little from the River Desert Algonquin as to be negligible” (McGregor, 1987, p iii). The Algonquin lexicon uses diacritical accent marks to indicate pronunciation, which I have used less here but I am familiar with that writing system and use it elsewhere. I have been taught and come to know that in relearning Anishnabemowin, there is no wrong way. There is much subtlety and nuance to understand and express the language. Often, matters of translation are very personal but can also have collectively shared meanings and understandings. Below, I explain how I understand terms from Anishnabemowin as well as other terms which may have multiple or unclear meanings in the thesis. Where possible, I have defined the terms within the text as well, but the inclusion of a specific section is also an effort to support a clear read of the concepts that I work with throughout, both in Anishnabemowin and in English.

AadzokanAdzokanag (-ag is plural) or Atsokanan

Sacred stories belonging to the collective of Anishnabeg communities, frequently accessed through ceremonial rites and protocols; some are sharable only under some

¹ Spellings appear as in original text.

conditions. *Aadzokan* are often animate, living beings and can have physical and nonphysical forms.

Aanikobijigan

A string of lives, representing generations. Here I point to the comprehensive definition offered by Kekek Jason Stark. “Our way of life is passed down through the generations along an interconnected string entitled *nindaanikoobijiganag*... The concept *aanikoobijigan* is defined as an ancestor, a great-grandparent, and a great-grandchild. This concept is derived from the terms *aanikoobid-* and *-gan*. The term *aanikoobid-* is further broken down by the term *aanikaw-*, which means a link, and *-bid* which means to tie it. The term *-gan* is a nominalizer term. Collectively, the term refers to the ancestral link tying together seven generations from a great-grandparent to a great-grandchild. As the Anishinaabe people utilize the traditional stories of their great-grandparents and recount them to their great-grandchildren, we are perpetuating the existence of Anishinaabe law through seven generations” (Stark, K., 2021, p. 296).

Ah-mun’ni-soo-win

The term is defined in Benton-Banai (1979) as ‘intuition’. There is internal sense of intuition as well as the ability to perceive information and insight through the sensory capacities embedded in the totality of one’s being.

Algonquin-Anishnabe/Algonquin-Anishnabeg (-g stem is plural)

Present day descendants of *Omamiwininiwug* which refers to groups and families who lived historically near and with the Ottawa river, who are today dispersed throughout many regions and include several First Nation governments and land bases in Quebec and Ontario. Where I use the hyphenated term, as opposed to the singular term below (Anishnabe/Anishnabeg) I am being specific about the people who historically live around the Ottawa river.

Anguillids

A species of catadromous fish which includes 19 members whose life cycle is distinctly marked by an origin in saltwater and can include a long-distance migration and physical metamorphosis.

Anishnabe/Anishnabeg/Anishinaabe/Anishinaabeg

I use this term to refer to “Original People” (Benton-Banai, 1979) whose origin is correspondent with Creation Stories which are connected to a shared history, geography, and cosmology. **Anishnabekwe** is a woman of the Original People; the *-kwe* stem comes from the root word *ikwe* which is defined in McGregor (1987) as “woman, female, specifically, a human.”

Anishnabemowin

The language of Anishnabeg.

Anishnabewin

The lived experience of being Anishnabe.

Bimaadiziwin

This term can generally refer to life, including the interconnection of all life including insects, rocks, wind, sky, stars, and many other elements that constitute a human experience. It has specific regional contours; Kim Anderson (2011) writes that “that this word, often translated as ‘life,’ is a substantive form of a verb that indicates to ‘move by’ or to ‘move along’...the goal is ‘to live well and to live long in this world’” (p. 127).

Biskaabiyang

A term that means ‘returning to ourselves’ and occurs specifically in a research context:

“The title ‘Biskaabiyang’ describes the process that an Anishinaabe researcher must go through in order to become decolonized and conduct research that will be meaningful to him or herself and other Anishinaabeg. The verb biskaabii means to ‘return to oneself.’ When conducting Biskaabiyang research, one must examine one’s teachings and worldview as if one can see one’s back by looking around the entire globe. (Geniusz quoted in Danard, 2016, p. 3)

Dodem/dodemag doodem/doodemag (-g stem is plural)

Often an animal, but can take other forms, *doodem* refers to another living being who supports humans in developing physical, emotional, mental, and spiritual connection to life processes and expressions. It is a relationship established through Anishnabeg kinship and governance structures and can come from descent or adoption. Again, some spellings include the double vowel system; I use the spelling with two “o” letters because it sounds similar to the way I hear the word; others whom I cite have used a spelling of “dodaim,” “dodaem.”

Dodemiwan

A term developed in Jewell, 2018; and Awasis, 2020; *dodemiwan* refers to a way of being in relationship with one’s clan, which naturally forms a place in the world where an individual is in profound spheres of relationality with all other beings with the *doodem* animal as teacher, supporter, guide, and ancestor.

Dibajimowinan/ dibajimowinanag

A term developed in Leddy; 2017; *dibajimowinan* (-ag stem is plural) refers to personal and everyday forms of storytelling; sharing and recollection of these types of stories are crucial to developing a co-constitutive sense of reality and being in Anishnabe lifeworlds.

Eels

A colloquial term used to refer generally to several members of *Anguillid* species; most frequently I am referring to “*Anguilla rostrata*.”

Elder

When referring to a human being, an Elder is a person who has reached an advanced stage of life. Elders hold the weight of authority and leadership in formalized governance modes in Anishnabe society. They are recognized for their life experience and respected for their knowledge, both of a personal nature and related to collective processes and histories. Kim Anderson (2011) has documented a great deal of information about the role of Elders and specifically women Elders in Anishnabe society.

Debwewin

Developed in several texts (Benton-Banai, 1979; Kruse, Tanchuk, and Hamilton, 2017; Danard, 2016; Borrows, L., 2016; McGuire, 2020; Craft, et al., 2021) I use *debwewin* to refer to the concept of truth. Danard writes that “*debwewin* is a core assumption in *dibajimowiman*” (206, p. 100) and *debwewin* is one of the original instructions for ethical conduct of Anishnabeg, part of the seven sacred grandfather teachings (Benton, 1979).

Indizhnikaaz

This term translates to “how I am called” and is used to state one’s name. *Indizhninaaz* or *nindizhninaaz* is often used as a form of customary greeting for Anishnabeg, followed by “*nindoodem*” or “*doodem*” to indicate who the person is, in totality, by referring to their personal name and clan affiliation, along with other details.

Indigenous

This term is often used in various fields of scholarship to refer to groups of people who common origin and have a history within a place. I recognize its ambiguity and that the concept of “Indigenous Peoples” and “Indigeneity” are rigorous debates in international law. As I use the term, Indigenous Peoples are those who are “the living descendants of pre-invasion inhabitants of lands now dominated by others” (Anaya, 2004).

Kete-Anishnabeg

Ancient ancestors of present-day Original People; can also refer to more recent ancestors. ‘Kete’ means old.

Kzhemnidoo

“The Great Mystery.” In my personal worldview and lifeworld, it would be disrespectful and limiting to try to define what I refer to as the “Great Mystery.” Sometimes Anishnabemowin speakers will use the word Creator, God, or other equivalencies in English, which I respect. My personal experience has revealed that those terms can be conflated with other terms in ways that are confusing to me personally. To be more clear, *Kzhemnidoo* is both great and mysterious, and is known to me as the source of all

things, the source *mnidoo* who created all life, all possibility. This is how I use the term in my work.

Lifeworld

This term, with its origins in phenomenology and European intellectual traditions, is being taken up in scholarly contexts by contemporary geographers, and those working in other disciplines. It describes the imaginative, internal experiences of an individual who is tied to a wider horizon of possibilities. I find the term attractive because it weds material daily experience to a larger sense of phenomenological connection and multidimensionality. Throughout the dissertation, I have provided definitions and contexts where I use the word in dialogue with other thinkers. “Lifeworld” originates from the German *Lebenswelt* which refers, in its origin, to a sense of imagination arising internally within an individual interacting with an external world (Convery, 2008).

Miskwadesi

A painted turtle. Taxonomically, this term translates to refer to *Chrysemys picta*, a small turtle with red and orange markings on its back found in freshwater environments all over north America. This turtle appears in several Anishnabe stories including a formative role in the Creation Story, one of the four turtles of creation.

Mamiwininimowin

This is a specific term which refers to the dialect of Anishinabemowin spoken by my ancestors. Allen (2007) documented that his discussions with Elders from my community of Kitigan Zibi used this term to teach him basic vocabulary that assisted his understanding of geographic contours and other relevant things. *Mamiwininimowin* is also a term I heard used by my grandmother and in environments where I have participated in cultural and language-related activities with my family and relatives.

Maymayginebig

This is the word that was used by a fluent speaker of Great Lakes Ojibway to confirm my *doodem*. As explained to me, the word means eel; *ginebig* is a snake, while the “*maymay*” prefix refers to beings that live in or near water.

Minobimaadiziwin

Mino-bimaadiziwin is an animate rendering of all life forms, not merely human, material, or affective experience, but an integration including the totality of all living matter. The expression of *minobimaadiziwin* reflects an interspecies dependence and respect for one another.

Mishiikenh

A sea turtle

Mnidoo/mnidoog (-g stem is plural)

This term can refer to animated mysteries that exist in all things, and can also refer to places and nonphysical beings.

nehiyaw

Plains Cree

Nindoodemag

Bohaker (2006; 2020) uses “*nindoodemag*” to refer to “kinship networks” (2006, p. 25). In her work specifically, *nindoodemag* is used in interesting ways, i.e. on the same page, she writes that “people inherited their *nindoodemag* identities from their fathers” (ibid.). *Doodem* is the root word, defined above, and the -ag stem makes *doodem* plural, while the *nin* makes the word self-referential. So, the literal translation as I read it would be “my clans are.” Where I use this term, I refer specifically to Bohaker’s work in quotation.

Omamiwinini/Omamiwininiwug

Omamiwinini (-wug stem is plural) is a term used by Algonquin-Anishnabeg peoples in what is now called Quebec and in parts of Ontario. It refers to many of the descendants who form the present-day Algonquin-Anishnabeg nation. Many have come to static residence on reserves but had migrated from other, nearby regions where they had villages in prior centuries. From the Gatineau Historical Society:

“The Algonquin left Oka gradually over a period of several decades in the 19th century. They had never abandoned their former territories in the Ottawa valley, and they returned to them. They also established new communities at Golden Lake and River Desert in those territories. Both old and new communities were invigorated by the infusion of Iroquois, Nipissing, Abenaki, and Ottawa kinsmen from Oka. It is perhaps ironic that as the Algonquin dispersed from Oka back into their hunting territories, they also became more centralized politically as a nation and more unified as Algonquin” (Black, 1993).

Pimisi

This is a term in *Mamiwininimowin* that refers to eels. Allen (2008) has suggested that the word has a relationship with the word *bimide* which refers to fat or oil; eel flesh is very fatty.

Seventh Fire

This term is a specific reference to the temporality of Anishnabeg. It refers to a larger, codified system of knowledge and prophecy. Transmission of knowledge about the Seventh Fire is passed in ceremonial contexts and through generations of families to give instruction to Anishnabeg for how to navigate the challenges wrought by newcomers, their settler colonialism, and other destructive processes. The Seventh Fire

is taken up in various literatures e.g. (Kruse and Tanchuk, 2017; Laduke and Cowen, 2020) and versions of the prophetic teachings have been shared with the public (Benton-Banai, 1979; Dumont, 2018).

Siinis

Siinis refers to a rock or a stone, an animate life form. In the story of Miskwadesi, which appears in the prologue, a *siinis* is used to protect the fragile body of a young turtle, and the *siinis* transforms to what we now see as a turtle's carapace on *Chrysemys picta*, a painted turtle. Both turtles and *siinis* are ancient and carry the memory of when Earth was young (Benton-Banai, 1979; Dumont, 2018).

Zaagidowin

Love, a force which is woven throughout the totality of existence. Love is also an expectation of conduct and a "legal tradition" (McGregor, 2015) that guides Anishnabeg, love is one of the seven sacred grandfather teachings (Benton-Banai, 1979).

Prologue

Miskwadesi indizhnikaaz; maymayginebig doodem—my name is Painted Turtle, and my clan is eel, and that is where this short telling of stories begins. Starting with story is both customary for Anishnabeg as well as grounding for the teller. I wish to open a doorway through which some aspects of my methodology might be seeded and envisioned. Following the well-established pattern of applying Indigenous ontological framing in academic discourse (Smith, 1999; Archibald, 2008; Kovach, 2009; Abolson, 2011), I use the method of story-gathering and storytelling everywhere in my work. Story has place and application in all things, including this invitation to my interior cognitive world, the revealing of experience, which is the prologue to my project, *Eels as Teachers*. In the words of *nehiyaw* and *Saulteaux* Indigenous research methodology expert Margaret Kovach, prologue “is a precursory signal to the careful reader that woven throughout the varied forms of our writing—analytical, reflective, expository—there will be story, for our story is who we are” (Kovach, 2009, p. 4).

Painted turtle, or *Chrysemys picta*, is a small turtle with red & orange markings on the carapace. *Chrysemys pictae* are ecologically significant and provide what some scientists might call ecosystem services or benefits. They live in diverse biomes, including within areas like wetlands, swamps, and shorelines. *Walking with Miskwaadesi*, an educational resource published by the Toronto Zoo in collaboration with Anishnabeg knowledge holders, describes turtles “as keepers of stories and knowledge about the *nibi* (water) and wetlands; they have responsibilities to communities and to the Creator. Turtles live very long lives and tell the stories of wetlands and waterways” (Conroy, 2012, p. 17). Through the years, I have heard many

versions of the painted turtle's origin story shared through oral tradition by other Anishnabeg who know a version or learned the story from their families, teachers, and Elders before them. *Anishinabewin* is an epistemology, or way of knowing, drawing on empirical environmental knowledge, including spiritual teachings and land-based systems and practices; it is an action that describes "lived expressions of being Anishinaabe" (Awasis, 2020, p. 838).

In *Anishinabewin*, turtles belong to specific families and have distinguishable roles in the watersheds where they live. They also have personalities, desires, and historical memory associated with the development of life on Earth through geological epochs. The ongoing discussion of how to classify the multiplicities in Anishnabeg knowledge is part of this inquiry: personal stories—*dibajimowinan*—are a well-established method in recent and ancient forms of Anishnabeg storytelling (Leddy, 2017; Bohaker, 2020; Acoose, 2011). *Aadzokanag*—or sacred stories, are another elemental teaching method and form of "storywork" (Archibald, 2008) in the interwoven fabric of Anishinabe studies, wherein the People's collective memory and knowledge are accessed and transmitted through cultural and spiritual practices and protocols. My life is informed by both canonical methods, and by other forms of study and engagement specific to Anishnabeg described and detailed throughout this project.

"Storywork" as proposed by Sto:lo storyteller Joann Archibald is an integrated methodology; a people's oral and other traditions combine with the written text of English to honor a sense of collectivist holism, integrating mind, body, spirit, and other elements in concentric, interconnected methods. Indigenous storywork is not linear, with a beginning, middle, end, as is so common in other forms of storytelling. There are

specific elements within this methodology, which make it unique among diverse Indigenous peoples. namely the “mystery, magic, and truth/respect/trust relationship between the speaker/storyteller and listener/reader...” which “may be brought to life on the printed page if the principles of the oral tradition are used” (Archibald, 2008, p. 20). Throughout the project, I hold the tension of trying to bridge these forms of listening, speaking, and expression through multiple epistemic approaches. I have been formally trained as a writer with an MFA in writing, and maintain a practice of poetics, and have worked as a researcher and advocate in the fields of environmental health and sciences. With the geographic study of eels, I seek to bring my own sense of holism to the work by weaving together the times and spaces that I come from, those which have formed my educational journey while respecting and upholding my ancestral and ecological responsibilities as Anishnabe-kwe navigating educational systems derived from other knowledges and worldviews.

Returning to painted turtles, they are known for their distinctive and colourful appearance, with deep, forest green shells. The edges of the upper carapace and the underside are flecked with bright red and orange markings in seemingly intentional patterns. For the sake of traceability, I will reference a published version of Miskwaadesi’s origin story here, which has been compiled through collaboration with several Anishnabe knowledge holders as referenced in the document’s project origins. In *Walking with Miskwaadesi* the depiction of Miskwaadesi’s encounter with Waynaboozhoo demonstrates that Miskwaadesi at one time did not have a shell and hid in the bushes shyly because she was always afraid; “the little *mishiikenh* (turtle) had a very hard time getting around safely” (Conroy, 2012, p. 39). Notably, the turtle was not

yet named Miskwaadesi and did not carry a shell on her back. The story takes place during a long-ago point in the ongoing ecological web of time, also referred to as a time when the Earth was new (Benton-Banai, 1979; Dumont, 2018).

Miskwaadesi received her *siinis* (translation: rock or stone, which becomes her shell) through an exchange of kindness with Waynaboozhoo, who might be described in some narratives as a cultural figure prominent in Anishnabe stories. Waynaboozhoo was conducting his own activities and traveling through an area where Miskwaadesi was hiding and living. It was the work of Waynaboozhoo to observe and help all creatures, as he was a powerful spirit-Being:

Most Elders agree was not really a man but was a spirit who had many adventures during the early years of the Earth. Some people say that he provided the link through which human form was gradually given to the spiritual beings of the Earth ... everyone agrees that he had many human-like characteristics (Benton-Banai, 1979, p. 29).

He is also known by many other names, for example Nanabozhoo; in this version I will use Waynaboozhoo as spelled/cited in Benton-Banai. He lived before humans inhabited the Earth. He traveled to many places. He interacted with plants, animals, waters, and other forms of life; in his travels he gathered a lot of knowledge and wisdom for Anishnabeg (human beings), getting to know all the creatures of the land, air, water, plant life—naming everything that depends on the living Earth to survive. It was natural that many of the beings of the Earth were familiar with Waynaboozhoo during this time of ecological newness while he traveled, naming and encountering all the different places, medicines, and residents he met.

One day as Waynaboozhoo walked about the Earth, he saw the little turtle poke her head up. She whispered to get the attention of the hungry traveler, letting him know

where he may be able to find something to eat, in the stream nearby. He was grateful and he also saw that the little turtle was shy and scared. She spoke of being burned by the sun. She spoke of other animals who would make fun of her. She was small and weak and had no quality of life. He offered to transform her body by affixing a heavy rock to her back, “like a coat” (Conroy, 2012, p. 43).

Waynaboozhoo painted the shell that would both protect her and give her more confidence. He painted Miskwaadesi’s back with all of the colors of the sunset and inscribed on her body a calendar of the days and months based on moon cycles. This would give Miskwaadesi an important role in helping Anishnabeg to tell time, and affirms the important relationships between turtles, water, the moon, and other cyclical, seasonal processes. And then, “Waynaboozhoo went on his way, rubbing his full stomach because of the kindness of a little green *mishiikenh!* Miskwaadesi went on her way, wearing a new covering with dignity and a heart filled with gratitude” (Conroy, 2012, p. 43).

In the text, *Walking with Miskwaadesi*, the telling of some stories is referred to by the fictional narrator as occurring in “wintertime, *atsokanan*” (Conroy, 2012, p. 38). This categorization refers to the nature of the story of Miskwaadesi, as a sacred story, a form of collective cultural knowledge that contains layers of potential meaning-making and is connected the sacred body of Anishnabe knowledge. The interaction has everything to do with the preparation of a world suitable for people, or *Anishnabeg*, to live on, and from, and with. Embedded in that preparation are instructions for how to live; the story tells us how to live. Kindness, environmental knowledge, sharing, and dignity are aspects of this story’s takeaways.

The exchange between Miskwaadesi and Waynaboozhoo demonstrates and teaches how interspecies encounters might occur, how grace might emerge between two life forms who are expressing the realities of their lived knowledge and experience in a shared ecology. The interior life and need of each being is shown and honored. Miskwaadesi is scared and has lost confidence, dignity, and safety. Waynaboozhoo is unfamiliar with the area and hungry, looking for food as he gets to know his surroundings. They both have gifts of insight that they can share with each other to offer comfort and improve the circumstances of each one's life, from within their own sense of being and sphere of influence. The "seven grandfather teachings" are often referred to as laws of conduct for Anishnabeg: "wisdom, love, respect, bravery, honesty, humility, and truth" (Benton-Banai, 1979, p. 64) are demonstrated in the story of how Miskwaadesi received her painted shell from Waynaboozhoo.

Years ago, after many days and nights spent living thousands of miles away from the place which I consider my ancestral home, I returned to live at the Kitigan Zibi Anishnabeg reserve at the request of my grandmother. While setting out to walk the long stretch of highway 105, I found a shattered Miskwaadesi *siinis*—painted turtle shell, fragmented and destroyed alongside litter and debris dotting the highway trail during my morning walk. I thought of these scenes as foreboding at the time, realizing that the "turtle crossing" signs put up by the band were ineffective. Like many other innocent relatives, the turtle had met a violent end that was likely punctuated with many more instances of being run over on the very busy stretch of open road. I was disturbed.

I had been excited to come home and connect, wanting to confirm and extend my relationships with the place that had long represented safety and healing in my life,

and my family, for generations. I had lived on and visited this road so many times. Walking back to my grandparents' home, I thought about safety and dignity, along with our human responsibility to water, to turtles, to protection of the land, water, and living ecosystems which support us. The reserve which is now Kitigan Zibi was once a trapline, a place the ancestors went to for refuge in order to escape the constant harassment and proselytizing of church officials who were encroaching another part of the territory, near the Lake of Two Mountains, present day Quebec.

The shell, demolished and fragmented, began to call up different stories for me over time. The image of the shattered shell lingers in my mind as a reminder of Miskwadesi's inherent gentleness. The colors on the shell were delicate and beautiful. She has walked this region, now paved over with concrete, for millions of years. The balance of life in fragile ecosystems is delicate and the modern world does not respect that.

Everyday functioning of countless animals, birds, trees, waterways, and other life expressions are interrupted by activities and structures taken as necessities of human convenience, all of which are relatively new to the ecologies of this section on Earth, along the Ottawa river. My life purpose is intimately tied to delicate creatures who live within these sensitive ecological zones, and as such I witness the everyday "imperial socioenvironmental degradation" (Nixon, 2011, p. 235) which includes the presence, articulation, and maintenance of systems which are designed to produce mass fatalities. There is no process or room for the many forms of grief that emerge. The violence and indifference of passive slaughter for wild animals confronted me in a very personal way in this moment.

In time, I concluded that this experience meant I had failed in my life's purpose and there was more inevitable, unavoidable failure coming, an absolute lack of control—belief that there was no way to pursue the ecologically intact life of my dreams. The event was an omen in my traumatized mind, the birth of new anxieties. I thought that by driving a car and depending on a carbon-based economy, I saw myself as colluding with and participating in the destruction that harms my relative, my namesake, my Self, the one who gives of her medicine so that I might live. There is an endless spiral of guilt, blame, and shame associated with the built environment when viewed from a lens informed by Anishnabe environmental ethics. Acknowledging this pivotal position involves rethinking the life path and opportunities of people who live in surroundings not of their own design—the argument can be made, in hegemonic structures, that this dilemma touches all people who are connected to all nonhuman life and elements within an ecosystem. The application of Anishnabe thought and practice offers opportunity to re-articulate environmental maladies by accepting the challenges and seeking an embodied relationality that aligns with Anishnabe notions toward the “ethic of responsibility” (McGregor, 2014). There is a responsibility for humans to use their inherent gifts to apply critical thinking and take calculated action by activating and acting from personal sovereignty. From this moment I internalized that knowledge human relationships were only one layer affected by the seizure and manipulation of land.

Mushkegowuk Cree scholar Candace Brunette-Debassige suggests that embodiment is key to reclaiming and re-articulating one's intellectual and spiritual sovereignty, that “colonial narratives reinforce disembodied ways of being in the world and become internalized” (Debassige, 2018, p. 215). Debassige's words affirm that

there is value in remembering and acknowledging the discomfort of that memory.

Disempowerment would mean believing that nothing can be done and there is no hope, and only more destruction is seen based on this singular event. It is beneficial to consider the presence of the turtle, fragmented as she was, alongside the wonder of memory that awakens every time someone tells the story of the interaction between Miskwadesi and Waynaboozhoo. There are messages and layers of meaning in this recollection, and as the teller of my own land-based stories, it is my responsibility to transparently share that my work stems from those moments of anguish. The living Earth is teacher, redeemer, and holder of humanity's oldest memories which remind of the need for delicate and cultivated balance.

The shattered turtle shell in my hands was a tangible initiator of intimacy with my surroundings, despite a design of disconnection in highways and culverts. The moment highlighted a duality of loss and possibility in my personal attempt to connect with the homelands where I come from. By sharing and catalyzing the memory, I call forth a transformation, both in my own thinking and toward the space where the stories live. Debassige clarifies that "individual embodied work does not exist in isolation, but rather acquires its power in relation to others" (Debassige, 2018, p. 225). Stories of environmental despair and violence constitute intergenerational, multilayered trauma and existential dread which constitutes the current moment. This is distressing not only for Indigenous peoples and societies, but for all who are witnessing and becoming aware of widespread destruction which manifests a "soft, unbearable sadness, filtering down from distant stars" (Atwood, 2007, p. 84). Ecological decline is evident in globally

dispersed environments and decline in environmental integrity is affiliated with inequity, violence, social strife, and rampant suffering in all spheres.

I am suggesting here that environmental violence against animals occurs as a byproduct of forced, transactional, extractive relationships that reconfigure land and waterways in configurations that animals do not recognize. Other ways of being with and navigating across land are embedded in systems which are deep and specific, relative to Anishinaabeg and their *dibajimowinanag*, stories. These might be stories of individuals engaged in relating to the animals, birds, fish, and other life forms who are part of their names, clans, and personal stories. Disembodiment is antithetical to an Anishnabe way of living—in *minobimaadiziwin*, or a balanced way of life, every interaction between living beings is necessarily vivacious, dynamic, and meaningful, as is the timeless vitality of the Earth herself. All forms of life exist in a state of mutual aid through interspecies connection and communication. Miskwaadesi, through receiving the gifts of Waynaboozhoo, supports the activities of maintaining an Anishnabe rendering and calculus of time based on the rhythms and natural cycles generated and sustained by the moon. Her physical being mirrors the patterns of the moon's cycles, and she is connected to the oceanic ides, river waters, and aspects of the sky-realm that generate seasonal shifts. Time is recorded and understood through Anishnabe ceremonial practices and other forms of knowledge transmission. In the story recalled above, Miskwadesi pursues and realizes a dignified existence that she can be safe in.²

² Stark offers another story about the 13 markings on a turtle's back—but not necessarily Miskwaadesi: "One evening a turtle was cresting a hill. The moon noticed this little creature, and for thirteen nights out of an act of love and kindness, the moon came down and kissed the turtle's back. As an acknowledgment of this encounter, the turtle was given the thirteen plates on its back as well as the establishment of the thirteen moons of the Anishinaabe calendar" (Stark, 2021, p. 310).

Questions that disarticulate the stranglehold on time according to a Gregorian calendar are important to undoing assumptions of coloniality; Indigenous conceptions of time are not linear: “time is layered (or spiraling, or slipstreaming, or rhizomatic... we can think of all creative resistance happening at once and in alliance” (Hickey, 2019, p. 166). Like turtles, humans alive today live in a generation where destruction and collapse spiral out of control; and yet, there is a “common thread that is interwoven among the traditional teachings of all natural people” (Benton-Banai, 1979, p. 112). I continually look to the ones who came before me, all those who depend on the specific conditions which make life on Earth possible; life with Earth, where all depend on water. I also look to those who will come after me and will call on the same sense of interdependence.

In this work, and as a personal practice, I have looked for a sense of grounding in a time of collective uncertainty, seeking “what was left along the trail” (ibid.). Recovering a sense of self and retreating from internalized colonialism is a challenging process. There are restorative perspectives to glean, alongside the agony depicting the constant, accepted brutality of our current reality. There is always more to be understood and applied from Anishnabe *mino-bimaadiziwin*; sharing personal experiences and stories can generate an approach that counteracts disembodiment and privileges the translation of knowledge, a basis for building a world that supports dignified coexistence built on empathy and respect for the lives of nonhuman relatives. In the words of Anishnabe historian Brittany Luby, being present is the foundation.

Anishinaabe teachings reveal that non-human beings are capable of imparting knowledge. Receiving gifts or learning from plant and animal teachers requires relationship building, which depends on careful attention over time, a process that I call presence-ing (Luby, 2020, p. 8).

In her notes, the author also writes that “spiritual relations with non-human beings can be forged through fasting, dreaming, or other means” (ibid). I take up Luby’s suggestion of presence-ing throughout this project to investigate the offerings of *maymayginebig* and the many forms of learning that they initiate.

Chapter 1 Introduction

1.1 Background and overview

Anguillid eels are a concrete indicator of global biodiversity loss. There are nineteen populations of *Anguillid* eels around the world, all of which have declined and are “exploited through the vicissitudes of human society...waters have been muddied by issues of world trade and economics” (Tsukamoto and Kuroki, 204, p. 171). *Anguillid* eels are indicator species; they “signal the vulnerability of other species in... biologically diverse but fragile ecotone(s)” (Allen, 2007, p. 5). The advent of hegemonic colonial power in the United States and Canada was formed over time, through periods when eels were abundant and sustained hungry populations of people new to the landscapes and lifeways of North American geography. Eels are underrecognized for their role during historic periods, such as the Jesuit encroachment in New France, the razing and seizure of lands in New York state, and other historical events to include the early days of current nation states. The decline of eel populations is correspondent with the rise in environmental and health inequities affecting Indigenous people in North America.

Present day systems inherit these legacies:

Social, political, and economic systems that continue to decimate biodiversity also dispossess Indigenous Peoples of their territories, culture, language, laws, and governance systems (Marshall, et al., 2021, p. 841).

The eel focused on in this thesis is *Anguilla rostrata* whose life begins in the Sargasso Sea, far off the eastern coasts of North, Central, and South America and the Western coast of Africa. They travel northwest into estuaries and freshwater systems as far north as Greenland, changing and metamorphosing along the way, and eventually returning in the direction where they originated.

Ideas involving the life cycle of *Anguilla rostrata* are the stuff of sciences which are not and have never been settled. This project traces arcs of several interrelated but disparate threads related to understanding the life and value of *Anguilla rostrata*. The research traces studies pertaining to *Anguilla rostrata*, elsewhere named *pimisi* in Algonquin-Anishnabemowin, or *Mamiwinimowin* (Allen, 2008), the dialect of Anishnabemowin/language known along the Ottawa river and surrounding geographies. The eel is a bridge and connector between biomes, estuaries, and watersheds, as well as a bridge between peoples, time periods, and geographies. They are undervalued and understudied, and frequently misunderstood: “the story of the colonization of North America is full of myths and legends, but the story of the eel isn’t one of them” (Svensson, 2020, p. 128).

Indigenous Peoples, and particularly women, in settler colonial framings are often discussed as being in a “death grip” (Simpson, 2016, p. 12) of ongoing dispossession, violence, and struggle. Yet, following centuries of dispossession and genocide, Indigenous societies and knowledges have persisted and are in stages of revival and regenerating. Some Indigenous societies remain in continual relationships and centuries-long interactions with eels. Eels represent opportunities for Indigenous societies to engage in further renewal and retrieval of their heritage and ancestral memory; “renewing relations with survivors of other-than-human genocides in order to (re)create worlds together” (Mitchell, 2018, p.919).

Overcoming the “cognitive imperialism” (Battiste, 2013, p. 26) of educational assimilation and the advent of oppressive institutions involves addressing multiple factors. It involves untangling “forced assimilation, English education, Eurocentric

humanities and sciences, and living in a Eurocentric context complete with media, books, laws, and values” (Battiste, 2013, p. 26). Shifting from Eurocentric perspectives and toward a more inherent sense of Anishnabe embodiment does not constitute “reaching for Indigenous knowledge when western knowledge and systems fail” (Thomas, 2021, p.1) but rather is a process of undoing and unsettling “cognitive imperialism” (Battiste, 2013). It is settler colonialism and cognitive imperialism that enable epistemicide, erasure, and the denigration of Indigenous beliefs to include cognitive possibilities and the understanding and expression of lifeways.

This dissertation is an investigation that gives primacy to *Anguilla rostrata* as a singular species, an individual organism, to ask what humans might learn from them—how their presence, absence, and behaviour might be interpreted as forms of interspecies connection for interpretation and analysis. Doing so is an approach that derives from being Anishnabe, traced through my positioning and relationships within being a member of that Peoplehood myself. I am drawing on the Anishnabe belief and ecological knowledge of animals as intimate ancestors and kin who are invested in reciprocal relationships with humans. In Anishnabe Creation Stories “animal progenitors helped to shape the landscape of their countries for the sustenance of their animal and human descendants” (Johnston, 2006a, p. 5). My research sought pluralistic lenses, gathering evidence and stories about eels from people with expertise in several disciplines, affiliations, and backgrounds to bring Anishnabe approaches into dialogue with other disciplines.

The dissertation compiles knowledge gathered from sharing time and space with others who are knowledgeable, familiar, or concerned about *Anguilla rostrata*. Within

the thesis are scholarly contributions to the fields of Anishnabe studies, critical animal studies, and Indigenous environmental justice. The primary research was based on activities and conversations curated over a two-year study period on lands in Ontario, Quebec, New York state but includes other geographic regions as well. The methods consisted of site visits and qualitative interviews, some conducted using adaptive digital methods imposed by restrictions of the COVID19 pandemic. The findings position stories and knowledge about eels stemming from different environments in conversation with one another, respectful and aware of the milieus from which they arise.

1.2 What is an eel?

Anguillid eels have been known in cultures around the world for centuries. According to some researchers, all *Anguillid* fishes, those snake-like eels who begin their lives in the open ocean and migrate into freshwater, have an “assumed area of origin around Indonesia to the Atlantic” (Aoyama, Nishida & Tsukamoto, 2001) based on studies which include differing methods such analysis of gene sequences and other ‘data’ extracted from isolated eel innards and fossils. *Anguilla rostrata* was classified as a taxonomic species in 1817 by American naturalist Charles Alexander Lesueur, who was also an artist and scientist that studied landscapes throughout eastern North America.

Anguilla rostrata (AR) has a closely related counterpart which travels up the coasts of present-day Europe, taxonomically classified as *Anguilla anguilla*, (AA) with an almost identical morphology and very similar migratory pattern, but in different biomes; AA travels east toward Europe. AA and AR are remarkably similar but differences between the vertebrae and scales make them distinguishable (Bertin, 1957).

To understand eels, their biology and habitats must be studied in addition to their mythology, history, and cultural significance. Dr. Katsumi Tsukamoto is a Japanese biologist who has been researching the global decline of *Anguillid* species for decades, arriving at a triangulated framework that gives equal weight to what he and colleagues call “natural, cultural, and social sciences” (Tsukamoto and Kuroki, 2014, p. v) with species conservation at the center of research considerations. I look to this model of overlapping approaches to frame my work; there are multiple angles by which pieces of eel study touch one another, with all of them focused on the preservation of eels and supporting their viability. Throughout each chapter, I develop ideas from ‘natural, cultural, and social’ sciences and literatures to frame my approach. I am asking one directed question: what might humans learn from eels, broadly? Each chapter offers an interdisciplinary rendering of how that question might be refined, interpreted, and responded to. Subtlety is a characteristic of Anishnabe communication, and critical thinking is a prized human faculty; thus, the responses are presented from multiple angles to render a pluralistic approach. Different sectors offer nuanced perspectives.

Research about *Anguillids* has not yet been framed in a specific query that engages the hypothesis of eel as medicine, or what it means to give respect and primacy to the world of an eel. My thesis builds on the suggestions of Tsukamoto and Kuroki (2014) to form an interdisciplinary engagement with eels as a foundation, and I am also bringing other dimensions through Anishnabe and Indigenous worldviews, where eels and other swimmers are both teachers and holders of their own inherent value and ‘medicine’ which are both physical and nonphysical. The words of philosopher Richard Gray are relevant here, considering the epistemic terrain of

Anishnabe ontology, to say that every life form has specific meaning and power, even if it is unintelligible to humans: “every sentient creature is a world maker” (Gray, 2014, p. 163).

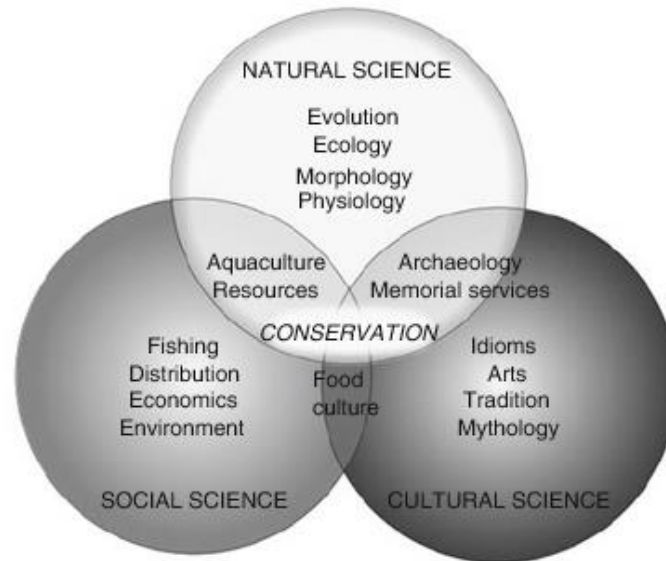


Fig. 1 Various aspects of eel-related science. Comprehensive understanding of such issues enhances public awareness of their importance and helps to conserve the species all around the world

Figure 1. (Tsukamoto and Kuroki, 2014, p. v).

Today, many of the values attributed to eels quantify their value based on economic perceptions and practices. It is common to hear sensational claims about glass eels “worth their weight in gold” garnering up to two thousand dollars per pound; news clips share the revealing of scandalous schemes to capture and sell eels in migratory zones near coastal regions. Some research documents the effort to regulate and control the capture and sale of eels specifically (Prosek, 2010; Sanders, 2016; Ebersole, 2018; Pinchin, 2018; Walker, et.al, 2019). In North America, the population has declined and may be off the radar of many people due to nonfamiliarity. There have been reality TV shows and think pieces in popular magazines and newspapers that talk

about eels such as the 2013 reality TV series, *Cold River Cash*, which focused on eel fishers in Maine. In 2018, Operation Broken Glass commenced, which was a trafficking investigation led by the US Fish and Wildlife Service. The report was released in 2018, but the study completed in 2014 (traced in Walker, et al., 2019) meaning that its findings are close to 10 years old. It was an investigation that spanned several states involving a highly coordinated ring of actors:

The elver poaching ring was made up of 21 fishermen along the East Coast who made an estimated \$5 million selling elvers to Asia on the black market. According to investigators, these fishermen netted elvers along the Atlantic seaboard in states where the fishery is banned and funneled them through Maine and South Carolina (Hill, S. 2018).

The lucrative practice of selling eels is well documented and a highly profitable trafficking ring with high stakes: one poacher “said he’d buy black market eels as long as nobody developed a ‘big mouth’—and if anyone did double-cross him, he’d pay \$200,000 to have him killed, according to undercover agents” (Ebersole, 2018). The European Union has banned eel trading since 2010 and increased efforts to raise awareness of trafficking have been taken up with positive results (SEG, 2018) amid constant challenges. The Sustainable Eel Group in the UK is explicitly involved in efforts to “rewild” areas (2018) that support the removal and amelioration of barriers to eel migration through the reintroduction of “wild” spaces. Other movements in Canada and the US have not yet followed this logic of rewilding in a clear, streamlined way as has been enacted in the UK, to the benefit of eels.

Anguillid fishes, of which there are 19 total, undergo a metamorphosis that exists in specific ways throughout different watersheds including saltwater, estuary, and freshwater. The unique axiology of eels has made them difficult to categorize, though

Anguillid eels have found a place in standard classification schemes: “biologically, they are fish, but they appear to be more than that; their unique morphology draws a clear line between them and other fish...their bodies are not streamlined as are those of ordinary fish, but elongate, closely resembling snakes, which are reptiles” (Tsukamoto & Kuroki, 2014, p. 6). In the small chart below, I list the life stages and physical characteristics of eels. Metamorphosis is an inherent property of their lives.

Life Stage	Physical characteristics	Where
<i>Egg</i>	Round, small, barely visible in water, rising from the deep ocean	Deep ocean, Sargasso sea
<i>Leptocephali</i>	Willow leaf, tiny, transparent ribbon-like body 1-3 inches	Deep ocean, beginning to travel carried by the Gulf Stream
<i>Glass Eel</i>	Transparent body, visible eyes and heart, 4-9 inches	Estuary, coast, saltwater
<i>Elver</i>	Deep green, 12-19 inches	Estuary, coast, some freshwaters
<i>Yellow Eel</i>	Green-chartreuse color, 2 ft or so	Rivers, estuary, lakes, ponds, wetlands
<i>Silver Eel</i>	Black and silver, long, 4-6 ft (closer to 4, historically they can be longer)	Rivers, estuary, lakes, ocean

Table 1.1: Eel life stages

Below, figure 2 depicts the life cycles and aquatic environments affiliated with the life cycles characteristic of *Anguillid* development. This figure derives from a science organization in Aotearoa, where *Anguilla dieffenbachii*, commonly called the longfin eel, is endemic to many regions. Life stages and aquatic zones travelled are the same for *Anguilla dieffenbachii* and *Anguilla rostrata*, a catadromous life cycle which indicates that the fishes mature in freshwater and migrate to the sea for spawning. The two species are very similar and related, though occurring in vastly different global regions.

Figure 2, from the Virginia Institute of Marine Sciences, depicts the life cycles and elements of the migratory path of *rostrata* traveling across the continental shelf and coastline of North America. In this dissertation, I also refer to other studies conducted on other *Anguillids*, such as *Anguilla anguilla* (“European eel”) and *Anguilla japonica* (“Japanese eel”).

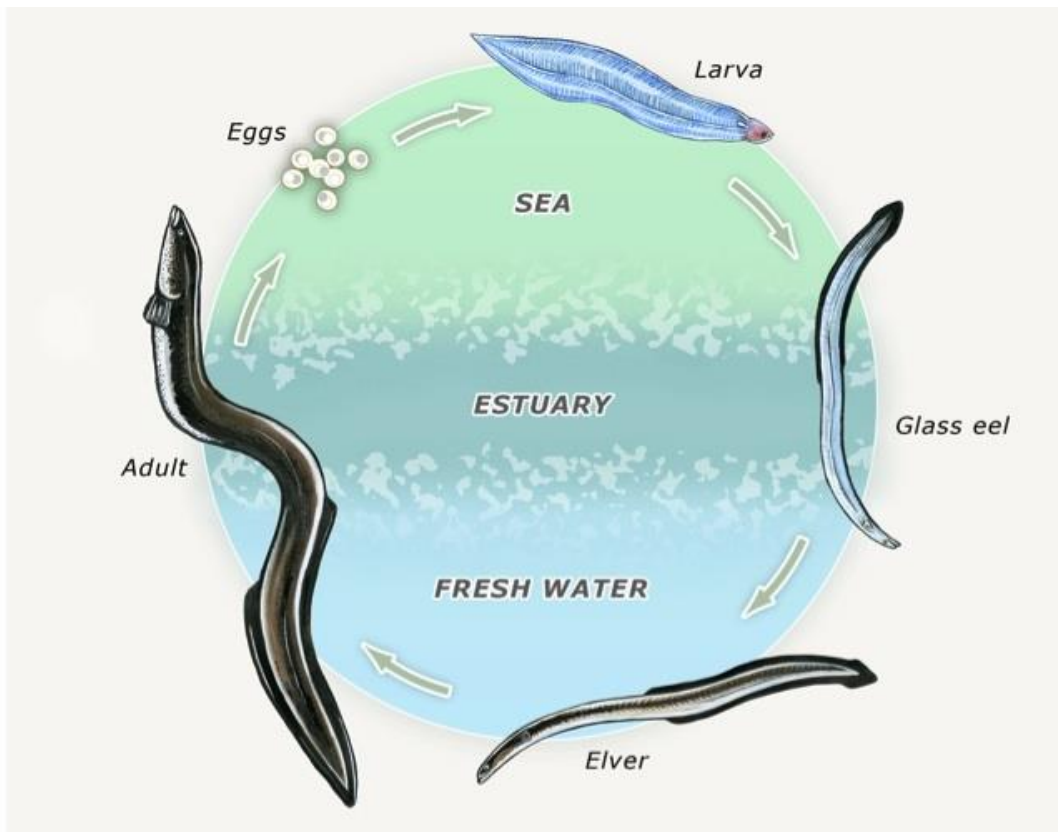


Figure 2. Eel life cycle and aquatic environments (Mahalski, 2014)

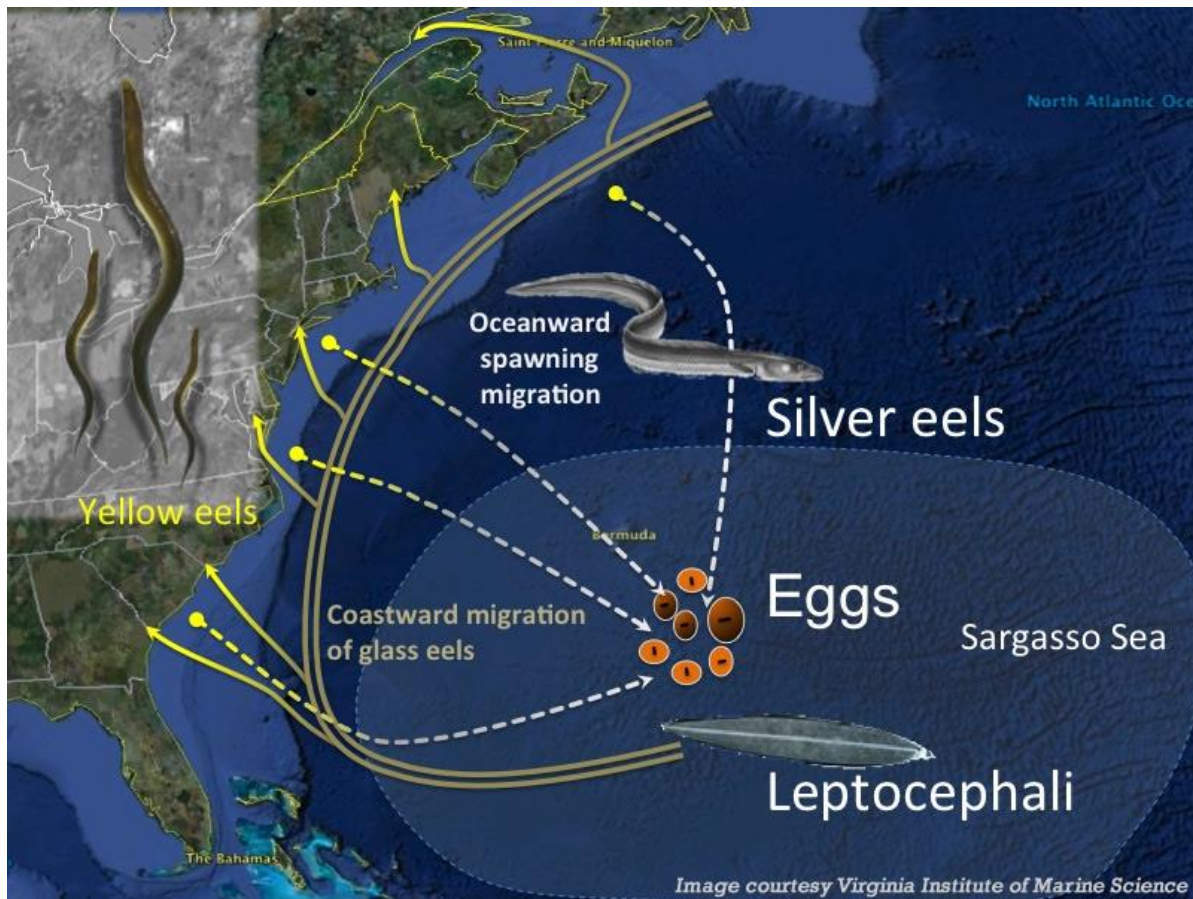


Figure 3. Image courtesy of VIMS (Virginia Institute of Marine Science)

When adults grow to full size and become silver eels, they stop eating as they approach the ocean. They actively engage in fasting behaviours throughout their lifecycle, but especially so in the silver migratory stage: “it is assumed that eels die after spawning due to the huge energetic demands of both oceanic migration and spawning, and the severe weight loss and organ degeneration” (Jellyman, 2021, p. 2) The chart I developed above is very basic and only gives a cursory snapshot of the multiple phases, behaviours, and metamorphosis that eels go through as they travel and mature to adulthood, a series of dramatic changes. Their migration is circuitous; some stay in saltwater while some travel into freshwater, and they migrate in the direction of their

place of birth. In chapter 4, I discuss more specific details about what makes *Anguillids* distinctive and attractive for scientific innovation and study.³

Through colonization and its practices, strands of scientific practice and discourse have been used to espouse “cognitive imperialism” (Battiste, 2013) which seeks to subsume and discredit the rich layers of meaning in language and expression found, for example, in *Anishnabewin*, the lived experience of being Anishnabe. In my view, overlap between the fields of science, naturalism, and philosophy are in essence phenomenological questions and tied to perspectives about reality though they may be separated by the disciplinary conventions. Sociologist Michael Carolan is worth quoting at length, in his discussion of ‘partial views of reality’ espoused by scientific materialism:

Scientists themselves often disagree when answering seemingly well-defined scientific questions... Latour... explains, 'Scientific facts are like trains, they do not work off their rails. You can extend the rails and connect them but you cannot drive a locomotive through a field' (Latour 1992: 266) ...I would extend this metaphor to include the scientific disciplines, where each discipline rests upon certain 'rails' - that is, partial views of reality - that both open up and constrict our epistemic access to the world (Carolan, 2008, p. 72).

Deep oceanic knowledges are beyond the scope of this study, but the mention of deep oceanic environments is an important inclusion to consider as a likely source of

³ I refer to selections from marine biology and other scientific literature which propose theories and ideas about how and why eels migrate through estuaries and other saltwater environments. My intent and interests are to learn from others’ analysis of eel behaviour in a way that might support how biological attributes, inherent to their bodies, are understood. To be clear, I am coming from the assumption that the eel’s body, and really, all bodies, are forms of intelligent, “vibrant matter” (Bennett, 2010) that have a metaphysical interconnection and spiritual origin. I don’t desire to prove this, as through Anishnabe ontological framing, the body’s intelligence is self-evident, seen in human systems of organs, skin, teeth, cells, and other matter. This is also true of the systemic elements which compose and make an eel, and countless other forms of life. In the thesis, other disciplines complement already existing knowledge, which comes from applied practice and awareness that I come from *Kzhemnidoo*, the Great Mystery, as derivative of and related to other Anishnabeg: an intelligent, knowledgeable, and thoughtful people who have our own understanding of all vitality, including the human form and its capabilities, which enable us to understand other animals and life-forms in specific ways. As Anishnabeg, humans were given “thought and reasoning to discover tools and better ways of doing things” (Benton-Banai, 1979, p. 14); through the language, we know the names of our internal organs, body parts, and the different properties and practical functional capabilities they carry.

vital information related to the life cycle of *Anguilla rostrata*. A thread in the scientific literature suggests that ocean conditions have a lot to do with why Europe and north America don't see as many eels as they used to: decreasing numbers could occur "partly because of a change in the hydrological cycle in the continental range since the early 1980s" (Kettle, Vøllestad, & Wibig, 2011, p. 381). The variance in hydrological cycle does not eliminate other factors which play a role. The climate changes consistent with the so-called "Anthropocene"⁴ (McLaren, 2018) epoch are distinct from the changes always occurring on some scale, and both produce different conditions for migrating eels.

The ongoing quest to understand the life cycle of *Anguilla rostrata* (AR) and its, perhaps, sibling, *Anguilla anguilla*, (AA) occurs in the name of conservation, curiosity, and scientific 'discovery' possibilities as described in chapter 4. AA and AR are known, in today's circumstances, to have the same point of origin in the Sargasso Sea, with some *leptocephali* (stage of life where eel looks like a small translucent leaf) gravitating toward the north American continent and others toward a northeastern direction, arriving on the shores and estuaries of European countries to the east of the Sargasso.

⁴ In this dissertation, I use Anthropocene sparingly; it is a term with multiple contextual meanings in different disciplines and here I point to McLaren's definition as most compatible with how I understand oceanic changes. McLaren's words sum up the paradoxes of human-induced global temperature and ecosystem changes when he writes that the Anthropocene "is redefining humanity's relationship with the Earth, positioning humans not only as a dominant impact on climate and environment, but also as vulnerable to the agency of Earth Systems" (McLaren, 2018, p. 136). However, Indigenous communities and Peoples are often absent from literatures that advocate urgent change due to Anthropocene-induced changes. Indigenous histories paint a wider lens toward Earth changes: "looking at Indigenous mobility in the Anthropocene involves unraveling layers of colonial injustice, instead of simply focusing on grappling with 'unprecedented' phenomena" (Whyte, et al., 2019, p. 320).

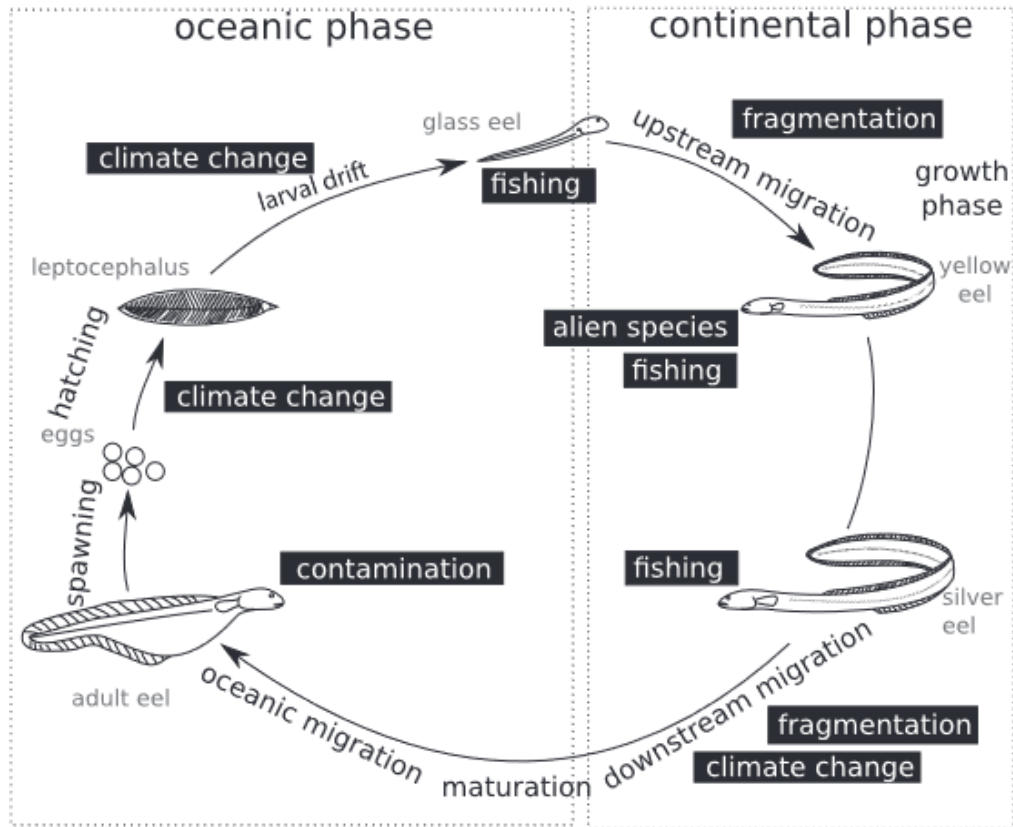


Figure 4: "Life cycle of the three *Anguilla* species [*rostrata*, *japonica*, and *Anguilla*] and effects of global change components" (Drouineau, et.al, 2018, p. 906).

1.3 Justice narratives

Estimates suggest that both species have declined by over ninety percent over the last forty some years (SEG, 2018; Casselman, 2019; Walker et al., 2019). As they rapidly decline, there is renewed interest in understanding their value from multiple angles. Drouineau et al. (2018) documented pressing threats to eel migration in figure 3, which shows common factors that affect *Anguilla rostrata*, *japonica*, and *Anguilla* encounter: climate change, fragmentation, "alien" species, fishing, and contamination are the five factors they identify as most significantly impacting *Anguillids* in different environments but in similar ways. Generally, opinions and data collected about eels

suggests that their decline is related to human-induced environmental processes and changes.

In chapters 4 and 5, I discuss places where eels have historically been well established as contributors to the social, economic, and seasonal orders that sustained Indigenous and newcomer populations. This links processes of dispossession, the milieu in which coloniality has arisen, to the plight of eels. Analysis of historical patterns combined with current knowledge of eels (or lack thereof) brings the research into places and spaces encountered in real time where eels continue to migrate. It is necessary to examine propositions and lines of thought which have contributed to current understanding of what an eel 'is' and what they 'do' as they move through the geographies that are part of their migratory range, to get a sense of how they are impacted by human infrastructure and behaviour.

In terms of the current management status, the Atlantic States Marine Fisheries Commission which manages eel stocks in the USA, assess *Anguilla rostrata* as depleted, but not listed on the Endangered Species Act.⁵ Both the province of Ontario and the International Union for the Conservation of Nature lists *Anguilla rostrata* as endangered (Walker, et al., 2019, p. 3). At other levels, and as a matter of global concern, there is a renewed interest in the plight of eels through recent decades, spurred by the global phenomenon of related *Anguillids* experiencing decline due to overfishing, habitat loss, pollution, and other factors. Another name for *Anguilla rostrata* is American eel, a term I use sparingly.

⁵ As of 2017.

Epistemicide and global tragedy

Epistemicide is a term coined by Boaventura de Sousa Santos, a Portuguese legal scholar who contributes to global social theory and other legal and social discourse relevant to coloniality and notions of pluralistic justice. Epistemicide is “the murder of knowledge” (de Souza Santos, 2014, p. 92). I am naming the contexts where the research took place as sites of settler colonial occupation and governance which have relied on epistemicide to form their stories and presences. I follow my own life experience complemented by the analysis of Quechua political scientist Sandy Grande and colleagues who suggest that settler colonialism is a concerted effort to destroy Indigenous peoples:

A...campaign for ‘Native Elimination’... waged through the collective actions of presidents, statesmen, generals, university officials, and church leaders. For more than two hundred years, the settler state has relentlessly worked, through strategies of religious conversion, child abduction, forced assimilation, and the rule of law (Grande, et al., 2019, p. 246).

Strategies of settler colonialism include subsuming populations of people and their societies into a dominant order, using a “logic of elimination” (Wolfe, 2006, p. 388; Orr, Sharratt and Iqbal, 2019) through the violent erasure of the Indigenous lifeworld, based on a desire to possess, transform, and control land: “the primary motive for elimination is not race (or religion, ethnicity, grade of civilization, etc.) but access to territory” (Wolfe, 2006, p. 388). I submit, as well, that an under-researched aspect of settler colonialism is the way that epistemicide is produced and maintained through the debasement, mockery, and misunderstanding of Indigenous and specifically Anishnabe spirituality and ontological framing evidenced in literature. Such debasement is also seen in common social practices such as mascots and widespread ignorance of the

need to affirm the dignity of Indigenous peoples and their ways of life, including the health of environments: human social environments as well as territories, waters., and living nonhuman communities (some might refer to these as the nation of trees, nations of plants, birds, mammals, and countless others).

Primacy of settler colonial systems and cognitive patterns creates conditions and practices that manifest as poor relations with nonhuman others, for all, which contributes to degraded environments that depend on capitalist logic, using extractivism and abusive land management regimes. Anthropologist Anna J. Willow has written that “when rivers run free, Indigenous communities thrive” (Willow, 2019, p. 82). Willow delineates extractivism from other forms of resource extraction as a practice that is “relentless in its quest to obtain more than required for simple sustenance” (ibid., 17). Through this dissertation I demonstrate that the rise of extractivism, settler colonialism, and epistemicide are factors that correlate with the decline of eel populations in specific places. I mention rivers here because rivers are a historical habitat where eels have been known to migrate, connected with the life-sustaining ways of Anishnabeg societies for generations. Rivers are key to physical development and travel of eels and have largely been impacted by dams and other settler colonial infrastructures which cause significant barriers for eel migration, longevity, and repopulation.

In his 2014 text, *Epistemologies of the South: Justice against Epistemicide*, De Sousa Santos calls for the development of “intercultural translation” (Santos, 2014, p. 212)⁶ by bringing attention to the social and intellectual contributions of resistance and

⁶ Intercultural translation is complex and intricate according to Santos: “Intercultural translation consists of searching for isomorphic concerns and underlying assumptions among cultures, identifying differences and similarities, and developing, whenever appropriate, new hybrid forms of cultural understanding and intercommunication that may be useful in favoring interactions and strengthening alliances among social movements

liberation movements primarily originating in the global south. De Souza Santos suggests there is much to learn from the global south:

“...movements or grammars of resistance that have been emerging against oppression, marginalization, and exclusion, whose ideological bases often have very little to do with the dominant Western cultural and political references prevalent throughout the twentieth century” (ibid., p. 21).

In other words, addressing epistemicide involves grammars of resistance that do not only operate against Western modes of thought and critique; there must be as well an affirmation of Indigenous value and existence. This dissertation does not seek to “deploy political or academic oppositions....to reify Indigenous versus Western differences” (Anderson, J.D., 2011, p. 93) and instead, privileges Indigenous knowledge and ontology to ask questions of other disciplines and practices. For those who live on Turtle Island/North America, there are relatives in all directions from other Indigenous societies around the world.

The concept of epistemicide is also used by *Wahponaki* scholar Rebecca Sockbeson who writes that epistemicide, for Indigenous people in North America, “happens in subtle, and perhaps more devastating ways when compared to those of previous epochs in Indigenous history” (Sockbeson, 2017, p. 2). Importantly, Sockbeson argues that epistemicide is not complete, tracing it as a type of separation: “separating knowing from being helped legitimate the denigration and thus erasure of Indigenous onto-epistemology” (Sockbeson, 2017, p. 3). Scholars addressing epistemicide create visibility and reclamation of that which has been disrupted and disturbed through erasure and assimilation. In the words of Sockbeson, “connection to our ancestors is

fighting, in different cultural contexts, against capitalism, colonialism, and patriarchy and for social justice, human dignity, or human decency” (Santos, 2014, p. 212).

deeply embedded in our language, and the survival of our language demonstrates failure of the colonizing intent of epistemicide” (ibid., 20). I am a learner and scholar of *Anishnabemowin* and the lifeways of Anishnabeg pursued through my own embodiment; these lifeways inform my methodology and research approaches. Contributions toward countering epistemicide will involve interventions in academic discourses, and the balancing of sources. Simultaneously, Indigenous scholars operate these pursuits while working in settings where “our institutions and disciplines are often responsible for the construction of... incongruity” (Leddy, 2017, p. 98).

I see potential for “intercultural translation” (Santos, 2014, p. 212) in disciplines like human geography, political ecology, and animal geographies and studies. These are attempting their own ‘decolonizing’ processes. I consider those disciplines while pursuing and strengthening the foundations from which my embodied knowledge of being *Anishnabekwe* derives. Anishnabeg are not restricted to live and work in separate siloes or environments of the familiar institutionalized apartheid while being critiqued and othered; Indigenous people have the capacity and ability to claim space as citizens of the world despite the common perception that Indigenous life is relegated to apartheid settings or exclusive to ‘the spatiality of the camp’ (Ek, 2006). Indigenous knowledge keepers are contributors to world affairs at all levels of engagement, in innovative ways that honour and lay bare individual and collective sovereignties.

I demonstrate that the epistemicide enacted against the knowledge of my ancestors and forebearers, along with our neighbors, relatives, and fellow Indigenous Peoples, is indeed incomplete. I do so by giving primacy to Indigenous and specifically Anishnabe epistemology, ontology, and the framing of worlds constructed through

animated practices of *kaandossiwin* (gathering knowledge) and *doodem* (clan) relations that are foundational elements of Anishnabe society and cosmology. As a member of distinct land-based legal orders, my role as a member (and one who carries responsibilities) exists among many others who exercise and grow knowledge of Anishnabe lifeways. There is a dEarth of holistic appreciation for eels in material expressions and a lack of collective awareness and understanding related to ongoing ecological disasters affecting them in contemporary Anishnabe society.

These disconnects are the result of “slow violence” (Nixon, 2011) a process which can be subtle because it is “spectacle deficient”⁷ and has impacts that “range from the cellular to the transnational and ...may stretch beyond the horizon of imaginable time.”⁸ Slow violence “occurs... out of sight...is gradual and accretive, its calamitous repercussions playing out across a range of temporal scales” (Nixon, 2011, p.2). The practices initiated by settler colonialism—domination, erasure, and assimilation of peoples and monetization of land and lifeforms—are one bit of Anishnabeg history and life circumstance. Since the introduction of settler colonialism, the degradation of eels (and many other species) has been a correspondent and rapidly accelerating form of invisible violence that corresponds with the attempted assimilation of Indigenous lifeways across spatial and political scales.

This calls for a specific approach to environmental justice that privileges Indigenous conceptions of wellness, environmental health, and other correspondent ideas which I discuss and refine throughout subsequent chapters. Drouineau et al. discuss the need for a global approach to “management” of eels; they suggest that

⁷ Ibid., p. 47.

⁸ Ibid.

pressures affecting eels must be identified as part of widespread trends, i.e., climate change, and that “global causes mean global solutions are warranted”; they call for “coordinated international management, acting on each source of anthropogenic pressure” (Drouineau, et al., 2018, p. 916).

I bring an intervention by making clear the relationality and ethics of Indigenous and specifically Anishnabe research methods (Craft, et al., 2021; Chiblow, 2019; Wilson, 2008; Smith, 1999) to add another layer to the many voices which are calling for increased attention to the plight of *Anguilla rostrata* from numerous angles.

Disconnection from eels is a tragedy for all people and ecologies, many of whom are not aware or have not noticed that eels are reduced or absent from the watersheds throughout Anishnabe diasporic geographies. Their value and medicine is needed in watersheds around the world. I propose eel decline as an abject existential crisis stemming from the constructed lifeworld of coloniality that affects groups and individuals in uneven, inequitable ways. I suggest that anyone can claim a stake toward taking action for the wellness of eels and the water where they live and grow---and that doing so is a matter of cognitive, temporal, epistemic, and environmental justice.

In this project, I operate from the ontological space where the eel is ancient relative and medicine who forms worlds that humans may only partially understand or fail to adequately understand at all. Medicine in an Anishnabe framing can carry several contextual meanings which I discuss in the methods chapter. Eel migration pathways span vast pathways in subaquatic environments, through cold layers of highly pressurized marine water and temperate, surface-level estuary and fresh water alike. The anthology *Eels and Humans* edited by Tsukamoto outlines the above-mentioned

framework for analyzing *Anguillid* species around the world. Their triangulation of natural, cultural, and social sciences includes what the authors categorize as “cultural dimensions” such as “idioms, arts, tradition, mythology, archaeology, and memorial services” (Tsukamoto & Kuroki, 2014, p. v) to indicate some of the ways in which eels are culturally significant to human societies through time. Loss of eels is loss of medicine, seasonal knowledge, and land-based connection to place for Indigenous societies, which is a loss for all members of any society.

Recent turns in academic disciplines initiated by Indigenous peoples veer toward a reanimation, a revitalization, that *can be* relevant to the study and recovery of relationships to eels: tracing decolonial practices and processes (Smith, 1999; Maldonado-Torres, 2007; Geniusz, 2009; Belcourt, 2015; Mignolo, 2015) and paradigm-shifting disentanglement from internalized coloniality (Gunn Allen, 1986; Deloria, 1999; Maldonado-Torres, 2007; Goeman, 2013; Brunette-Debassige, 2018). Other approaches include the recasting of historical events and facts through Indigenous analysis and embodiment, affirming Indigenous autonomy and sovereignty to resist erasure and genocide (Witgen, 2011; Whyte, Talley, & Gibson, 2019; Estes, 2019; Awasis, 2020). The field of Indigenous legal studies (Borrows, J 2018; Borrows, L., 2016; Curran, 2019; Curran and Napoleon, 2020; Craft and King, 2021) is deeply related to the pre-Columbian lifeworld of Indigenous peoples. The longstanding impact of fascist and oppressive policies targeting Indigenous lifeways, facilitating epistemicide and initiating ecological catastrophe, is clear; the era of settler colonialism remains entrenched. There is and always was resistance and pushback which will continue until *minobimaadiziwin* is restored and achieved across Turtle Island.

Returning to my rejection of the Anthropocene as overarching concept, I instead situate my work in the framing of Fourth World studies. Toivanen et al. have described the many approaches taken toward Anthropocene study, which they define as a term with “conceptual multiplicity” (Toivanen, et al., 2017, p. 184) but still, I maintain that Anthropocene scholarship does not always speak to Indigenous experience. There is a much longer land-based tenure and memory embedded in Indigenous ecological knowledge (Whyte, 2018) than most settlers conceptualize. To find a space that affirms the embodied, everyday knowledge of this tension and resistance, I pursue threads of engagement with the scholarship of Fourth World studies. The field of Fourth World Studies is described as a way to circumvent inappropriate categorization.

[Fourth world studies] ...bridges international relations theory and Indigenous studies, offering a conceptual framework that recognizes the international political character of dominated peoples while de-naturalizing the modern state system. It also recognizes the struggles for political self-determination of nations far older than 500 years (Ryser, Gilio-Whitaker, & Bruce, 2016, p. 53).

Fourth World Studies grows from the thinking of the late Secwepemc leader George Manuel and aligns the experiences of Indigenous nations from the global north and south, and indeed the world over, in a framing with other dominated peoples globally. It is a framing to study the complex phenomena of modernity and coloniality and the local expressions and lifeworlds of dispossession and disruption.

Anishnabe studies can be linked as a distinct node within Fourth World political framings and studies. The most concrete example is found in the “four directions metaphor” of Anishnabe medicine wheels, documented widely as teaching tools and wholistic models of expressing interconnection. Ryser and Gilio-Whitaker present four directions teachings as common in Indigenous societies and cosmologies around the

world including Konga, Toltec, Nuu-Chah-Nulth, and Anishnabe, among others. Within Fourth World theory, the four directions (east, south, west, north) are connectors and facilitators of interdimensional understanding:

This remarkable metaphor in its simplest form reflects the relationships between fixed physical points in space on the surface of the planet as well as with the galactic points that are in motion internal and outside the planet (Ryser & Gilio-Whitaker, 2016, p. 55).

In other words, the four cardinal directions carry meaning across cultural difference that enables connections between Indigenous cosmologies and worldviews. The Anishnabe clan system, or *nindoodemag* is also related to the four directions. *Nindoodemag* (Bohaker, 2020) is a term used to describe the relationship of individuals to their clan animals e.g., if an individual was bear clan, they would say *makwa nindoodem* (bear is my clan). Other iterations of the clan system are referred to as *doodemiwan* (Awasis, 2020; Jewell, 2018; Conroy, 2012); *doodaemag* (Acoose, 2011); *doodem* (Corbiere, 2019; Fontaine, 2020). Four directions outlines an orientation of movement, connections to the seasons, tethered to the Earth, stemming from the Creation Stories of Anishnabeg. The history of Anishnabeg originates in the lands known as Turtle Island, or North America. Within Anishnabe kinship and governance, everyone is part of the Creation Story, and ‘everyone has a clan’ (Jewell, 2018).

All people are related to the original ‘people’ forming the *nindoodemag* system that defines the governing system, division of labor as well as other social relationships. Leading *nindoodems* are the crane, bear, eagle, fish or bullhead, wolf, turtle and deer or moose” (Ryser and Gilio-Whitaker, 2016, p. 56, italics in original).

The *doodem* tradition is tied to Anishnabe stories of being, and responsibility, and I expand further on meanings and specificities of the clan system as a distinct legal order in the next chapter.

Communities and nations “of the Fourth World” are a different framing from the often-limiting discourse of “Indigenous” peoples as opposed, perhaps, to “settler versus Indigenous” as simplistic categories of being. Fourth World nations and communities engage with ancient cosmologies and ways of life that are afflicted by the epistemicide proposed by Santos as well as ‘cognitive imperialism’ (Battiste, 2013). The Peoples have commonalities and specific ontological differences which show that the cognitive justice sought is beyond racialization and racism, although racism and phenotypical categorization (as a classification scheme) is a tool of coloniality.

Settler colonialism employs a “grammar of race” (Wolfe, 2006, p. 378) which has long suggested forms of inferiority based on superficial characteristics used to judge, mock, other, and debase the diverse peoples of the world. The late anthropologist Audrey Smedley documented the “rise of scientific racism” and the ways in which some Indigenous peoples in North America were perceived as “weak savages who had to be conquered to make way for superior civilization” (Smedley, 2011, p. 222). Others had been labeled as uncivilized savages and targeted for brutality, assimilation, and discipline. The racialization of Indigenous bodies facilitated the destruction, denigration, and erasure of sophisticated, preexisting legal and social structures that respected and understood how to manage ecologies and civilizations. Anishnabeg call this *minobimaadiziwin*, or a balanced way of living.

Scholarship strands which touch “Indigenous studies” and “decolonization” are often floating around in “decolonial” discourses that importantly critique the constructions of race relations in North American contexts; and I suggest that there is more to know and apply based on the pre-existing knowledges of “multivocality...and

wider webs of relations” (Restoule, Dokis, and Kelly, 2018, p. 219-220). The realities of Fourth World nations might also correspond with the language of “grassroots” people who are further marginalized and invisible in popular, perhaps louder, and more visible discourse amplified through the selective elevation of institutions and organizations, such as academic publishing, media campaigns, funded publicity, conferences, and so on. In the methods chapter, I draw on my experience growing up within territories and boundaries that correspond with this space of the grassroots and connect to other Anishnabe knowledge formations posited in Fourth World scholarship.

Incredibly, the webs of practices and knowledge streams among “dominated” Fourth World peoples have survived and are continually maintained at a community level, and this is where much of my motivation and energy originates to pursue this work. I maintain a personal relationship with eels, as they are my *doodem*, my clan, which I discuss in depth. Being Anishnabe is a foundational strength and gift which I describe specifically through my positionality as Anishnabekwe. Being Anishnabe before anything else—scholar, thinker, etc. also forges bonds between myself and other globally interdependent systems of thought which connect Indigenous societies, beyond the limitations and borders of nation-states. Other fields in the social sciences, such as social work, have grown in effort to take up Indigenous knowledges and concerns through approaches that grow from the “ecospiritual,” or engaging “a feminist ethic of care” (Coates, Gray, and Hetherington, 2006, p. 391) which I find productive to meaningfully navigate the many related dimensions of scholarly thought and practice.

As disciplines seek to respond to the challenge of respecting the intense gravitas of Indigenous knowledge in meaningful ways, ideas within a global network of scholars

reflect Colombian anthropologist Arturo Escobar's "pluriverse" as an important foundational concept. The pluriverse is a concept that acknowledges simultaneous existence of multiple overlapping realities. Escobar makes space for the ontological resistance and persistence of communities and networks which operate by "resisting the neoliberal globalizing project...advancing ontological struggles for the perseverance and enhancement of the pluriverse" (Escobar, 2017, p. 337).

Fourth World realities and Escobar's scholarship toward an inevitable transition to new ways of being-in-relation are aligned with the methods I work from. Dakota feminist scholar Kim Tallbear writes that caretaking and building relations are the ways forward: "ridding ourselves of the category of the settler along with its discourse of white supremacy and assertions of an inherent right to these lands and waters" (Tallbear, 2019, p. 38). The call is to find commonalities that "dismantle violence" and deny "extinction narratives" (Mitchell, 2018) that support pessimistic visions of the future.

Political ecologists, geographers, historians, and others can affirm and support the interests and awareness of "submerged cultures that have survived" (Cook-Lynn, 1997, p.75). Dakota intellectual Elizabeth Cook-Lynn, like many Indigenous intellectuals, has been advocating for decades that scholarship and practices go "beyond the complicity of well-intentioned progressive leftist white critical scholars in the epistemic and material destitution of Indigenous lands and bodies" (Harcourt, 2020, p. 1331). Concepts such as "radical hope" permeate the intellectual and practice-based scholarship which is seeded in academic practice but wishes to be relevant beyond the university and other settings.

Practitioners who support land-based practices learning from the Earth have described “walking backwards into the future... unpacking the entwined histories of capitalist and colonial logics from various sites” (McElhinny, 2021, p. 529). I work with contributions from these types of scholarship throughout the dissertation to build from and reflect the ‘pluriverse’ which is already here and where eels might be a welcome focal point of connection between Peoples and places.

Framing the dissertation

In this project, I investigate the “production of space” (Lefevbre, 1974) in settler colonial discourse and practice, including the built environment. I apply an engaged, “ensouled” (Bohaker, 2006, p. 36) analysis of experiences, places, and ideas through the study period. The field of human geography is complex and layered, with many sites of intervention and possibility. My work aligns with recent developments in Indigenous and anticolonial geographies (Coombes, Johnson, & Howitt, 2014; Johnson, J., 2012; Daigle, 2016; Hunt, 2014; Pierce and Martin, 2015; Barker & Pickerell, 2020). Theory, practice, and method within human geography can complement the generative aspects of Indigenous anti-colonial geographic practice. Layering of theoretical terrain demonstrates the relevance of eels across scales, across time and space, to describe their life in terms that have ecological and affective relevance in overlapping lifeworlds. ‘Lifeworld’ has been defined in different ways. Described below, lifeworld is a concept which:

...originated in German phenomenology as *lebenswelt*, signifying a relationship of intentionality between a conscious and imaginative human subject and the external world ...it is the everyday life, anchored in a past and directed towards the future, a shared horizon, though each individual may construe it differently (Convery, 2008, p. 134-135).

The lifeworld as proposed in the writings of geographer Ian Convery gives expression to the constructed space of habitus in the works of French theorist Pierre Bourdieu. Lifeworld builds on Bourdieu's habitus, which he described in 1991 as an "invisible reality that can neither be shown nor handled, and which organizes agents' practices and representations dynamic" (Bourdieu, 1991, p. 635). There is relevant crossover in the canonical texts of many disciplines which bears relevance to Anishnabe peoples, homelands, and life worlds. According to Convery, the application of "lifeworld" is dynamic; "it is not uniform, and differs, both between societies and within society, by educational background, fashion and social pressure" (Convery, 2008, p. 135). Simultaneously, the author documents that

...in geography, the lifeworld...has been used as a means of drawing together the phenomenological with the existential to bring new meaning to emerging concepts of humanistic geography (ibid.)

Lifeworld as a conceptual anchor is also used elsewhere in innovative ways through disciplines such as political ecology (Harcourt, 2020) and marine science (Siriwardaen-de Zoysa and Hornridge, 2016) which I consider in my analysis of human relationships to *Anguilla rostrata*.

Tracing the lifeworld may correlate to a type of self-identification within paradigms, a declaration of positionality. I recognize my positionality as Anishnabekwe and a direct relative of eels as acknowledged by ancestry, biological family, ceremonial affirmation and practice in the communities and governance orders to which I belong. Chiblow writes that "positionality statements...promote transparency while acknowledging beliefs and cultural background of the researcher" (2021, p. 3). Consistent with Anishnabe "protocol" and in respect of intellectual property, rights, and

protections (Diamond, et al., 2018) I acknowledge too that I am navigating a balance by working with forms of sacred knowledge and must do so with care, accountability, and respect. The responsibilities and roles of women in Anishnabe society, as connected to water and water governance, are present in the literature (Anderson, K., 2013; Day, et.al, 2014; McGregor, 2015; Chiblow, 2019; McGuire, 2020) and inform the ethical terrain of my cultural sharing and reference points.

Women physically carry an environment to support the growth and continuity of life; the womb is portal through which all humans travel to arrive on the Earth. Women's roles are an important aspect of Anishnabe governance—gendered responsibilities and rites are tied to webs of relationship and historical memory. This research acknowledges the entrenched foundations of gendered roles and leadership based on matriarchal social orders in Indigenous societies (Gunn Allen, 2006; McGuire, 2020) and also simultaneously highlights *doodem* or clan as another way to connect with land and place (Johnston, 2006; 2006a). Clan relationships are a way to apply and mobilize the knowledge that has already been established and laid out through embodiment and through the Anishnabe scholarship of those who have built the foundation toward describing and shaping water governance through revitalization of Anishnabe *inaakonigewin* (Craft, et al, 2021; Craft, 2020; Awasis, 2020) or laws of conduct.

My goals are to form accurate translation and to give shape to the “pluriverse” of lifeworlds navigated in the study. I state and embrace my biases and do not seek to obscure, project, or deny them. Knowledge transmission is both intergenerational and learned through applied practice for Anishnabeg. It also must come from a subjective lens; “what non-native science and medicine dismisses as ‘anecdotal’ and therefore

‘suspect’ is in the Anishnabe way the highest possible degree of credible information” (Geniusz, M, 2015, p. 4). Navigation of my own lifeworld is then part of the research and how I express interaction with the complex terrain of an eel’s world that is encountered.

I am not a marine biologist, a fisheries scientist, a classically trained philosopher, and indeed lack training in many of the disciplines which interest me, and which inform the project. It has never yet been possible for me to raise enough money to fund a seafaring vessel that would take me to the Sargasso Sea or other seascape to study, capture, or track eels, nor has my education or personal path led me to a place where I am in alignment with the practices of animal sacrifice, dissection, and other standard methods characteristic of some strains of research that claim to produce knowledge about eels. I recognize that there is limitation to my engagement with the works of scholars and researchers who are trained in these methods and fields. In making the limitations explicit, I recognize the risk of essentialism and misinterpretation; I recognize the limit of my reach as I work with information gathered from collective knowledge of *Anguilla rostrata*.

This dissertation finds its home in Indigenous geography and specifically the growing “Anishnabe research paradigm” (McGregor, 2018; Chiblow, 2021) which is an expansive field that I argue originates in ancient practices of Anishnabeg peoples forming and participating in land-based ecologies with epistemic, ontological, and material dimensions. Anishnabe research practices have been building for decades, as many Anishnabeg retain ancient spiritual, material, cultural, and ontological orientation and align their multiple ways of knowing with contemporary tools and processes available, such as the English language, forms of Western scientific inquiry, and others

(Smith, 1999; Wilson, 2008; Acoose, 2011; Absolon, 2014; Johnston, 2006; McGregor, 2018; Craft., et. al, 2021).

The role of research, for Anishnabeg scholars, is to “engage appropriately in a series of relationships with other beings... to serve our nations now and into the future” (McGregor, 218, p. 244). My work considers “Indigenous diasporic studies” (McLeod, 1998) as a foundation by which Anishinabe land-based memory and practice might be affirmed, extended, and reactivated. Cree scholar Neal McLeod asserted that diaspora is a phrase often used to describe the experience of immigrants to a new place, but that Indigenous notions of diaspora must be considered as well, since diaspora can “create a condition of alienation both in our hearts...ideological diaspora, and our physical alienation from the land” (McLeod, 1998, p. 54).

Anishnabeg communities across North America have encountered the attempted eradication of their knowledge and existence through a “long, historical duration of capitalism, colonialism, and patriarchy...a past of unequal relations among knowledges. In many cases, those relations led to epistemicide” (Santos, 2018, p. 209). Cognitive justice is a pathway towards reversing, “unsettling” (Wynter, 2003) the “coloniality of being” (Wynter, 2003; Maldonado-Torres, 2017) which characterizes conditions of contemporary life, particularly in the North American contexts where I have lived, researched, and worked, and sought places to learn from eels. I will now turn to describe the contents of each chapter which build from the proposal that the decline, abuse, and disregard of eels, in policy and practice, is symptomatic of an epistemicide affecting Indigenous and specifically Anishnabe and related peoples in settings throughout Turtle Island, the continent known as North America.

1.4 Dissertation roadmap

Literature Review, Chapter 2

This chapter is structured as a thematic review and draws from several fields to establish support for three concepts that frame the overall project. The concepts emerge as gaps in different literatures where studying eels, through human geography and informed by Anishnabe methods, can uniquely address directed questions.

Anishnabe studies is not a subfield of Indigenous or human geography; as stated earlier, it is related to Fourth World studies but has its own distinct historical contours which I introduce so that my “three concepts” have footing.

The first concept is *doodem*, or clan, which I frame as an embodied ontology and legal practice within Anishnabe social norms and legal traditions. Clan relationships flow from Anishnabe Creation Stories and other forms of *adzokanag*, sacred knowledge and stories that belong to all Anishnabeg. I suggest that the conceptualization of an Anishnabe geography can flow from the established efforts in critical human geography to consider “space” as a production of relationships, after Lefebvre and specifically the critique brought by Pierce and Martin (2015).

Pierce and Martin bring “place” as an addendum to “space” with attention to the ways in which place is co-constituted as “ontologically and epistemologically hybrid” (Pierce and Martin, 2015, p. 1288). I develop a framing where *doodem* relations are the foundation of Anishnabe ontology and social ordering, thereby generating a geographic range where eels have relevance to historic iterations of Indigenous relationships, including place and seasonal practices. I align *dodemiwan* (Jewel, 2018; Awasis, 2020) as a distinctive legal process and category, building from the literature to show how *doodemag*/clans guide social conduct across multiple levels of interaction and

behaviour, which I establish by working from the models developed in *Drawing out Law: A Spirit's Guide* by John Borrows (2010) and other sources.

Aaron Mills has suggested an approach that involves “attending to the lifeworld-law relationship,” (Mills, 2016, p. 857) where he defines the lifeworld as “ontological, epistemological, and cosmological frameworks through which the world appears to a people” (ibid., 850). The lifeworld-law approach is an emerging area of study that enables placement of *doodem* in a distinct legal category for Anishnabeg that I describe and expand; thus, the work is also an engagement with the revitalization of Indigenous legal traditions and draws from that scholarship as well. Naturally, there is a relationship between Creation Stories and lifeworld, but also a relationship between Creation Stories to individual agency, perception, and expression within a collective. I adapt this approach through the application of *doodem* as my lens of genesis for the project. I did this to counter the alienation resulting from existing in the dread of settler colonial occupation and omnipresence.

The second concept that I discuss—nonhuman kinships and relatedness—is related to *dodemiwan*, but distinctive and broader. I develop a more general sense of kinship, and specifically relationships with nonhuman animals from a lifeworld informed by Anishnabe ontology to include place. I review recent papers from animal geographies and critical animal studies, papers that have engaged Indigenous thinkers and scholars and align to the “multispecies turn” (da Rocha, 2021) which reframes and repositions relationships with animals and others. Da Rocha suggests that the multispecies turn is an intersection between law, decoloniality, and reconfiguring human relationships to nature that shift “normative discourses” (da Rocha, 2021, p. 890). This

applies in legal practice related to environmental policies and the cognitive, epistemological foundations that inform conceptions of human-nature relationships. I also incorporate papers from critical animal studies that have relevance to practices in eel conservation and management (Srinivasan, 2014; Braverman, 2015).

Third, I discuss my read on the emerging field of Indigenous environmental justice braided with practices in political ecology. I see the fields as related; Indigenous environmental justice has distinct contours from other conceptions of environmental justice (McGregor, 2018a; Gilio-Whitaker, 2019) which is intimately tied to the experiences of Indigenous communities in different geographies. Political ecology is a bridge between the two. The movement toward building frameworks of Indigenous environmental justice has different origins and goals which I describe and refine as both place-based and self-determined.

With these three concepts, the setting of my research is footing for the task of “environmental reconciliation” (Borrows, J., 2018) that is needed during the “time of the Seventh Fire” (Kruse, Tanchuk, and Hamilton, 2017) which is different from the “decolonization” that is proposed in Indigenous geographies and other studies. Environmental reconciliation and the Seventh Fire flow distinctly from Anishnabe thought and practice, specific references to current thought in Anishnabe ontology, described in the chapter. The Seventh Fire is temporal location and lifeworld concept informed by ancient Anishnabe historical events, geographies, and ancestors.

This knowledge has been stewarded through forms of practice held by respected people and families within Anishnabe communities, e.g., Benton-Banai as documented in *The Mishomis Book* (1979) but also many others. For Anishnabeg, adherence to

ethical conduct through laws and relationships with animals, places, waters, and other beings supports human and environmental justice. Relationships are Earth-based and simultaneously cosmological; life is connected to other dimensions such as a spirit world as evidenced and upheld through Anishnabe linguistic patterns (Gross, 2016).

Anishnabeg lifeworlds are deeply reverent to animals. Anishnabe stories and laws suggest that humans live in a world formed by the sacrifices of a muskrat who dove to the bottom of the ocean and pulled fertile Earth from the ocean floor so that humans would have a place where they could live, where they could cultivate life & thrive in respectful interdependence (Johnston, 2006; Bang, et.al, 2015).

Fields like animal geographies, political ecology, and environmental justice offer potential connections that support an understanding and application of Anishnabeg worldviews in broader settings. The literature review is grounded by Indigenous teachings and stories to overcome limitations of living in the milieu of settler colonial lifeworlds. Knowledge of how to live in a balanced way is an encounter of relationships within multiple dimensions—the late Anishnabe botanist Mary Siisup Geniusz is worth quoting at length on this point.

The Anishnabeg have always believed that the ultimate good is a bountiful land that could and would supply all that humankind needs to sustain life. This planet of ours has four orders of life. The first created, the elder brothers are the Earth forces: the minerals, the rocks, the wind and the rain and the snow and the Thunder beings and all of the rest of the beings we refer to as weather, and the *Aadizookaanag*, the grandfathers and grandmothers, our ceremonies, songs, and traditional stories. The second created, the second brothers, are the plants: the trees, the greeners and the nongreeners. The third created are the nonhuman animals, the four leggeds, the Flyers, the creepers and the crawlers and those who swim. The fourth created, the youngest brothers, and therefore the most vulnerable are human beings. All four orders of life are interconnected. None can survive without the others except for those of the first order, and if they had to survive alone they would not be happy because they could

not do as Creator directed everyone to do in the beginning time. They could not take care to see that all of life continued as Creator had intended (Geniusz, M., 2015, p. 15).

For Anishnabeg all of life is intertwined. The wellness of some cannot come at the expense of others. The current epoch of time is different than the time when these stories and instructions were imparted from prior generations, but the stories remain relevant and instructive. Like academic discourse, policy, and other avenues, there are limitations in drawing on strictly settler colonial framing, which is why I continually make distinctions about what kind of knowledge I refer to and why. A good correlate is seen in John Borrows discussing the missing dimensions of justice projects that stem from state initiatives. Despite their best efforts,

...state-driven processes...can never create or replace the importance of resurgence and reconciliation in the hearts, minds, and actions of people living in more local contexts (Borrows, J. 2018, p. 66).

The “local context” Borrows refers to can extend to mean the habitat and geography of both eels and Anishnabeg peoples who have a common, shared story of migration in disparate areas, with similar disruption on their life path as a result of colonial encounters and encroachments. The formation of Indigenous environmental justice serves to critique the coloniality which forces harm on water, eels, and many other orders of life. I suggest that healing and reconciliatory actions can support Indigenous environmental justice but also must be defined by those who are experiencing and identifying injustices (McGregor, 2018a).

Indigenous Methods and an Anishnabe theoretical framework: Chapter 3

I begin with discussing Anishnabe research methods. A key element of foundational practice in doing so is identifying and tracing my own relationships and

place in Creation (Wilson, 2008; Kovach, 2009; Absolon, 2011; McGregor, 2014; 2018). Much of the discursive space in Anishnabe studies has been initiated by the contributions of dedicated knowledge holders and Elders, the scholars of current and prior generations, and innovative thinkers in Indigenous and global studies who have navigated academic space and built the discipline from Anishnabe lifeways (Danard, 2016; Danard and Restoule, 2010; Debassige, B., 2012; Pitawanawkat, 2013; Borrows, L., 2016; McGregor, 2018; McInnes, 2016).

These ideas and philosophical domains do not belong to any one individual, rather it is the responsibility and inclination of each Anishnabe person to learn their role in supporting *Mino-bimaadiziwin*, which I define as a balanced way of life, as members of collective and geographically dispersed Anishnabeg. Acoose describes *bimaadiziwin* as a “way of being that balances all forms of being Anishnabe” (Acoose, 2011, p. 36) while Gross has translated *bimaadiziwin* in affiliation with “the proper conduct of life” (Gross, 2011, p. 211) The addition of “*mino*” has a general connotation of good or benevolent, to indicate that the pursuit of a good life is the aim of Anishnabeg people ethically engaged in the worlds they create.

Finding a place in the paradigm, I anchor into Anishnabekwe Kathy Absolon’s “flower petal model” (2014) synthesizing a balance of my own “*dibaajimowinan* (stories)” (Leddy, 2017) of family history and connections. These stories help locate practical ways to carry out my research. I operate alongside established and growing knowledge streams in the fields of Anishnabe and Indigenous studies, including the arcs formed by Anishnabe researcher Sue Chiblow who has traced “Anishnabe women’s *gkendaasowin*” (2019) or knowledge about water. I draw on my own water knowledge to

offer framings of learning through and with water through a section titled “*Kwe and nibi*: the inverted world.”

I conclude by demonstrating that these methods are both grounded for Anishnabeg ethics and are also translatable to others; Indigenous knowledge and storytelling is valuable and benefits all people. The methods originate from and are accountable to Anishnabe knowledge systems and can be applied to research settings that coincide with but are beyond the limitations of current borders and boundaries—of disciplines, of mentalities, from genocidal states and their collaborators. I look to *O mushkegowuk* Cree geographer Michell Daigle’s concept: Daigle refers to the “spatial politics of recognition” (Daigle, 2016) which describes the ways that lands and places are formed and upheld by colonial constructions of space. Daigle suggests that applying the “spatial politics of recognition” is a way to reduce the scope of Indigenous rights:

...certain places in this colonial landscape such as reserves and treaty territories become naturalized as the spaces where Indigenous...self-determination can exist while all other land under Canada’s jurisdiction becomes marked as readily available for privatization, capitalist accumulation, and settlement (Daigle, 2016, p. 264).

I consider the merging of cognitive awareness, land-based practice, intellectual pursuit, interspecies healing, and kinship expressions in the ways that I conduct my research. Building on Acoose (2011), Coulthard (2014), McGregor (2015), Daigle (2016), and Craft and King (2021) I foreground Anishnabe ceremonial practice and protocol. I attend to my responsibilities, identified by my name, *doodem*, ancestral lineage, spiritual and physical expression as a woman, and other personal specificities. All of my work is guided by personal practices learned in ceremonies and other “Anishnabe teaching and learning environments” (Debassige, B. 2012).

Who knows about eels? Chapter 4

In this chapter I review studies related to eels by offering a summary of recent literature on “scientific” developments. Many of the selections within this chapter were recommendations from my study participants, discussed more thoroughly in chapter 5 on fieldwork findings. There are many who share the idea that eels are valuable in ways other than financial cash cows for fishing industries and individuals. The chapter has three sections: Identifying Anthropogenic Pressure, Things Written/Eels in the World, and Anishnabeg, Eels, and Lifeworld.

In this chapter, I respond to a provocation in 2007, from archaeologist William Allen who asked, “who speaks for the eels?” (2007a, p. 3) in response to the wide geography where eels migrate and have largely disappeared. I found that there are many sectors dedicated to eel research. The role of *Anguilla rostrata* as food source for North American Indigenous people and essential nourishment in the days of New France and elsewhere is frequently mentioned as an anecdotal aside of some long-ago past, but for multiple Indigenous societies and groups in North America, eels remain “more than food” (Allen, 2008). In The *Jesuit Relations*, eels are spoken of as the food that “sustains when all else fails” (Jesuit relations, Gutenberg) which is one demonstration of how historically abundant and reliable they were.

Old Algonquin-Anishnabe people and others have talked about eels “creating great silver pathways in the rivers during migration times” (Commanda, cited in MacGregor, et.al, 2011, p. 11). Images of eels appear in ancient petroglyph formations and in sacred stories of Indigenous people throughout the Northeast (Allen 2008; Prosper, 2014). Eel skins, oil, and flesh have known uses in Indigenous canoe-based societies: eels are part of traditional diets, used to make technologies such as birch bark

canoes, lining of footwear, used in doctoring and medicine-making, among other important purposes (Allen, 2008; Prosper, 2014; Giles, et al, 2016).

Seasonal activities of prior economic orders for Indigenous societies were oriented to seasonal fishing which included eels, always (Recht, 1999; Giles, et.al, 2016; Prosper, 2014; Ebersole, 2018). These economic lifeways were commonplace for centuries and have been quickly modified and diminished with the acceleration of colonial expansion and a cash-based economy. There is an impact on intergenerational knowledge transmission and the feasibility of land-based activities and processes, which contributes to generational disconnect from eels. The three segments in this chapter trace complexities in identifying some of the parties and groups who have contributed to collective knowledge and eel studies in diverse places.

Fieldwork stories with eels: Chapter 5

In this chapter I document a detailed reporting of my fieldwork findings. During the COVID19 pandemic my fieldwork plans required massive adjustment and shifting. I share my experience of executing limited place-based research practices. I was required to cancel, adjust, and rebuild through an emerging network of scholars and practitioners which came about because of pandemic conditions and the willingness to try new things. The study in this dissertation is an explicit engagement with an ontological motivation and genesis that originates from and is nurtured by Anishnabe *kandossiwin* (Abolson, 2014) and yet ventures into a “transdisciplinary” (Suchet-Pearson, et al., 2013, p. 26) space where I worked with others from different backgrounds and fields.

Transdisciplinary works, according to geographer Sandie Suchet-Pearson and colleagues, involve an “interplay of knowledges...stories of lives entwined...new places

of being and belonging” (ibid). I tap into the languages and spaces of transformation by navigating places where eels and humans are interacting in visible ways. I share the results of communicating with lands, waters, spaces, and human individuals within places, which led to unforeseen connections, collaborations, and insights. In reporting and analyzing my research site findings, I draw on the “transformative third space” (Bartmes & Shukla, 2020) which emerges from my inquiry and the expertise of others as an emergent, malleable web of relationships, a space which is “produced” (Lefebvre, 1974) by the intentional fusion of stories from overlapping and intersecting lifeworlds.

The chapter also has three sections: a fieldwork story from the Hudson River watershed, a discussion of selections from the raw interview and survey data, and a discussion of dreams that came about during the research period. Dreaming is a distinctly Anishnabe method that is also seen as a valuable practice by other Indigenous people (Jewell, 2018; Miller, 2013; Million, 2011; Hirt, 2012). The chapter ends with an analysis of intersecting lifeworlds to correspond with the content of the interviews.

Conclusions and ways forward

This chapter concludes the dissertation, focusing on limitations, summary, and future directions. The link between all of these is the pursuit of multiple forms of justice which are core teachings I personally learned from eels. My findings throughout the thesis are complemented by the overlapping structure of the framework proposed by Tsukamoto and Kuroki: that eel study is best considered through natural, cultural, and social sciences (2014) which I respectfully engage.

Also, I have woven Anishnabe studies, and specifically legal traditions such as *doodem* and the “Seven grandfather teachings” (Benton-Banai, 1979) into some of the overlapping segments of that model, which might be classified under ‘cultural’ science.

Several forms of justice are proposed in the literature I cite: cognitive justice, temporal justice, spatial justice, environmental justice (Santos, 2014; Hickey, 2017; Awasis, 2020; White and Springer, 2015; Craft and King, 2021; McGregor, 2015; Gilio-Whitaker, 2019).

Author and eel enthusiast Richard Schweid has suggested that life becomes “meaner” when it “no longer offer(s) the simple conditions needed to support eel life” (Schweid, 2009, p.158). With every new Spring season in North America, an influx of new eel life, carried by the tides, arrives from the ocean, a new ecological cycle starts, another year begins with the simple promise of transformation and growth that characterizes an eel’s lifelong transformation. I suggest that attention to eels reveals a bit about these several forms of justice, built from a framing of ‘justice’ based on Anishnabe time and relational framings.

However discursively unfamiliar and implausible the ideas may seem to other disciplines, the wholistic impact of *Anguillid* eels constitutes a lifeworld that is worth centering and learning from, through the lenses of time, space, and being. They are tangible expression of life connecting prior epochs to a reflective present, the bridge to a co-constitutive future of improved relations. A recognition of the past is needed, with aspirations for a future that is cognizant and knowledgeable about human impact on surroundings in explicit and subtle ways as evidenced by the lives of eels.

Chapter 2 Literature review

What is an Anishnabe geography of eels? The question is too large. In this chapter, I suggest three concepts that emerge from a read of multiple, distinct literatures to support an approach that whittles the question to a more manageable size. In my Introduction, I suggested relationships with eels are types of justice narratives. Justice discourse should, according to Boaventura de Sousa Santos, avoid “weak answers... those answers that do not challenge the horizon of possibilities” (De Sousa Santos, 2014, p. 20). In naming these concepts, I wish to broaden the horizon of Anishnabe studies by connecting with diverse approaches in scholarship. The plight of eels, which is my focus, occurs both across North America and on a planetary level. It is a story connected to the epistemicide and loss of collective knowledge that I continually refine in each chapter.

It is necessary to first contextualize the setting where I am working, alongside notions of decolonial scholarship and practice. There are questions about needless contribution to the trends which currently produce a cadre of ungrounded papers that cause harm to Indigenous peoples and communities in “decolonial” discourse; I have found that people enjoy the phrase, and yet have trouble unpacking what it means to ‘decolonize’ in practical ways, to apply alternate epistemologies and practices to conceive and build justice-oriented worlds. Chilean poet Raul Zurita proposes a land-based, alchemical process that shifts colonial horrors from tragedy to resurrection through inherent power embedded in the land: emerging flowers represent “the resurrection of our love flying up into the sky like the flames of a dream flickering before us” (Zurita, 2009, p. 74).

To clarify, I am looking to acknowledge that my work is rooted in a deep love, *zaagidowin*; flowing from being Anishnabe: “concepts of love, kindness and generosity are not naive ideals in Anishinaabek society. These obligations and relationships are living examples of Anishinaabek natural law” (McGregor, 2015, p. 71). Application of the Anishnabe legal principle of *zaagidowin*, love, enables the development of a vision for a radically different world that transmutes the horrors of current reality, especially for colonized and dominated peoples, spaces, and places. Gross clarifies that in Anishnabeg worldviews, spiritual and legal concepts (by extension, *zaagidowin*,) can take very clear and recognizable forms:

...we can find living, breathing embodiments of the spirit of kindness. These people are not religious specialists who went off to a monastery. Instead, they are ordinary, everyday people who do not just espouse the values of Anishnabe culture, but live them (Gross, 2016, p. 241).

Love is not simply a feel-good word denoting emotion or emotional states. Ojibway Elder Onaubinisay has said that for Anishnabe, “there is an energy, by which everything is created... in English, what we call ‘love’ is that energy of caring and kindness...this desire to live life is what we were given” (Dumont, 2018). Beyond and in excess of whatever is meant by ‘decolonization,’ the restoration of *Anishinabe-bimaadiziwin* or “life in the fullest sense” (Genius, M., 2015, p. 5) is the translation I am seeking through the vehicle of these three concepts.

The concepts of this chapter are: *doodem* as embodied Anishnabe legal practice, nonhuman kinships and relatedness, and Indigenous environmental justice. In this configuration of ideas and principles, Anishnabe cultural and spiritual teachings are foundational and can be relevant across scales. What follows is a brief introduction to coloniality and how I respond to it, followed by explanation of the three concepts, under

their respective subheadings, and discussion of the literatures that support them for proposal of an emerging Anishnabe geography animated by love and respect for the *doodem*, the clan, and the Indigenous legal tradition connected to that concept.

Naming coloniality and an expansive geographic practice

Nelson Maldonado-Torres, tracing discourse from Argentinian philosopher Walter Dignolo and Jamaican cultural theorist Sylvia Wynter, suggests that “decolonization is an idea that is probably as old as colonization itself” (Maldonado-Torres, 2007, p. 261). Maldonado-Torres frames the concept, “coloniality of being” by suggesting that “colonization and racialization are expressions of the dark side of being, that is, they represent radical betrayals of the trans-ontological” (ibid). Sylvia Wynter in her intervention to Michel Foucault’s conception of the episteme (Wynter, 2003) challenges the “descriptive statement” of “man as human itself” tied to Western notions of episteme. “Man” is the default, formed by rigid separations of knowledge by disciplinary classification. Her argument is informed by W.E.B. Dubois’ explanation of the color line: “the extreme situation both of the darker-skinned ‘natives’ and of the Black in the West’s new conception of the human was, as it still continues to be, both discursively and institutionally constructed” (Wynter, 2003, p. 310). These allow for both a gendered and ontological framing of what it means to ‘be’ in the current episteme or framing of time that is the present day.

The “coloniality of being” proposed by these authors is a key anchor to forming a place-based, geographically inscribed lifeworld to include space and the metaphysical dimensions of relating with others, including eels. Spatial affect and spatial relations are produced whether those dimensions are conscious or not. Settler colonialism depends

on the erasure and elimination of Indigenous peoples, according to the framing offered by the oft-cited Patrick Wolfe (2006) who wrote that “settler colonialism destroys to replace” (p. 388), and that “bioassimilationist” goals target Native populations. These goals affect people and societies, and by extension the animals that they depend on and are related to. Settler colonialism seeks to mediate and control life and what it means to be deserving of life or in need of assimilation, elimination, or some wretched combination/extension of the two; it therefore shrinks and manipulates space and the possibilities within constructed spaces.

Historically, settler colonial destruction ‘to replace’ means destroying the material culture as well as the bodies and cellular integrities of Indigenous people including their food sources (Daschuk, 2014; Koehler, 2018). It also involves massacres and mass killing, blatantly or through coercive means, and requires forced change for surviving populations, with settlers proclaiming themselves as the “new natives” of a place. The new “natives” in settler colonies build and uphold institutions forming an order which is cultural, legal, material, and has other dimensions. Colonial studies scholar Lorenzo Veracini (2014) alternately suggests that settler colonialism is best understood through the metaphors of viruses and bacteria.

Viruses and imperialism/colonialism are related. Viruses wiped out entire populations in the New World and the Pacific and allowed colonialism and indeed settler colonialism in the first place (p. 618).

Veracini traces the biological and environmental behaviour of settler colonialism as a metaphoric bacterium that interacts with places, spaces, and behaviours between settlers and the spaces they dominate, in ways that mimic the impression of bacterial colonization in cells. Using evolutionary biology to analyze and position monocultures

alongside colonial regimes, Veracini suggests that decolonization discourse acts as a sort of flawed treatment targeting the wrong pathogen: “‘antiviral’ decolonizations actually enhance the subjection of Indigenous peoples under settler colonialism” (Veracini, 2014, p. 629). It is these backdrops which inform my decisions to point out coloniality but also start from the ontological occupation of an Indigenist stance. Indigenism involves the prioritization of Indigenous liberation and ontology.

Indigenist research may turn to non-Indigenous paradigms for support, ‘this support is not for external validation but rather as a complementary framework for accepting the uniqueness of an Indigen[ist] research paradigm [Wilson 2008:16] (Capuder, 2013, p.51).

To avoid essentialist traps, such as empty land acknowledgements and one-sided reconciliatory efforts that produce no real change, I suggest that Indigenous scholars in the global north benefit from learning through discourses that are distributed globally and which they can relate to as forms of resistance. Indigenous people alive today are part of longstanding traditions that seek to animate Indigenous histories, prophecies, and priorities (Benton-Banai, 1979; Estes, 2019). A global framing is also evidently necessary for *Anguillid* species experiencing global population decline.

Eurocentric colonialism impacts the very sense of self and perceptions of what life is and what is possible within life. Black feminist geographer Katherine McKittrick suggests that anticolonial thought engenders a “disobedient relationality that always questions, and thus is not beholden to, normative academic logics” (McKittrick, 2020). A commitment to anticolonial thought calls everyone to attend to the ways in which colonialism has affected our perception of self, and the conception of imperial Other (Smith, 1999). In North American contexts, the settler world and epistemic conventions

are taken for granted, as the given, the inevitable, the unchanging, the default.

“Othered” groups then form perceptions and practices of place—and of themselves—through structures not of their own making. Relatedly, many people alive today take a world without eels as the default; many have no idea that eels are even part of so many waterways, or that they do not originate strictly in north America.

Eels are worldwide and have relatives in all the Earth’s oceans, and they demonstrate to Indigenous peoples that temporal and spatial experiences are much bigger than the colonial borders which confine relationships within occupied homelands where current Indigenous societies persist. In this literature review, I want to get to what might be called “ontogenesis” (Mignolo, 2015, p. 116) or the creation of a sense of being, which is not the same as accepting what Wynter, Maldonado-Torres, and Mignolo might call the ‘defaults’ afforded in coloniality and adherence to its expectations, desired outcomes, or norms.

Throughout this dissertation, I make the case that the current state of the world – the so-named Anthropocene epoch, formed in “interspecies geographies of hell” (White and Springer, 2017, p. 163) which characterize collective experiences, represents an inverted and distorted understanding of what *minobimaadiziwin*, or life, could be. I make the claim that *minobimaadiziwin* is an ontological paradigm, a lifeworld, a way of life that does not support harming others for the sake of harm. To kill needlessly is antithetical to Anishnabe concepts of life, while it is necessary and inevitable to settler colonial relationships and worldviews. Coloniality deals in violence, betrayal, and other aspects of the “dark side” of life referred to by Maldonado-Torres (2007).

The carefully chosen sources reviewed in this chapter are a way to affirm an Indigenist stance (Nakata, 2007; Wilson, 2008; Capuder, 2013) which is both deeply personal and connected to global webs of relation. Each concept supports a connection to eels and their habitats where I have personally been affected and hold a specific type of situated knowledge. “A presupposition of relationality” (Moreton-Robinson, 2017) informs the methodology for chosen literature in each field, seeking to bridge concepts of relatedness and Indigenous feminist practice with concepts in critical human geography. Another layer, another connector is scholarship rooted more broadly in Indigenist thought and philosophy from Anishnabe studies and elsewhere.

Many scholars, activists, and practitioners in diasporic contexts seemingly embrace projects labeled “decolonization” with various aims. I have been guilty of wheel-spinning in decolonial discourse and therefore I would like to re-orient my gaze and veer away from “decolonization” as a goal I align with and move toward the “recreation of being” suggested by Cree scholar Janice Acoose in her 2011 dissertation, *Minjimendaamowinon Anishnabe: Reading and Righting All Our Relations in Written English*. Acoose forms a “recreation of Being” through naming, claiming, and reorienting all of her relations through a “*manidokewin*” (ceremony) which follows the protocols and ordering of her spiritual and cultural practices, inclusive of all living matter. She draws on written stories and traditions of Ojibway scholar Basil Johnston, the late ceremonialist Edward Benton, her own family and other affiliations and reference points with Anishnabe sacred societies.

The pursuit of such aims “requires a metaphysical inquiry... commonly a mystified or even taboo subject” (Anderson, J. 2011, p. 95). The teachings, spiritual

spaces, and knowledges of Indigenous societies have long been marginalized, othered, mocked, caricatured, and seen as “imagined, ahistorical, constructed, or essentialist” (ibid). The strategy of intervention with ceremonial protocol, practice, and scholarly engagement deployed by Acoose represents an innovative and appropriate way to engage the question of *doodem* relations in an academic context.⁹

Describing current theoretical and practical gaps in critical geography has been accomplished in scholarship that seeks to attend to “border epistemologies” (Naylor, et al, 2017) in ways which disrupt the binaries of “artificial difference” (ibid., p. 1) that contribute to uneven power relations, even despite the effort to ‘decolonize.’ While decolonial approaches are attempted by subfields like political geography and others, overall the discipline of critical human geography contends with tethers to its exclusionary origins, which many scholars are attempting to address.

Geography still produces ‘emotionally toxic material spaces’...for non-white geographers and commonly excludes black and minority ethnic geographers... geographers have experimented with participatory approaches that go beyond mere inclusion of research participants in research design, instead seeking to radically reconfigure the purpose and approach of geography, calling for collective action against social injustices (Barker and Pickerell, 2020, p. 644).

Barker and Pickerell call for a shift in how geography is done and recommend philosophical shifts and correspondent behavioural changes to the ways that geography is approached, through attention to the established notion of place articulated by

⁹ I don’t need a PhD to have a relationship with eels. Contributing to scholarship that concerns itself with human-animal relations, Anishnabe law, and the reclamations of place and space, are opportunities to form pathways toward intentional and conscious relations with eels. These are Anishnabe pursuits that have not yet been accomplished on a wide scale, and which I wish to pursue— as a matter of hope, to render submerged futures possible, with teeth, in my own reality—to start. These futures might also be desirable among those who align with the vision of restorative engagement with waters where eels live.

Indigenous and allied scholars. They observe the nuances of a radically different perception of reality:

...place is often articulated as having agency in stories of the ancestors, the spirits and Indigenous cosmologies which act as guardians and custodians of relations to the land and sea – the life force of powerful non-humans is evoked in place (ibid, p. 64).

Barker and Pickerell suggest that geographers adopt a ‘radical’ approach since “knowledge, emotions, feelings and intuition only come into being through the doings of the body with other bodies, places, and objects, including non-humans” (ibid, 65). The concept of “doings with the land and sea” is proposed in their work, a methodological approach that supports Indigenism and the privileging of Indigenous ontology while honouring other positionalities. Their approach might be considered an application of “decolonial accountabilities to Indigenous peoples in settler colonial contexts” (Naylor, etal., 2017, p. 3). Accountability is another way to call people into relation, not only with other people, but with places, environments and elements as well.

Importantly, anticolonial geographies can make the case that Indigenous knowledge is important, not only for Indigenous people, with positive outcomes for all of life. For example, anthropologist Dame Salmond has written about the development of legal institutions that support kinship with water in Aotearoa through ‘rivers with personhood.’ Rivers are sites of ancestral engagement and persistence in Maori cosmology: “sometimes, river currents are spoken of as *whakapapa*, lines of ancestry tied to a post representing a great *rangatira* or chief” (Salmond, 2019, p. 184). The personhood approach makes space for participation and being, with land, with water, in ways that are informed by Maori knowledge but benefit all people by protecting and revering that element which all require to live: water.

Geographic inquiry moving toward this interdimensional understanding of place, affect, ensouled landscapes, and human responsibility relies upon Indigenous understandings of place, and geographers who want to be relevant to the discourse, according to Barker and Pickerell, must address their epistemological underpinnings. If “nonhuman others participate in the creation and maintenance of human sociability” (Kwek and Seyfert, 2020, p. 36) the implication of Indigenous legal orders and conceptions of space/place can form relationally grounded and inclusive environments that counteract the entrenched coloniality of prior and persisting constructions.

In other geographic scholarship, the discussion of space and what constitutes space continues to dominate. Pierce and Martin (2015) suggest that the oft-cited “production of space” concept from French theorist Henri Lefebvre can be taken up in ontological terms. Lefebvre’s work is foundational to human geography and expands definitions and conceptions of space, but not always place. Place is a key intervention to bridging gaps between Indigenous epistemologies and geographic thought; geographer Jay Johnson writes of the importance of place:

...recovery of place within Western thought... needs to embrace those anthropologists, geographers, ecological humanists and philosophers who are using phenomenology as a bridge between Indigenous and Western philosophies of place (Johnson, 2012, p. 834).

Pierce and Martin trace how “Lefebvre sought to unite three ‘realms’—the mental, social, and physical—into a conceptualization of what space is” (Pierce and Martin, 2015, p. 1282). They bring relationality into their discussion:

...a relational place perspective provides a flexible conceptual scaffolding for attention to the political economic dimensions or bundles of place without insisting on a solitary focus on the (socio)-spatial (ibid., 1294).

In other words, place addresses relationships formed by political economy while simultaneously suggesting that the “givens” of Lefebvre’s theories might miss the mark in terms of relational possibilities. They suggest, then, an “openness” to redefine place and reset the terms through relational awareness.

“Indigenous” geographies cannot be conceived without understanding Indigenous laws, customs, and practices which might be analysed through phenomenological considerations of worlds otherwise, including through language, spirit and being. Potentially, another element of Indigenous geographies may be realized through analysis and definition of affect, a complex concept which bears its own discussion. Kwek and Seyfert trace ‘affect’ to Pace Benedict de Spinoza, and suggest that “affect is always relational; it always already involves two or more: a thing, a body, an image will affect another, *only to be affected in turn*” (Kwek and Seyfert, 2020, p. 37, italics in original). Place is formed through relationships and structured through conceptions of law and conduct; something which attentive geographers might appreciate: “without interactive and sustained relationships with place, it is not possible to ‘know’ or understand the world” (Barker and Pickerell, 2020, p. 649).

Relational place making and, perhaps, the mapping of a geography can reflect the aliveness of a landscape so inherent to Anishnabe thought and practice. This might constitute a total reframing of what a ‘geography’ might be through consideration of relationships, beings, generational connections that exist in and co-constitute a place. Pierce and Martin suggest that attending to “‘directly lived’ space requires inquiry into the experiences, understandings, and affects of individuals” (Pierce & Martin, 2015, p. 1293). They offer this intervention as a way for scholars to draw on Lefebvre’s work in

re-articulation with getting to know place through “multiple, multi-faceted bundles and approaches” (ibid., 1295). Attention to what is made in and constitutes a ‘place’ combined with ontological framings offers a pathway to sharing and relating in different ways, an inclusivity and openness to pluralism.

The authors recognize that this is a contested and often uncomfortable site or position, one that many geographers will find productive in engagement with the theoretically dense work of Lefebvre. Their framing of space that is “directly lived” gives form and content to other elements of space which they suggest may not be clear in the theory itself. However, for clarity, I personally think what Lefebvre says can be read, itself, in interesting ways as well. There is, too, a chasm of translation between Lefebvre’s French and the translated English. Lefebvre wrote about how the body, space, and the heart are informed by science, culture, and perception:

Representations of the body, they reside derived from accumulated scientific knowledge, disseminated with an admixture of ideology: from knowledge of anatomy, of physiology, of sickness and its cure, and of the body's relations with nature and with its surroundings or milieu...lived experience, for its part, may be both highly complex and quite peculiar because culture intervenes here... the ‘heart’ as lived is strangely different from the heart as thought and perceived (Lefebvre, 1974, p.40).

Here, Lefebvre critiques the way people know and understand the intelligence embedded in the living organ of their own hearts. The heart is central to understanding the multiple forms of intelligence that constitute Anishnabe conceptions of life and being, otherwise referred to as ontology. Lefebvre, Foucault, and other “normative” thinkers in the discipline of critical human geography have critiqued the scientific materialism of approaches toward the body as evidenced here. The body as a site of biopolitics is the social and categorical norm for much discourse in social sciences;

Lefebvre here suggests that the heart 'as lived' is worthy of consideration itself which might be considered antithetical to the numbing conformity of colonialism.

A critique of coloniality founded in Indigenist feminism and notions of womens' bodily autonomy involves personal emancipation, collective responsibility, and land repossession for Indigenous governance to form unified alliances against extractive activities (Haysom, 2017). These principles and actions are yet to be implemented through geographic shifts of practice and intent stemming from 'decolonial' approaches. Leeuw and Hunt (2018) call for awareness that "Indigenous lives, communities, languages, and cultures continue to bear the burden of settlement... material survival is at stake" (p. 9). Tonawanda Seneca scholar Mishuana Goeman has argued that the awful stories told about Indigenous people to subjugate them and take over the land-- which forms places and sites of Indigenous law-- are an intricate part of what I might call violent story-making, codified as law:

Conceiving of land through narrative process... is not unique to Native people. Property law, European concepts of environment, and concepts of Nation all rely on tales to lend meaning to nature and ordered space (Goeman, 2013, p.35).

Goeman takes a narrative approach to geography, which is a response to the suggestion that stories and storytelling do not have value or contribute to a rigorous or credible discipline. Indigenous legalities often rely upon story and emerge from story, which does not discount their credibility; for Anishnabeg, some forms of story are animate beings. Goeman applies the agency of Indigenous women to employ and point out authoritative stories about place and being. Similarly, Mohawk anthropologist Audra Simpson unpacks the space of sovereignty and law which renders Indigenous women

burdens to the state and targets of its violence—to include the state’s places, spaces, and stories. The bodies of Indigenous women are a casualty of settler colonial societies:

... [Indigenous women] have historically been rendered less valuable because of what they are taken to represent: land, reproduction, Indigenous kinship and governance, an alternative to heteropatriarchal and Victorian rules of descent. As such, they suffer disproportionately to other women. Their lives are shorter, they are poorer, less educated, sicker, raped more frequently, and they ‘disappear’ (Simpson, 2016, p. 7)

The erosion of what Gunn Allen called a “gynocratic order” (2006) based on the leadership of women in Indigenous societies in North America is an important correlate to the rise of these socioeconomic disparities. But importantly, the narrative about Indigenous women should not espouse a greater sense of victimhood and ‘a new colonial frontier’ (Clark, 2016) which draws Indigenous women and girls into geographies of pain and misery with endless, ongoing state, medical, and academic intervention. Hunt and de Leeuw draw attention to Indigenous thinkers and scholars engaging geographic inquiry, who are “insisting on their agency, survivance and futurity... both within and outside the academy...focusing on embodied theorizations of daily life” (Leeuw and Hunt, 2018, p. 9).

Goeman and Simpson are examples of such scholars within the academy, who insist that gender and the specific ways that women’s bodies have been targets of the state and its productions of space, law, and place are central to addressing colonial claims of domination, to begin. They also importantly highlight the rearticulation of women’s agency in placemaking. Nation-states in the North American context are material artifices that “require a disappearance of Indians in order to make the meta claims of the state make sense” (Simpson, 2016, p. 11). Goeman names the relationship between Indigenous women and settler colonial nation states which “comes

down to power” (2013, p. 38) and which calls for “imaginative geographies...[to] open up new possibilities and inaugurate new and vital meanings” (ibid, p. 39). It is these imaginative leanings and inaugurations which set a path for the next section, a review of some concepts in Anishnabe legal traditions that support an emergent Anishnabe geography.

I acknowledge such a geography is wholistically undefined because it is not community-sourced knowledge and validation I have engaged here. My work here is mere node within a fabric of Anishnabe ontology, history and land, where I am a sole ruminator on an intergalactic concept (Anishnabe geography) that exceeds my ability to define it simply. It does not exist solely in the human or even in the Earthly, in my view. I wish to build from the knowledge of interconnection and the agency of life itself: “bodies everywhere and always are being remade by their environments, and bodies are always active in their own remaking” (Guthman and Mansfield, 2012, p. 499). Indigenist sovereignty, and the making of sense, the making of place, begins by looking to refine and sort the wisdom of one’s own life and experience, including relationships and responsibilities. These are complemented by those storytellers, historians, and change-makers who have formed these fields and whom I cite. They have done immense labor through their physical, intellectual, spiritual, material, cognitive, and affective contributions, and I am grateful to be in dialogue with their work.

2.1 Doodem as embodied Anishnabe legal practice

The “resurgence” (Borrows, J., 2018) of Indigenous legal traditions might be considered an extension from the “science of wholeness” (Deloria, 1999, p. 40) that originates from Creation Stories and other forms of Indigenous knowledge. These are

foundations of “ethnoscience and human ecology...the intellectual roots of traditional ecological knowledge” (Berkes, 2008, p. 70). From Indigenous traditions and practices, forms of “customary law” can be identified; these are practices that have been established by gathering knowledge from ancient civilizations: “knowledge from older beings who have the wisdom of the world within their grasp” which includes “technology that arose as a result of our learning experiences” (Deloria, 1999, p. 131-2). Indigenous legal traditions also encompass the realms of science, technology, medicine, and social orders. Science, medicine, and technology do not belong to white supremacy. I refer here to a diagram, or “cosmogram” (Ryser and Gilio-Whitaker, 2016) depicting interactions between Anishnabe law and cosmology, enabling the connection of internal processes and concepts... i.e.: knowledge, growth, reflection, and purity, as one example of rungs in a wheel which are also connected to medicines in the physical environment on Earth, such as tobacco, cedar, sage, and sweetgrass.

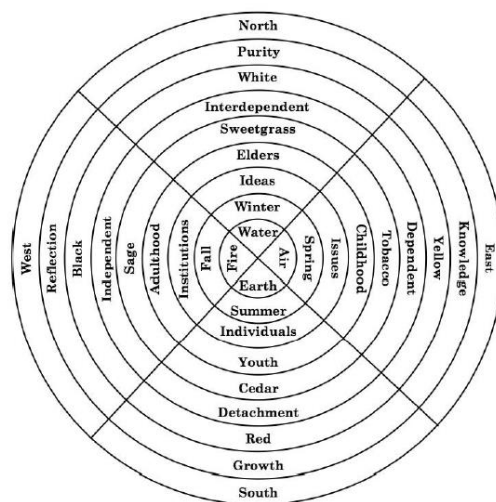


Figure 1. Borrows, 2016. p. 845

Borrows describes the figure’s complexity and potential utility by positioning it as a way to ‘draw out law’:

...many Anishnabe stories, songs, ceremonies, and teachings are organized in this pattern to allow participants to jump between insights and thus create new ways of respectfully interacting with the world. These patterns also help practitioners learn to memorize each law and teaching when they leave the classroom, lodge, council, or other teaching venue (Borrows, 2016, p. 845-6).

A key aspect of this diagram is the directional orientation: the four directions depicting east, south, west, and north, with each direction holding specific attributes of being, correlation to seasons, and other understandings related to medicine and life stages. This Anishnabe cosmogram connects to the other Indigenous cosmograms mentioned in Fourth World knowledge systems (Ryser and Gilio-Whitaker, 2016) that depict an interconnected and interdependent conception of reality linked to realms beyond the Earth, but also very much anchored to and growing with the Earth. It is also noteworthy to say that the Sargasso Sea, where the life of *Anguilla rostrata* originates, is an area within the Atlantic Ocean “bounded by four mighty ocean currents: east, south, west, north” (Svensson, 2020). I interpret this visual, felt, and perceived and oceanic movement as a “Hermeneutic circle” (McPherson & Rabb, 2014) or a way of drawing meaning from patterns in water and through the wheel/cosmogram.

In any discussion of Anishnabe law and legal orderings, an important phrase is said and heard often: “*bangi eta go negoo ningikendan*/I only know a little bit” (Borrows, L., 2013, p.1). Lindsey Borrows highlights the linguistic differences in legal interpretation especially through Canadian and US legal systems that rely on Latin or Roman terms alongside Anishnabe understandings which may not have direct correlates, which explains the difficulty in explaining how the above cosmogram correlates with the four directions in the Atlantic Ocean/Sargasso sea. For example, *humilis* in the Latin refers to being on the ground, or close to the Earth. *Dabaadendiziwin*, an Anishnabe legal

principle often translated as “humility,” is an active process or way of doing by evidence of the stem of the word, -iwin- which makes it a verb. The translation Borrows offers is “to measure out your thoughts” (Borrows, L. 2016) which is a key underpinning; a pluriverse of diverse meanings and interpretations lends itself to this sort of grounded and applied humility. *Dodemiwan*, clans do not act alone. Each clan is part of a larger system, a sophisticated and interdependent way of maintaining a social order and seeking forms of mediation and balance. No Anishnabe can do this by themselves.

Anishinaabe *inaakonigewin*¹⁰ encourages us to reflect on responsibilities as diffused in a web of multiple legal interactions, some of which we are aware of, some not, and through which we are all somehow affected (Craft, et al., 2021, p. 32).

The recounting and sharing of Creation Stories, where Anishnabe law might be said to originate, often involves building intricate, thoughtful, and protocolled events with many specific practices, processes, and considerations i.e., medicine lodges, land camps, and other physical and spiritual structures. That is not possible here, and so I refer most superficially to published records and literary interpretations which have a different kind of value. Stark (2021) offers a comprehensive framework for contemporary application and approaches of *minobimaadiziwin* to develop “Anishnabe Jurisprudence” (p. 337) in US courts.

Most importantly, laws of Anishnabeg are not outdated, archaic, or extinguished: “Indigenous law operates and is expressed through legal institutions, responding to the challenges of each generation across time” (Curran and Napoleon, 2020, p. 270). As a specific field of advanced postsecondary study, and in communities everywhere, Indigenous law in the Canadian project is experiencing institutional reinforcement

¹⁰ Craft, et al., define this term as “law” although I might translate it differently; ewin/ referring to a way of being and doing

resulting from the work of dedicated knowledge keepers who have survived genocide and 'bioassimilation.' There is also political support from Canada-specific factors such as the Truth and Reconciliation commission's work culminating in 2015. This is not true for the United States, Mexico, and other Indigenous contexts in the so-called West.

Recent developments to advance Indigenous legal traditions in Canada emphasize that histories of domination must be addressed:

Indigenous legal traditions must be treated substantively as law— to be debated, applied, interpreted, argued, analyzed, criticized, and changed. As with other law, Indigenous law may be approached philosophically (Napoleon and Friedland, 2016, p. 739).

Indigenous laws and legal traditions are often complex and there are certainly incommensurate aspects of translating to English, however, scholars in the field have taken the approach of applying principles in specific settings to form community-based notions of how to identify and apply law. For example, Napoleon and Friedland documented a case study where they drew on values to take the complexity bit by bit and include community members in the formation of common understanding: "we focused on the issue of resolving intergroup conflicts and the use of generosity and hospitality" (ibid., p. 750). The involvement and participation of community is essential to revitalizing Indigenous legal orders.

For example, Craft and King (2021) designed, refined, and implemented a water declaration with people in Treaty 3 territory which was a ceremonial, iterative process with parallel structures of accountability, ceremony, and relationship-building to identify how Anishnabe relationships with water can and should look according to their own jurisdictional understanding of women's responsibilities to water. Jewell (2018) in her

effort to understand and make *dodemiwan* clear engaged a community-based process to gather her community, in ceremony, to hear words of Elders and knowledge keepers.

Similarly, the development of an Indigenous geography, even conceptually, that might be legible through English language and normative epistemics is inherently limited by the origins of the discipline (critical human geography) with its relationship to militarism, empire, and colonization. I suggest, here, that to build an Anishnabe geography appropriately is beyond my reach for the purpose of this chapter. To conceptualize it, however, is possible, based on multiple understandings of law and territory that reflect the sources suggested by Craft and King: spiritual, natural, customary, and human:

Spiritual, natural, and customary law is applied to current relational contexts, with a fuller understanding of relationships and responsibilities... these sources of law make up the principles by which interactions are governed among beings (Craft and King, 2021, p. 5).

In formulating a covenant that outlines practices of reciprocal relationships with water based on human agency, the people referenced in Craft and King's study have collectively developed a "mechanism of intergenerational learning... to encourage Anishinaabe and western knowledge systems to work together in order to protect water" (ibid., p. 12). This methodology demonstrates some of the many opportunities which exist for affirming and extending the foundations of Anishnabe law which can be strengthened and reinvigorated through collective practices. Clans/*doodemag* exist in those collective practices.

Introducing *doodem* as a legal order that has been established, I suggest that the following four Anishnabe scholars are each, independently, worth quoting at length. Fontaine and Corbiere describe the nuances of language and relationships created by

the *doodem*, while Awasis and Jewell mobilize the orally transmitted clan teachings of Elder Jim Dumont and other Anishnabeg knowledge holders, which they describe in their writings. *Dodemiwan* is a concept put forth by Dumont, which the two latter authors work with to form their arguments about self-governance of First Nations and Anishnabe ceremonial and political communities in specific contexts. Both Awasis and Jewell build their arguments from community-based gatherings and events which were facilitated with the express intent of disseminating information to Anishnabeg about recovering their clans.

The word '*doodem*' is interesting in itself, deriving from the root '*de*,' meaning 'heart' or 'centre'...with...relationship between the words '*ode*' (heart), '*oodena*' (town or village), '*doodem*' (clan) and '*de-we'i-gun*' (the Big Drum). Simply stated, it's about our connectedness: physically the heart is the centre of the body and the town or village is the centre of a community. The clan is therefore accepted as the centre of identity/responsibility and the drum is the heartbeat and/or the centre of the nation (Fontaine, 2020, p. 31).

The *doodem* or clan is the foundation of Anishinaabe identity. The *doodem* was most often an animal, bird, or fish but could also be a tree or a *manidoo* (spirit, such as the thunderbird or the merman) ... *Doodems* tied people to specific places, especially places that those *doodem* animals inhabited. In this way, the Anishinaabe people conceived of themselves as having been 'made' for that particular place (Corbiere, 2020, p. 13).

Anishnabe Chi Inaakonigewin (natural law) provides context for *dodemiwan*.¹¹ *Chi Inaakonigewin* is encoded in ceremonies, songs, and stories, observed in the environment, and embedded in continual processes of reciprocal relationship-building with human and nonhuman kin... temporal justice demands that Anishnabe peoples have the capability to make decisions that could impact the land in contexts and through processes that adhere to *Chi Inaakonigewin*. The resurgence of Indigenous decision-making processes is both an element of, and a condition for, temporal justice that simultaneously challenges the legitimacy of colonial decision-making institutions, misrecognition, and the disproportionate distribution of power (Awasis, 2020, p. 834).

¹¹ Awasis (2020) defines this term as "clan governance... grounded in land-based power, [dodemiwan] exists across space-time in a decentralized system generated and maintained by Indigenous people themselves" (p. 840).

Dodemiwan provides a profound sense of belonging in kinship. Dodemiwan provides instruction on living a good life that honours our kinships, land, elements, and all living beings. It provides a powerful sense of both autonomy and responsibility, of interconnectedness and individuality. Its kinship order ties far-reaching Nations together through common origin (Jewell, 2018, p. 247).

The clan systems of Anishnabeg span a wide geographic range, all of which have been impacted by colonialism, and some with environmental degradation; “quite a few Indigenous peoples in North America are no longer able to relate locally to many of the plants and animals that are significant to them” (Whyte, 2018, p. 207). The erosion of clan relationships, then, is a lingering effect resulting from “industrial settler campaigns” (ibid.) and other historical land abuses that render the current moment dystopic for many Indigenous communities. The degradation of Indigenous biodiversity, place-based relationships, ceremonial practices, kinship networks, territorial access and other vitalities, in the words of settler scholar Audra Mitchell “offer a bleak vision of Earth’s future...the planet faces the demise of its most singular and valuable feature: ‘life’” (Mitchell, 2018, p. 913). Life seems to hang in the balance.

From an Anishnabe perspective, I suggest there is a great deal more to say; “we have agency, and life is magical” (Laduke and Cowen, 2020, p. 243). In the growing field of Indigenous legal tradition and revitalization, intervention is initiated by Indigenous scholars who engage the academy but recognize why it is critically important to do so in self-reflexive ways so as not to reproduce the toxic dynamics where coloniality stems from. Community involvement is a step toward equal footing: a chance to both hear and share stories of how learning of and from one’s *doodem* holds potential for people to retrace their place in the interrelated webs of life. Jewell (2018) and Awasis (2020) engaged such research practices as documented in Jewell’s

dissertation. For Anishnabeg, it is important to ground in the reality of *zaagadowin*, or love, as a correspondent legal principle that is woven throughout the fabric of all reality, even if “love” might be dismissed as superfluous by other parties.

Western institutions have a tendency to deal in superficialities and offer placating forms of recognition (Coulthard, 2014; Daigle, 2016; Hunt, 2014; Leeuw and Hunt, 2018) which ultimately reinforce colonial hierarchies and serve to condescend the interests of Indigenous peoples, who have rich contributions, beyond mere recognition. Coulthard traces “recognition” as a process by which Indigenous people, communities and interests are given shifting opportunities to further assimilative goals; critics of mere “recognition” have argued that recognition is “aimed at molding a class of law-abiding Aboriginal citizens with identities that are formed vis-a-vis the colonial state and capitalist industry” (Daigle, 2016, p. 264). Daigle argues that geographic practice for Indigenous geographers should be situated in forms of relation that draw on ceremonial conceptions of territory and of relations, not recognition of colonial borders, constructs, and control mechanisms. Daigle suggests that Indigenous geographers should turn to long-standing Indigenous protocols and practices that form territory, whether or not they are codified and legible as laws outside Indigenous consciousness and relationalities. These are the relations which form Indigenous legal orders because they are ancient and pre-date the settler society that displaces them.

The bones, artifacts, and ensouled memories of ancient people and ancestors are in the landscape and engender connections for their descendants. When visiting other Anishnabeg territories, I have been asked by Elders, *where do your old people rest?* This question has stuck with me, informing an understanding of the land where I

live, where I originate from, and where I find belonging. Kamilori poet and educator Melitta Hogarth offers a related reframe of landscape and being in her poem, I am the emu: “I am connected to this land through my bloodlines/ I too have a right in this space/My story is just one of the emerging narratives in Indigenous history” (Hogarth, 2018, p. 63). Similarly, *doodem* relationships enable practices that reflect how Anishnabeg hold “reverence for burial sites” and, since the 1700s, have been contending with problems of grave robbing and other forms of abusing the dead and their resting places (Johnston, 2006, p. 32) initiated by settlers.

There is rigorous documentation of practices by which Anishnabeg honour and engage with the dead; told through the lens of practices throughout the Great Lakes region in the seventeenth century (Witgen, 2012; Johnston, 2006; 2006a). These practices included massive, intertribal gatherings, seasonal ceremonial feasts, collective fasting rites and visiting events, and subsistence activities for trade and the acquisition of goods. Intertribal adoptions were and are common practices of diplomatic relationship building in Anishnabe society, which include balancing interactions between the living and the dead. Blood relationships and lineages do matter, as well.

These customs are all intimately informed by *doodem* relationships and identities which are intergenerational and form “family in all four directions” (Bohaker, 2020). Witgen recalls that, “in the world of the Anishnabeg there were two categories of people— “*inawemaagen* (relative) and *meyaagizid* (foreigner)” (Witgen, 2011, p. 31, italics in original). The potential to become relative is available in Anishnabe practice and ontology, requiring respectful engagement with principles that constitute balance

between the ensouled landscape where ancestors lie and the multiple realms that Anishnabe are connected to, those which constitute their lifeworld.

Care for and of the dead is part of a living Anishnabe geography based on normative social orders, such as *doodem* or clan relations. Historian Heidi Bohaker has documented the interaction of generations through this system which I discuss more thoroughly in the next chapter. Importantly, Bohaker's work shows the *doodem* interaction between the living, the land, and the dead: "it is this concept of souls, and particularly the idea of a *doodem* soul, which explains why the Anishinabek historically felt that it was important to return the dead to the country of their birth" (Bohaker, 2020, p. 55, italics mine). Care for resting places of the dead remains an important Anishnabe tradition and responsibility that is enacted through *doodem* identities, responsibilities, and family *dibaajimowinanag*—personal stories of everyday experience (Leddy, 2017). Making Anishnabe legal orders visible today enables connection and continuity to previous generations of human and *doodem* ancestors, and the "recovery of the sacred" (Laduke, 2016). Witgen's text offers at least two profound insights about conceptualizing an Anishnabe geography: he suggests that historic seasonal migration is in fact an ancient form of what is now called 'sustainability':

...migration patterns of Anishnabe peoples...required a sophisticated understanding of the seasonal availability of resources and the carrying capacity of the land... movement of nomadic peoples in North America was not random, nor was this life a result of the lack of social development (Witgen, 2011).

There have long been attacks on Indigenous personhood denoting savagery and ignorance, well documented, and persistent. They emerge from these prior days when grave-robbing settlers felt the moral authority to quantify experiences they did not

understand through their own Eurocentric, capitalism-driven lenses. Witgen further suggests that *doodem* relations—which form relationships to territory, space, and other than human kinships—do not necessarily equate to the modern “nation” structure that has been foisted on Indigenous communities. Modern nations, as a structure, exist to fit the recognition schemes of the early colonists, and later, the oppressive settler state:

The idea of a nation, as either a political construct or as a descriptor of collective identity was the misapplication of a European social category onto a native social formation. Applying such a singular category of collective social identity to a place such as Anishnabewaki... misrepresented the social structure that produced space and identity in this region (Witgen, 2011, p. 75).

Doodem relations, by contrast, Witgen describes as ways to see and experience living networks very differently, through land, and through generations. The *doodem* itself, whether it is a fish, bird, or other life form, “represents a distant ancestor from the time when human beings first began to live on Earth...animals [are] understood as blood relatives” (Witgen, 2011, p. 80).

The *doodem* is both a relative and an adopter: Anishnabe stories about *doodemag* indicate that the *doodem* takes pity on human beings and agrees to walk with each Anishnabeg, to teach them how to live, because human beings are the youngest members of the Creation. This is different from what popular culture might mockingly refer to as “the spirit animal.” The deeply embedded relationality of Anishnabe geography is woven through structures that supersede concepts assigned by current ways of relating, recognizing others as members of nations, citizens, polities.

I suggest that since *doodem* relations more accurately reflect Anishnabe cosmology and thought, *doodem* is a seed of all embodied Anishnabe research methodology. *Doodem* relationships form connections to land beyond death and in

nodes throughout the Earth and other dimensions where animals live. Below is a diagram I made based on Heidi Bohaker's suggestion of Anishinabeg generational accountabilities:

Each Anishinaabe person exists at the centre of four lines extending in the four directions: The vertical lines represent the generations of one's ancestors and descendants, while the horizontal lines extending perpendicular to the vertical represent the expansive network of kin in the present – through one's *doodem* and through the *doodem* of one's mother or spouse (Bohaker, 2020, p. 71).



Figure 2, *Doodem* lines

Clan membership and belonging for Anishnabeg is a matter of descent but can also be facilitated through adoption and the growing of families by adding new members, who assume responsibilities of their adoptive *doodemag* (Witgen, 2012; Bohaker, 2020). Belonging, roles, and responsibilities to Anishnabe society flow from *doodemag* and extend beyond the human realm and into the worlds where ancestors and descendants remain connected to those living on and with the Earth.

The ways in which the state and its tentacular arms would recognize Indigenous peoples, through passes, status cards, and other forms of legibility are methods for the state to subsume Indigenous geographies, to decide what/who is legitimate and

what/who is not, and who is granted the autonomous agency to engage in movement through spaces and places. Identification documents operate under the guise of the state's own interests in security, rooted in control and subjugation. Daigle offers the practice of "juxtaposing state forms of recognition with the process of ceremonial regeneration" (Daigle, 2016, p. 267) to counter the state's borders, boundaries, and the ways in which it gives itself permission to say who comes and goes, and where.

Those borders and boundaries are "drastically different ontologies on territory, land, and responsibility that reproduce colonial Indigenous-state relations" (ibid). Thus, interaction with the state's laws and "tales" (Goeman, 2013) in an everyday sense involves, "reclaiming relations beyond invasive infrastructures... acknowledging the violence done by prioritizing technical and technological infrastructure as the work of national progress" (Spice, 2019., p. 47). The national progress that has been sought to build massive nation states of the USA and Canada always occurs at the expense of Indigenous life and continues to grow, morph, and irritate the established conceptions and boundaries of Indigenous territories.

National progress and security of the US-Canada nexus has been a longstanding hindrance to the movement and connectivity of Indigenous peoples. I know this both scholastically and experientially; my great grandparents initiated intertribal organizing efforts that sought to retain Indigenous autonomy and practices of seasonal travel and diplomacy between Indigenous territorial practices. They "asserted their treaty rights under the Royal Proclamation of 1763 and other treaties as early as the mid- 1920s" (Fisher, 2021, p. 57) Historian Daniel Fisher forms a discussion of diplomatic relations facilitated by my family, who were being restricted from movement, hunting, and

gathering. My great grandmother and grandfather (referred to here as ‘The Algonquin’) were part of political organizing that formed councils and hosted meetings along with neighbours and collaborators from other communities, including Clinton Rickard of the Tuscarora Nation and other Haudenosaunee people:

Chief Rickard and the Algonquin continued to collaborate into the early 1930s, most notably during the Grand Algonquin Councils of 1930 and 1931. These meetings were significant. They drew participants from all over Quebec, Ontario, and New York State to Kitigan Zibi. Their collaboration focused on onerous provincial game laws. In addition, they undergird their arguments on treaty rights and sovereignty by invoking the Royal Proclamation of 1763. They also hoped to publicize their cause by inviting government representatives to their meetings.... these encounters shed additional light on the Department’s repressive actions— most notably by severing the connections between the Algonquin and their political partners across the border (Fisher, 2021, p. 70).

These events and activities demonstrate an ongoing awareness in Indigenous consciousness that inherent rights and sovereignty to travel freely cannot be taken away; rights to territory cannot be taken away. The desire to restrict and dilute that Indigenous sovereignty is enshrined in the pillars of Canadian state making. The intent to sever these connections stems from the constant desire of the state to control, subdue, and diminish the free movement of Indigenous peoples. That free movement, evident in an eel’s migration, reflects a pre-existing legal landscape which Indigenous peoples sought to maintain and protect, and still seek to protect as their territories are vulnerable to exploitation.

Indigenous lifeways are inclusive, dynamic and participatory, embedded into the fabric of reality with no fixed center. The territory, or land, is itself a body and technology of “places” and sacred sites forming many interlinking forms of animacy. The Earth is a

universal mother and the living site which hosts these relationships. The work of humans is to respect the Earth.

Anishnabe scholar Phil Bellfly describes a tactic of installing divisiveness among Anishnabeg near Bawating, or Sault St. Marie, with communities in present day Ontario and Michigan. The nation states sought to divide and conquer by physically separating the communities and assigning different names which caused people to see themselves and each other differently:

The Indigenous people of the region refer to themselves as Anishnaabeg, which translates to 'the people who intend to do well.' They are also called the Chippewa, a term used exclusively in the United States, and the Ojibwe (with various spellings), a term used exclusively in Canada. These two different, politically tinged terms show how the visitor governments attempted to separate these sovereign people into competing and distinct camps and used a divide-and-conquer strategy as they drew the Canada-US border through the middle of their community (Bellfly, 2013, p. 199).

Relations within Indigenous legal and spatial orientations are a crucial juncture that give opportunity for Indigenous peoples and knowledges to activate agency in what seems like a constantly unwinnable circumstance. Needed are the stories and memories of prior generations to counter the constructed borders of the settler state, which are divisive and produce fragmentation; "attempts to create division, dysfunction and instability" (Fontaine, 2020, p. 31). To facilitate "the rebirth of Anishnabeg nations" (Medak-Saltzman, D., 2017, p. 146), a renewed framing is possible through tracing the historical iterations of how Anishnabeg governed themselves according to clans and other correspondent relationships. It is fair to say that "Indigenous history is not a narrow subfield of US history...rather, Indigenous peoples are central subjects of modern world history" (Estes, 2019, p. 21). I suggest here that *doodem* governance, rooted in Anishnabe doing, being, and existing, is relevant to all geographies where

Anishnabe and related Indigenous peoples have historic land tenure. It is also an important indicator of ecosystem integrity and knowing which animals thrive in different ecological environments.

I argue that the connection to Indigenous legal orders, for critical human geography, constitutes an opportunity to deepen and elongate memory beyond fragmented notions of history imposed by settler education systems and political narratives. Another link that enables the consideration of new possibilities exists through animals and the places they reside. It is not only the physical infrastructures which undermine Indigenous legal traditions: “structured violence is subtle and mundane” (Mitchell, 2018, p. 918) Chickasaw intellect Jodi Byrd suggests that “colonializing liberalism established themselves through force, violence, and genocide in order to make freedom available for some and not others” (Byrd, 2011, p. 221) which directly correlates to the problems faced by *Anguilla rostrata*, and all *Anguillid* species globally.

I end this section with the profound diagnosis of Winona LaDuke and Deborah Cowen. Laduke offers Anishnabe prophecy, legal tradition, and other forms of analysis to a diagnosis of what the authors together call “the cancer on our world today” (2020, p.244). This awareness of an inherent malaise is the precursor to my next section on animal geographies and studies, followed by a brief discussion on concepts toward Indigenous environmental justice. Laduke and Cowen speak of an economic order, affiliated with settler colonialism, that is hyper-consumptive and destructive:

It holds striking concentrations of wealth and poverty. It is organized by an extraordinary expansion of military, security, and carceral power that destroys, separates, and contains peoples based on race and nationality. It is like a cancer, a cancer on Mother Earth, a cancer on our bodies; and indeed, in the world we live in today (LaDuke & Cowen, 2020, p.244).

The proposal of *dodemiwan* as a legal order that brings together Anishnabe land, generations, space, ancestry, and connections beyond the Earth is a specific way of inviting Anishnabeg researchers to reconsider what it looks like to execute all of one's life expressions through the lens of their *doodem*. Each will decide how that can facilitate relationships with place in new ways. *Doodem* is specific to Anishnabeg and the retrieval of Anishnabe familial relations and the social fabrics of all relationships. Invigoration of Anishnabe law and legal traditions is challenging; "law is a site of discomfort...law challenges us to step outside of ourselves and consider new ways of being" (Borrows, L., 2016. P. 165). This is work worth doing which brings a wealth of opportunity for analysis, critical thinking, and creativity as one engages the heart-space of learning from and with their *doodem*.

I have formed a basis through which *doodem* or clan relationship is affirmed as a known element of a person's being, an important piece of an Anishnabe person's identity. It is also important to say that a person's name is informative and Anishnabeg carry all sorts of names: place names, story names, and personal names. Personal names are especially meaningful. The naming ceremony is perhaps one of the most important events in an Anishnabe person's life. In times pre-contact, expectant parents of coming children would seek spiritual guidance for their child's name through interaction with a gifted family member or member of the community who was specifically endowed with that gift, to be able to retrieve and identify the spirit-names of coming children. The name is not only an ornamental signifier or aesthetic preference, but the name also speaks to who the child is and what their life purpose entails.

The meaning of the name unfolds throughout time and continues to build in significance as a child walks their life path and grows into the stages of life; “these names carried a spiritual power that was often transmitted through dreams or visions. The first category of dream name was given shortly after birth” (Anderson and Campbell, 2011, p. 74). The practice is currently being revived across the diasporic settings where Anishnabe people live, and for some, naming has never fallen out of practice. This practice of naming is accompanied by several protocols, including relationship renewal. People in Anishnabe society may know of individuals gifted with naming and authorized to conduct personal ceremonies or meditations, followed by a formal and collective ceremony.

These are forms of specifically Anishnabe knowledge and practice with many affiliated protocols, much like the revelation of one’s clan that has its own ceremony. The naming practice was standard for millennia, before Indigenous children were taken from their families and forced to adapt the structure of first and last names which helped to create state legibility of families and bodies and forcefully indoctrinate heteronormativity and wives and children as patriarchal property (Scott, 1998). Due to the many disruptions of settler colonial hegemony and brutality acted against Indigenous peoples through forced assimilation, it is possible that communities and families may have lost touch with these forms of knowledge.

Despite the continuation of socioeconomic disparities and other challenges arising from colonial tactics that produce “chronic destitution” (Peers and Brown, 1999, p.545) there has been a growing reliance on healing practices building for decades among Anishnabeg communities across Turtle Island. Retrieval of names and clans are

part of such practices. Preservation of the traditions fused with political action and the revitalization of ceremonial and cultural knowledge are important ways forward, many of them rooted in “the notion of extended family” (ibid., 551) which refers not only to human family but to all of the life expressions which support and surround Anishnabeg, many of whom have given of themselves so that humans do not become lost or placeless. I have sought here to develop a footing where Anishnabeg legal traditions and geography are nascent concepts supported by the literature. I cannot do this work alone, and I exist in a collective, so the above discussion constitutes my translation and thinking based on available literature, lifelong learning, and my own life expression and experience.

2.2 Nonhuman kinships and relatedness

In this section, I consider some recent scholarship in animal geographies (AG) and critical animal studies (CAS), leading to a discussion of the limitations of settler approaches to animal relationships and ‘liberation.’ There have been important interventions from Indigenous scholars such as Anishnabe-kwe Vanessa Watts and Cree poet Billy Ray Belcourt to the disciplines of AG and CAS. Woven throughout this section, also, are responses from Indigenous scholars who have presented correspondent notions of ethics, animal relations, and other concepts to the ideas raised by scholars in “animal” based fields.

I operate from the assumption that animals have agency, emotional range, spiritual power, and the capacity to communicate with people in specific ways, and sometimes the desire to do so as well. Animal geographies is a field which has been

self-described, ironically, as exceptional in its capacity to speak for animals; according to M. J. Barrett and coauthors, it is:

Uniquely situated to address cognitive justice for animals by examining the impacts of anthropocentric and exceptionalist systems with particular attention to human accountabilities for mutual flourishing across species and spaces (Barrett, et.al, 2021, p. 160).

Barrett and acolytes suggest that communication with animals is possible through processes of what they call “intuitive interspecies communication”, a conscious form of research that enables a pursuit of justice respecting and honouring what might be called the “personhood” of animals. Deckha, a legal and animal studies scholar, draws from the framings of John Borrows (2018) to advance longstanding ideas from critical animal studies about animal personhood, considering Indigenous “reconciliation” in the Canadian context to advance ideas about how animals might be regarded with improved rights and, possibly, improved legal status.

Application of reconciliation recommendations by the Truth and Reconciliation commission (2015) as well as the Murdered and Missing Women and Girls Report (2018) are important in the Canadian legal context. Also significant is the recent (2021) Royal Assent of Bill C-15, which would implement the United Nations Rights on the Declaration of Indigenous Peoples and demand that Canadian law align to the principles of the United Nations Declaration. That document purports to uphold and extend the human rights of Indigenous peoples in settings where they have been dominated and excluded from decision-making and self-determination. These scaffolded historical processes represent potent opportunities to integrate Indigenous notions of law into everyday practice and legal systems including policy reform.

Deckha suggests opportunities in the Canadian context can extend to animals as well: including the development of “a new legal subjectivity for animals that ends their present property status in settler colonial law and materially changes the conditions of animals’ lives” (Deckha, 2020, p. 78). Recent developments in critical animal studies and animal geographies constitute some of the increased possibility to consider the “intercultural translation” (Santos, 2014, p. 212) that might address human exceptionalism and the ongoing prevalence of a ‘defaulted’ brutality against animals.

Importantly, Deckha raises questions about the nature of Indigenous notions of reciprocity and animals, forming a particular critique about how Indigenous ontology and practice continues to allow the killing of animals. Critical animal studies scholars might see the killing of animals as always problematic, which is a tension between Indigenous ontological approaches toward hunting and those of settlers from the outside looking in at hunting practices of Indigenous peoples. Reo and Whyte (2012) have documented considerations of subsistence hunting among Anishnabe communities in Wisconsin, noting that there are several protocols associated with hunting and taboos as well which constitute moral codes and boundaries. Some of these taboos include obvious principles like caution against behaviours of greed, or taking more than necessary for food, e.g., killing too many deer, which could lead to wastefulness. They also record other taboos.

One should try hard never to wound an animal; and should not shoot deer near one’s own home. Shooting deer near one’s home is frowned upon because... white-tailed deer that come by their home could be the spirits of deceased relatives coming to visit (Reo and Whyte, 2012, p. 22).

Stark also documents relationships between animals and Anishnabe:

Relationship with the Animal Nations is based upon mutual love, respect, and kindness. As the Anishinaabe engage in the act of love and respect, the act is reciprocated and likewise provided by the Animal Nations to the Anishinaabe by providing of themselves so we can be well and live a good life (Stark, 2021, p. 311).

While there is momentum for invigorated legal practices and modifications to animal relations through Canadian law specifically, there is much to consider in terms of method and “drawing out law” (Borrows, 2010). Doing so constitutes applying and institutionalizing Indigenous law in settings which then, conceivably, would affect the everyday experience of citizens within and perhaps beyond settler colonial framing. Killing and consumption are at the center of the debates between Indigenous ontology, animal relations, and compatibility with other activist and scholarly discourses. Understanding what ‘killing’ means in Indigenous terms is important and has not been translated to and codified in Canadian law at this time.

Animal geographer Leah Gibbs reflects that in its current state, “animal geographies research maintains its empirical focus on terrestrial mammals” (Gibbs, 2020, p, 775) and that there is a need to “hear the call” of other animals, including fish and insects, who are suffering at the expense of human activity. Gibbs suggests as well that there is potential in studying animals as “part of a network, assemblage or other relational form that has agency and/or elicits affect or emotion” (Gibbs, 2020, p. 774). In these conceptions of animal geographies, human beings might extend their perception and intellectual capacity to answer questions about how to relate animals in specific ways, such as animal life as co-constituted with place. Throughout this dissertation, the connections formed throughout the totality of an eel’s migration produce both an

enormity (their migratory range) and an immense specificity (the streams where they are located as they migrate) with where and how eels show up in place.

Gibbs' suggestions are useful toward developing water as a foundation through which to study animal wellness and welfare. From an Anishnabe perspective, eel falls under the category of fish and is classified with other water beings and swimmers. It is ironic and unusual to study one so closely and could be critiqued as essentialist or overly focused. Yet, for the 'embodied Anishnabe legal practice' of conducting clan-based research, there is both the focus on the singular animal and the awareness of its co-constituted environments and ecological relations which I discuss more clearly in chapter 4 on eel biology. In that chapter, I describe eels as understood both by scientists and by Indigenous communities who have communicated with eels for generations.

Barrett and colleagues indicate that developing their methods involved collaboration with specific Indigenous people, but they position animal geographers specifically as potential "animal communicators" who can adapt this method of intuitive interspecies communication to invigorate their discipline which has a history of "harmful power imbalances arising from multiple, interwoven exceptionalist systems" (Barrett, et al, 2021, p. 158). Woven throughout animal geographies is the constant debate over species hierarchy and the struggle to truly see animals as equals, or in ways that privilege animals in the web of life. Similarly, practices of conservation are sometimes built on faulty logics of species hierarchy. Geographer Inus Braverman suggests that the practice of selecting individual animal species for protection denies the relationships animals are engaged in:

...a problem with...exclusive attention to the individual animal is that it disregards myriad nonhuman life worlds, networks, systems, and relationalities that do not necessarily flow directly from the individual scale (Braverman, 2015, p. 185).

Braverman critiques the formation of 'lists' that isolate and target specific species such as endangered or red listed, noting that the people behind such lists "differ in their perspective on what is most important about life – and thus what is most worth saving, whether rarity in numbers, unique territorial configurations, or evolutionary (phylogenetic) variation" (ibid., p. 99). She specifically examines the Red List, from International Union for the Conservation of Nature which is often seen as "the organization coordinating much of the work on environmental protection and biological diversity around the globe" (Svensson, 2020, p. 260). The Red List ¹² is a criterion which supposedly gives special protections to some animals who meet the criteria for nearing extinction and are deemed worthy of protection but doesn't always include all extirpated animals.

As previously mentioned, *Anguilla rostrata* is listed as "endangered" by the criteria of the IUCN, while *Anguilla anguilla* is listed as "critically endangered", both red listed categories (Jacoby, etal, 2017). Svensson (2020) traces the specific relationship of *Anguilla rostrata* to red listing criteria. The IUCN suggest that population size is a major factor in deciding whether to red list the species, and the population size should be determined by the number of "fully grown, sexually mature specimens" which would require a "head count of silver eels in the Sargasso Sea" (Svensson, 2020, p. 262). The

¹² "The Red List classifies taxa into eight categories: Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Lower Risk, Data Deficient, and Not Evaluated (IUCN 1994). The system consists of one set of criteria that are applicable to all species and that measure the symptoms of endangerment (but not the causes). The three IUCN Red List threatened categories are Critically Endangered, Endangered, and Vulnerable" (Braverman, 2015, p. 192).

problem he points to is that per the scientific literature, “no one has managed to find so much as one silver eel in the Sargasso, after more than a hundred years of trying” (ibid.). The exact migration area of mature silver *Anguilla rostratae* is unknown, although it is speculated and assumed to be the Sargasso Sea, there is no evidence to support an exact location (Beguer-Pon, et al, 2015). The criteria for how and why *Anguilla rostrata* need to be on certain lists and targeted for conservation is a subject of much debate—discussed more thoroughly in the next chapter.

In her critique of using lists to decide which animals are worth saving, Braverman draws on Foucault’s biopower, to “make sense of conservation biology’s extensive use of species ontology, its fundamental trust in numbers, and its focus on calculations of rarity in practices of listing life” (Braverman, 2015, p. 187). In other words, she critiques the clinical practices of conservation biology which rely on very subjective reads of numbers and other data. Foucault’s biopower and the questions of bioethics and species are hierarchy are connectors to other discussions in in critical animal studies; critical animal studies scholar Richard Twine remarks that engagement with animals has fundamentally problematic hierarchies entrenched within human practices:

Bioethicists may wish to consider closer ties with environmental ethics...connections between the human mastery of the environment, understood as ecosystems and nonhuman animals, and the biomedical control of the human body (Twine, 2010, p. 43).

The notion of environmental ethics suggested by Twine leaves ambiguity in what constitutes “harm and care” (Srinivasan, 2014, p. 506) for whom and by whom. Ethics, animals, and biopower are significant questions for Indigenous ontology as well and tend to be woven into wider frames of reference that perhaps do not receive attention in

these disciplines. Indigenous philosophical underpinnings support a wholistic approach to the acquisition of knowledge, which is a fundamentally ethical venture:

...for American Indian philosophies, epistemology—the study of knowledge and truth—is not independent from ethics, since knowledge is often contingent on knowing rightly, or in ways that help the community. In Indigenous epistemologies, the world does not need to be poked, prodded, controlled, and dissected in order to discover its inner meanings (Sinclair, 2018, p. 95).

Braverman distinguishes conservation logics by tracing conceptions of life through the lens of biopower: “all that is considered natural or wild...have been confined to the realm of biological life: namely, that which is killable...conversely, humans have been privileged with political life” (2015, p. 298). The exact opposite is true in Anishnabe conceptions of environmental relations. For Anishnabeg and other Indigenous peoples, living *bimaadiziwin*, or life, seeks to affirm relationship and agential expression in all beings: “if trees, mushrooms, otters, and mosquitos are all endowed with agency, then the scope of our relationships take on different meaning” (Borrows, 2018, p. 52).

Ethical engagement is part of expectations for personal and collective conduct in many Indigenous traditions and lifeways. Chiblow documents Anishnabeg notions of ethical conduct which are “much more rigorous...than what is asked...from the University ethical research process” (Chiblow, 2021, p. 4). Engaging in research with nonhuman others, for Indigenous researchers, should engender reciprocity and draw from epistemological framings which support an ethical worldview and series of practices that are not squarely focused on human beings (Kovach, 2011; Absolon, 2009; McGregor, 2018). Anishnabe researchers, per Chiblow, are accountable to multiple forms of relationships and responsibilities. This is very different from the practices of disciplines where research is undertaken that allows certain forms of harm,

or considers harm necessary, such as research practices which modify biological processes and body parts, or sacrifice animals, for the so-called greater good or for the purposes of discovery and innovation.

While biopower by design is “directed at fostering life, violence and harm do not disappear” (Srinivasan, 2014, p. 506). Foucault’s notion of biopower is used to critique structures and expression of power “bent on generating forces, making them grow, and ordering them” (Foucault, 2008, p. 136). Srinivasan discusses the practice of tagging turtles with monitoring devices, a common practice in conservation work that seeks to gather data about animal behaviours by digital means. She asks important questions about the practice of helping or supporting turtles and other species. Tagging animals with technological interventions does harm them and causes pain, discomfort, and invasively disrupts their lives. There is a contradiction in conservationist practices that require harm in order to information about goals to study them in specific ways. She argues that in “supporting” individual animals this way, humans debase and subjectify those individual animals to unnecessary harms:

Ontological and ethical construction of turtles as populations...allows for individual turtles to be harmed by dredging, tagging, trawling, sustainable harvesting, development, etc. without it being considered as harm per se as long as the population is not affected (ibid. 511).

Srinivasan takes up biopower as a key mediator in the “struggles between *what is* and *what might be*” (ibid., 514, italics in original) through conservation discourse, noting that the animal/turtle intervened upon at an individual level occupies a space of “nonsovereign mode” that has parallels in human structures such as “psychiatric institutions, penal reform, and economic development” (ibid., 514) where harm is accepted and even encouraged through isolation and/or indifference. This is done

supposedly in the name of the greater good, by harming and hurting isolated individuals. Carceral logics which privilege human ordering confine and “manage” populations of people and animals through restrictive, pain-inducing, and punitive tactics.

These are also tactics of control and domination, even if not labeled as such. The turtle, an individual and a member of the collective, is harmed, making “spaces of care and reform” (514) difficult in the tension between saving or sacrificing the individual and preserving the integrity of the group. Srinivasan offers an important intervention to the discourse of conservation practices constantly in conflict with the balance of human-animal wellbeing and interests.

The line of thought that she traces—what is and what could be, points to the suggestions of anthropologist Dan Sayers and Justin Uehlein. In critiquing their profession of historical archaeology, the authors suggest that “there has been little acknowledgement of the potential of animal emancipation perspectives to illuminate the social past and transform the future” (Sayers and Uehlein, 2018, p. 122). The two suggest that historical archaeology helps researchers to understand how past societies have treated animals, and they also suggest that “garbage pits full of thousands of animal bones have never been treated with respect and ceremony by researchers as pits full of human bones would be” (Sayers and Uehlein, 2018, p. p. 135). To this, I respond by stating that NAGPRA (the Native American Graves Protection and Repatriation Act) was passed in the United States (where these scholars research) in 1990 by necessity due to the ongoing reality of mass desecration for Indigenous graves and sacred items including disturbing the belongings, resting places, and remains of

ancestors. Grave sites of Indigenous people can include animals such as horses, bison, and other kin. No legislation similar to NAGPRA exists in Canada, although there is a need.

There have indeed been ceremonies and recognitions in Indigenous communities to mark both the loss and the disruption of resting sites for animals, even if absent from official 'scholarly' practice. Critical animal studies, per these authors, integrates humanity in specific ways:

Humans are not just beings to blame and excoriate for their innumerable inhumanities... they are also beings in dire need of transformation in all areas of mind, body, identity, society, and social relations as shaped by the wider structures of modern capitalism (ibid., p. 20).

Indigenous ontology is not a consideration here, nor is the criminalization of Indigenous spiritual practices. Often they were criminalized *because* Indigenous societies, including Anishinabe, revered and protected animals and other nonhuman life. The world of Anishnabeg is a "spiritual power exchange...reflected in the physical world" (Jurss, 2017, p. 398) which depends on reverence for the sanctity and self-determination of animals, trees, plants, and other forms of life. The worldview supported by Indigenous languages supports an understanding across the limitations imposed by English (Gross, 2012). Kimmerer notes that her language forms a "a mirror for seeing the animacy of the world, the life that pulses through all things, through pines and nuthatches and mushrooms" (Kimmerer, 2017, p. 131). This includes the "sentient" landscapes where humans and animals are buried.

These types of casual historical fallacies and erasures of Indigenous kinship and legal principles are suggestive of the divides in epistemic starting points: by default, there is erasure of Indigenous histories including the very bones of Indigenous peoples

and the relations of their societies. These possibilities and actualities are often unknown to animal geographers and related disciplines like animal studies scholars, and absent from their discourses. Indigenous people have been buried with their animal kin, and animal parts including personal effects to include feathers, bones, medicine pelts, hides, claws, paws, and other elements of personal bundles. These are animals included in Indigenous grave sites and in resting sites of their own. While the focus of the authors' chapter—animals, excavation, and respectful, productive interdisciplinary engagement, are points well taken, I also look to the interventions of Cree thinker and poet Billy Ray Belcourt who wrote in 2014 about critical animal studies:

Animal domestication, speciesism, and other modern human-animal interactions are only possible because of and through the historic and ongoing erasure of Indigenous bodies and the emptying of Indigenous lands for settler-colonial expansion...we cannot address animal oppression or talk about animal liberation without naming settler colonialism and white supremacy as political mechanisms that require the simultaneous exploitation or destruction of animal and Indigenous bodies (Belcourt, 2014, p. 3).

Belcourt suggested that “decolonial animal ethic must instead center both Indigeneity and animality as sites of anti-colonial possibility” (Belcourt, 2015, p.4) not because Indigenous people are to be treated as inhuman animals, as policy regimes have suggested in the past, but because the inherent colonial milieu where animal studies and geographies occur is so clearly enmeshed with problematic colonial logics that deny and suppress the kinship relations which enable ecological, spiritual, spatial, political wellness and other organizational norms of Indigenous societies and lifeways.

Belcourt reemerged in 2020 with a redux of the 2014 article, to restate some earlier points, respond to critiques and outcry, and offer that “for Critical Animal Studies to perform the radical work it seeks to, it must be grounded in an understanding of the

coloniality of the world” (Belcourt, 2020, p. 25). The point he makes is supported by the work of historian James Daschuk who documented the “clearing of the plains” by accumulating millions of bison bones which are ‘grievable’ (used in Byrd, 2011) by Indigenous societies and peoples who lost not only a food source but a way of life through relating with their relatives—the bison— through that intentionally ecocidal period. Hoy, who has studied relationships of Plains peoples and bison, suggests that Lakota ontology saw the disappearance of bison in a specific way.

The Lakota believed that the bison took issue with foreign smells (coffee, gunpowder, and bacon) and noises (steamboat whistles and firearms). Offended by the disrespect they had experienced; the bison had retreated ‘back into the Earth’...the task of convincing the bison to return required addressing these slights. That meant conducting proper rituals and prohibiting whites from entering or crossing Lakota territory (Hoy, 2021, p. 101).

In Indigenous epistemic traditions, animals not only have agency but exert that agency upon their surroundings and make deliberate choices about how they will set the terms of their kinship relations. Through observation and interpretation of animal behaviour, over time, in place, animals can communicate and send messages in direct and indirect ways; they do so through their inherent intelligence. Animal and disability studies scholar Sunaura Taylor calls for a reorientation of what is perceived as intelligence:

Nonhuman animals have been victims of centuries of misinformation that negates their abilities... animals have countless capacities that human beings do not have... western science needs to alter radically the way it has thought about animals (Taylor, 2017, p.75).

The hierarchical presentation of human beings in a matrix of domination that positions them at the top with the biopolitical authority and sophistication to make animals live or let them die, is a translation from the famous tenet of Foucault’s biopower. Taylor calls

for a merging of critical disability studies along with critical animal studies to call attention to the ways in which the social constructions taken for granted in human formations that do not privilege the intelligence inherent to all the expressions of animal species who carry multiple forms of intelligence. Animals are, instead, described as lacking because they do not possess human cognition which Taylor and other critical disability scholars have critiqued for its oversimplification of animal intelligence.

The underlying axiology of critical animal studies that is so problematic to Indigenous notions of the world, and of life, is that, like so many other “givens” humans are naturally privileged in ways that are uneven, perhaps because of settler colonialism, perhaps as Belcourt implies, for other reasons. Anishnabe scholar Vanessa Watts clarifies that there is a new push to extract Indigenous perceptions and ideas without full awareness of what they encompass.

Continued transposition of theories of animal liberation and care onto Indigenous cosmological animal-human relationalities in an absence of dialogue with Indigenous methods of communicative exchange with animals discounts the agency and intentions of animals themselves (Watts, 2020, p. 124).

In animist traditions, ideas about “becoming” (Kwek and Seyfert, 2017) animals have been criticized as anthropomorphism and the traditions of ceremony that revere animals in Indigenous communities have been criminalized, discouraged, mocked, laughed at (Jurss, 2017). Political ecologist Jane Bennett suggests in *Vibrant Matter* that “we need to cultivate a bit of anthropomorphism— the idea that human agency has some echoes in nonhuman nature— to counter the narcissism of humans in charge of the world” (Bennett, 2010, xvi). Anthropomorphism, however, is also a false equivalency to the relationships expressed in Indigenous worldviews and practices because it

continues to place humans as primary. Nonhuman kinships when framed in Indigenous ontological ordering call for a total transposition of all assumed reality and deepening of ways in which humans conceive of relating with and learning from animals.

Doodemiwan and other Anishnabe *Onakonigewin* (laws) account for the multiple ways humans and animals are interconnected and related, through generations, and how those relationships might be nurtured.

Returning to the introduction of this project and the assertion that there are four orders of life, and humans are the most recent members of the order, humans in Anishnabe worldviews are the ones who are at a natural disadvantage. Animal studies that seek to investigate relationships with animals continue to center human cognition, perception, and agency. In some Indigenous traditions, the relationship between a human and an animal is reciprocal and the animal gives itself for consumption and sustenance of the people, a long running practice of animist ontologies. Giles, et al. discuss the principles that inform eel fishing in Mi'kmaq communities:

Two concepts predominate: *Netukulimk*, which recognizes that sustenance is physical and spiritual, and that harvesting practices should not foreclose on options for the next seven generations... while *M'sit No'kamaq* translates as 'all my relations' and acknowledges that Mi'kmaq people are related to all those with whom they share their territory. The concept acknowledges the spirit in all species and implies reciprocal responsibilities (Giles, et al., 2016, p.169).

For Indigenous communities, food security has long been at the fore of subsistence and other economic activities, to the displeasure of non-Indigenous people: the fishing wars of the 1970s around Lake Superior and in Michigan and Wisconsin are a prime example, along with the fish wars of the 1960's in Washington (Smithsonian, 2021). The Great Lakes Fish and Wildlife Commission pointed to the development of

their *Casting Light Upon the Waters* report of 1991 which they developed to document aspects of this struggle. The report begins with this framing:

A strong, negative public reaction stemmed largely from several groups that formed in opposition to...treaty rights. Propagating misconceptions and organizing public rallies in opposition to the treaty rights, especially spring spearing and netting, these groups frightened local citizens by saying the resources were going to be destroyed along with property values and businesses. In Wisconsin they encouraged and organized active anti-Indian protests at boat landings, which turned ugly, racial and dangerous. After enduring years of racial harassment and slander, the protest movement was finally curtailed following a lawsuit filed by the ACLU against STA [Stop Treaty Abuse—one of the opposing groups]. In 1994 Judge Barbara Crabb ruled that racism motivated the STA protest activities. Also serving to quell the protest was the 1991 *Casting Light Upon the Waters* report based on joint federal, state and tribal fishery assessments. The report concluded the treaty fishing activities did not harm the resource. (GLFWC, 2020)

As of 2013, the GLFWC released an update on the status of fisheries around the Lake Superior region. Theways.org is a more recent website which features videos and stories of community harvesters including fishermen who harvest from the treaty lands according to traditional Anishnabe protocols; they do so by respecting and caring for the animals they hunt, drawing on their ancient stories of connection and interdependence, and gifting to and sharing catches/harvests with community members. Their videos also feature clips from the protests in the 90s that show nonindigenous protestors burning effigies, throwing cans and rocks at people, and screaming racial taunts at people in boats and canoes, including Elders and children.

I highlight these multi-layered, overlapping occurrences here to demonstrate that there are levels of discourse to consider when considering the missing connections between some scholarly discourses and Indigenous peoples, those which operate in “white settler tautologies – things that seem true by the very nature of their repetition

and their logical irrefutability under settler colonialism” (Wysote and Morton, 2019, p. 480). An example of these ‘tautologies’ is found in the critiques that Belcourt insists makes critical animal studies only marginally relevant to Indigenous peoples and scholarship pertaining to human-animal relations. Indigenous conceptions of all life, including care ethics, are animistic renderings of vitality, evidenced in material culture, customary law, hunting and fishing practices, to name a few examples. The care ethic of environmental protection is not restricted to animals. Historian Jacob Jurss documented a land-clearing dispute at Walpole Island in 1844 among Jesuits and Anishnabe traditional leadership:

Two young missionaries... cut trees to clear a space for a new mission church in a sacred space on Walpole Island. The physical act of logging scarred the landscape and desecrated burial mounds located near the source of timber; the construction of the missionary’s church became a constant reminder of the Jesuits unwelcomed presence on the Island. This occurred at a time when the settler-colonial government of Canada increasingly looked towards the elimination of First Nation peoples from desirable lands. The transformation of trees into lumber and their removal from a sacred Anishnabeg site illustrated the disregard the Jesuits held towards the *Midewiwin* (Jurss, 2017, p. 396).

The conflict described in this passage is endemic to other conflicts that place the willing violence of settler colonialism in a hierarchy that discounts Indigenous ethics and morality, both of which at times are bound to notions of protecting land, place, and space. Land and ensouled landscapes, for Anishnabeg, contain material and spiritual currency represented by ancestors and intergenerational connection. These conflicts scale across geographies to demonstrate that the lifeworld of Anishnabeg and the values of industrial societies have formative disagreements that span centuries of engagement and contact with one another. Ethical and reciprocal framings demonstrate that animals, like all living beings, indeed have personhood.

Other than human animals feature in Indigenous spiritualities, in four ways...as part of kinship systems... as sources of wisdom and protection... as ceremonially significant...as historically important (Legge and Robinson, 2017, p.3).

Any framings of liberation and justice that attempt to sweep animals under the protective wings of academics and activists must, at minimum, account for the disrupted lifeworlds where Indigenous people already exist. They exist with their ancestors, descendants, and kin across geographies, across temporalities, across spatial formations, in many cases the targets of undeniable violence and logics of elimination. For Anishnabeg, the clan system has been attacked by the Indian act legislation in Canada and by other methods of assimilation. There is difficulty in translating the intricate nature of *doodem* relations: “societies in which humans identify themselves as animals have tended to be seen as ‘primitive’” (Kwek and Seyfert, 2017, p. 40) in historical and other records. Many forms of sacred knowledge have been targeted by colonizing regimes because they represent deep connection to land, place, and spirituality.

Government officials and missionaries contended that certain Indigenous religious practices were immoral and seriously undermined the assimilative objectives of Canadian Indian policy...the rationale for adopting coercive measures against Indigenous religions had much deeper roots...based on a belief...that there existed a direct connection between Indigenous worldview, ceremonial life, and the social, economic, and political structures of the community (Rheault, 1999, p. 53-54).

In other words, later efforts to eliminate the “Indian problem” in the US and Canada through structured, deliberate genocide and assimilation in residential schools, forced sterilization, biological warfare, massacres, and other tactics were rooted in and directed at attacking the spirituality of Indigenous families and communities. The idea was to destroy them *because* they represented and embodied the geographic and

material worlds of “unified knowledge” (Deloria, 1999) in practice through expressing and exercising their customary laws and other forms of social infrastructure.

Justice based on species relations can and does exist in a paradigm that seeks a different kind of liberation, a cognitive, epistemic, and applied justice where interspecies relations of reciprocity and care constitute the default. For Anishnabeg, this is *minobimaadiziwin*, the realization of good, interdependent, multispecies, intergenerational life, informed by seasonality, guided by the Four Directions, and based on balance. Animals and humans (and plants and stones and the sun and many other forms of life) are and have been living in places where animal and “more-than-human” relations (Abram, 1997) sustain interconnecting relationships, which are revered and recalled through stories, Anishnabe laws, which are also memories of ancestors, animals, and interspecies interactions. Anthropologist Brian Noble refers to these relationships as ‘treaty ecologies’:

...referring not to what passes as hegemonic statist discourse of treaties that, against the grain of negotiated reciprocity, all too often play out as asymmetrical, colonizing instruments in their own right... I am referring to a mode of living well together with other peoples, animals, and non-humans (visible and non-visible), and with the lands, air, and waters... that takes in persons and peoples (Noble, B, 2018, p. 315).

Noble’s framing reflects the Anishnabe teachings intimately known by Anishnabeg, i.e., the words of the late Anishnabe cultural teacher Basil Johnston who wrote about how the nonhuman species might think about Anishnabeg, human beings, according to teachings of the clan system, “though last in the order of creation, least in the order of dependence, and weakest in bodily powers, humans have the greatest gift...the power to dream” (Johnston, 1974). I have suggested here that the fabric of reality for Anishnabe society may be, in some ways, incompatible with other notions of

animal relationships proposed in scholarship that seeks to help or “save” animals, because humans lack the capacity to do so and are dependent on animals and all else.

The kinship structures of *dodemiwan* offer a specific framing and worldview, but they do not come alone; they are attached to the places and peoples that they are affiliated with. Despite what many people think in popular culture and everyday vernacular, *dodemiwan* is a form of sacred knowledge flowing from the legal traditions and Creation Stories of Anishnabeg. One does not simply “get” a “spirit animal” or assign the value of “spirit animal” to random things, as is seen in meme culture and elsewhere, i.e., figure 3, below. It is well established that “Indigenous people have a particularly troubled history where the commoditization of their knowledge is concerned” (Diamond, et al., 2018, p. 17) and I wish to caution that I am not suggesting that the adaptation of Indigenous legal principles and concepts will be an easy translation. There are layers and protocols to follow in order to respect the sanctity of all life in a spiraling web of relations.



Figure 3. Spirit animal meme, 13

¹³ Retrieved from <https://www.pinterest.com/pin/565412928217527191/>

Some of this review is directed toward Anishnabeg researchers, and there are framings external to that positionality as well. For example, Kanngieser and Todd (2020) discuss the potential for what they call a 'kin study' by also setting a foundation where "place, a nonhuman being, is sentient and active" (p. 386). Citing Nicholas Reo, who wrote that "animals can become our teachers and rivers can be our collaborators and co-authors" (Reo, 2019, p. 72) the authors argue for an approach that goes beyond case studies, which are often superficially adapted:

[Case studies are] ...consumed and reproduced carelessly by those with no lived relations with the lands, waters, and atmospheres that they are mobilizing in their own scholarship on the Anthropocene, late liberalism, extinction, and other forces of ecological destruction (Kanngieser and Todd, 2020, p. 391).

The approach Kanngieser and Todd suggests involves careful attention to the construction of overarching narrative (i.e., Anthropocene, etc.) which would elevate certain disciplines or discourses as having greater relevance to questions of climate change, ecological collapse, species decline, and so on. They offer a careful balance of recognizing agency in place, combined with listening and forming a land-based practice. There are practical ways that the authors suggest to support a 'kin centric way.' They suggest practitioners develop an ecological understanding of kinship that recognizes interrelatedness in all things, including constructed and living "places."

Within those places are trees, animals, birds, soils, rocks, and other forms of living material with which to build and vision multiple relationalities. I am suggesting here that a limitation of animal-centric study, in critical animal studies and in animal geographies still places humans at the top of a hierarchy, perhaps wishing to pull animals in to that hierarchy alongside humans without fully recognizing what it might

mean to develop a “grammar of animacy” (Kimmerer, 2017, p. 131) which would support a widened lens toward all aspects of life—and, critically, of living, cyclical relationships with death and the dead, as well. Bang and colleagues remark that even in the heavily altered wetland, amid the streets of Chicago which have been altered with “layers of colonial fill,” tobacco continues to grow; they suggest that “land is always re-becoming itself” (Bang, et al., 2014, p. 38). The presence of tobacco in itself is a profound teaching about rupture, and about the agency of the Earth herself and which life forms she will support.

From an Anishnabeg worldview, we are constantly—all---engaged in death and rebirth in constant and unending ways, based on the “cyclical nature of the seasons—birth—death—and rebirth” (Smithers, 2015, p. 100). Each of those three are processes which constitute a normative ordering that supports land-based relationships with dynamism, interconnection, transformation, and cycles of change. Death is not a central node of fear for Indigenous societies the way it is in settler framings. Care throughout the life cycle is seen as a priority; the preservation of life as sacred is an important element of Indigenous practice.

The roles of guardianship and mutual care ethics are growing through emerging paradigms in conservation which adapt and integrate Indigenous knowledge in pluralistic settings. For example, Indigenous principles such as “two-eyed seeing” (Marshall, et al., 2021) are being advanced by Indigenous people. “Two eyed seeing” derives from Mi’kmaq thinking and language and refers to the idea of blending methodological approaches. It privileges Indigenous knowledge in related sectors of Indigenous environmental practices and applies, as well, practices from Western

knowledge systems (Popp, et al., 2020). Guardianship programs within Indigenous communities are partnerships which integrate local Indigenous experience and practice with practices and knowledge from other sectors, i.e. universities or others working in natural resources sectors to monitor and assess population health and related ecosystem concerns.

Guardianship programs are suggested as viable conservation and management approaches that have been successful and beneficial for monitoring moose in multiple Indigenous communities and can be adapted to other areas: “more fish and wildlife species are likely to benefit from continuance of this program within the community” (Popp, et al., 2020). The mutual respect and cooperation of all parties is a foundation where the respect and welfare of the animal, such as the moose, and the ecologies where they live are at the forefront of considerations. This represents a different approach from what might be called the extractive practices of other disciplines and discourses which align, at times, with human exceptionalism and saviorism and the ‘biopolitical’ avoidance of death and its contradictory permission of harm and pain common in some arenas of conservation practice. These all represent interesting overlaps where the supposed desire to improve the lives of animals would benefit from a wholistically minded Indigenous approach.

Finally, I wish to conclude this segment with a framing from Yamatji-Noongar (Australia) scholar Margaret Raven and colleagues. They discuss the totemic relationship of Indigenous people in Australia to the emu, a rare flightless bird which is “intrinsically linked to Aboriginal people’s culture, identity and economy, and is woven within the fabric of networks of customary law and inter-tribal relationships” (2021, p.

1529). The emu connects the people to the stars, the cosmos, creation, and dreaming, with some geographical variation. The sites where emu stories are kept and shared “embed Indigenous culture and beliefs into the landscape” (ibid., p. 1531). The authors suggest that there are biological, ecological, and cultural understandings of emus in the Indigenous Yamatji-Noognar worldview, along with teachings about emu as medicine, food, national icon, and possessor of a sacred form of oil now used globally in beauty products and obtained through destructive, extractivist practices.

Emu oil is being patented in what the authors refer to as “biopiracy” which takes emu oil and places it in the context of extractable resource. Corporations the right to own formulas which require large-scale exploitation of emus. The authors’ positioning of emu as scientific animal is contrasted with the emu discussed by Indigenous societies as sacred ancestor and planetary guide. The authors suggest that biopiracy “threatens Aboriginal customary rights and spiritual guardianship connected to the emu” (ibid., p. 1540). The emu is not an “extractable resource” (Thomas, 2021) but a profound link to the interdimensional aspects of the Indigenous lifeworld in that region. The life of the emu is in the balance as the prioritization of global markets supersedes Indigenous rights and understandings of the cosmos, which require a delicate balance guided by the emu.

This is one correlate example to the situation of eels I discuss in chapter 4 which integrates these considerations: biopower, the living landscape, and seasonal cycles which include life, death, and rebirth. My discussion of kinship and relatedness here has examined only some of the nuances that seek to privilege Indigenous knowledge. Ontological and cognitive differences emerge in engaging fields that have not yet been

able to make room for the shifts required. Entrenchment with coloniality permeates the worlds of animal welfare and indeed all realms of existence, calling up the need to re-articulate and relearn animal relations in different ways.

2.3 Indigenous environmental justice

In this section, I pivot back and forth between political ecology and environmental justice because I see both fields as having relevance to concepts of justice that stem from relationship with Indigenous geographies, including the Anishnabe legal orders and concepts mentioned in the prior section. McGregor (2018a) names the terrain of legal orders which disregard and discount 'natural law':

...foundations of the prevailing legal system, and dominant society itself are standing on shaky ground due to the ongoing and often willful ignorance of Indigenous legal orders, in particular, natural laws (p. 227).

In the context of Canada, a state attempting to reconcile and yet extend its coloniality, with varying approaches, failures and successes, McGregor and others point to the concept of natural law (Borrows, 2010; Craft and King, 2021). Natural law is central to the formation of legal orders that seek a wholistically balanced way of living through invigorating and applying concepts from Anishnabeg laws. Some of these conceptual ideas toward 'balance' are mentioned in this chapter, but the questions of application and practice are complex and constituted collectively but also in an individuated way: balance is only hinted at here. I personally address my efforts toward finding balance, or *minobimaadiziwin*, in the next chapter on methods.

Indigenous environmental justice has been proposed as distinctive from other forms of environmental justice that stem from groups who experience injustice related to environmental conditions, i.e., air quality, water quality, access to healthy food, and other examples. According to Gilio-Whitaker (2019) the landscape of environmental

justice in the United States began to “find its way into the federal regulatory terrain with the help of the Congressional Black Caucus” (2019, p. 19) and later led to such acts as the Clean Water Act and other federal regulations. She suggests a dual approach.

Indigenous People’s pursuit of environmental justice requires a different lens, one with a scope that can accommodate the full weight theory of socialism on the one hand, and embrace differences in the ways Indigenous Peoples view land and nature on the other (ibid., p. 12).

I use Gilio-Whitaker’s framing here to highlight her point about Indigenous nations (called “tribes” or “tribal governments” in the US) which, ideally, operate from a nation-to-nation relationship with the federal government. Tribes have jurisdictional and legal relationships to land and territory, which distinguishes tribal governments and citizens from other categories, i.e. racial minorities or special interest groups. To be clear, I am not suggesting here that there is a hierarchy involved where the status of tribal government or citizen is superior to that of other Peoples in affinity or racialized groups or discount those who may be descendants of Indigenous communities and do not meet membership or citizenship criteria. Gilio-Whitaker makes the distinction about tribal governments because of the unique and specific histories of displacement, dispossession, contamination, and relocation that have characterized historical circumstances that contribute to environmental injustice for tribal lands (a federal term) in specific territories. In the context of Canada, and its reconciliatory aims, McGregor remarks that Anishnabeg notions of reconciliation have specific and wide-ranging implications which fundamentally shift the nature of reality and relationships across scales; Anishnabe *minobimaadiziwin* involves striving toward balance.

(The good life) “...requires balance to be restored and maintained among all beings in Creation (many of whom Western cultures do not even consider to be alive). To many this may sound like a radical notion,

implying as it does such a profound re-thinking and re-ordering of how we conduct ourselves and our society” (McGregor, 2018a, p. 229).

A society in need of reordering is the foundational assumption behind the discipline of political ecology, which is closely related to disciplines already mentioned here: “Indigenous geographies and political ecology are praxis-based and informed by an engagement with activism” (Awasis, 2020, p. 834). Terming political ecology the “trickster science,” Robbins pins the field with multiple nuances and collaborative elements. Political ecology has the potential to shift disciplinary conventions and crosses boundaries:

[Political ecology has a] ...simultaneous ability to advance rigorous empirical assessment of socio-environmental conditions and change, freely adopting the methods and conceptual apparatus of related research traditions, while constantly critiquing and undermining the projects of these other fields (Robbins, 2015, p. 89).

Within political ecology are multiple subfields, including the subfield of feminist political ecology, and the emerging field of Indigenous political ecology (Middleton, 2010; Mortimer, 2020). In this segment, I seek to frame ideas of Indigenous environmental justice in conversation with political ecology because the field and its contours have the potential to bridge worlds:

Feminist political ecology spans the worlds of academia, policy, practice and activism, where a feminist perspective requires self-reflexivity, an openness to multiple truths and more marginalized voices, and where feminist ethics guide everyday practices of research, engagement and ‘impact’ (Elmhirst, 2015, p.528).

Reflexivity opens the space to critically respond to “place” as theorized elsewhere (Kannseiger and Todd, 2020; Pierce and Martin; 2015; Barker and Pickerell, 2020) through animacy. Theories of justice can then be applied to the everyday, the local, even the intimate and emotional (Sultana, 2015). Feminist practice is a key

component of some political ecology approaches to think about life in new ways:

Feminist researcher Karijn Van den Berg (2018) traces the feminist approaches in new materialism which extends from critiques of works from Jane Bennett, whose *Vibrant Matter* is often cited as foundational to the wider field of political ecology. Van den Berg writes that “philosophical language that is often used in new materialist and posthuman approaches is difficult to translate into other contexts in which climate change might be deeply felt” (2018, p. 66). The call, then, is to include affective engagement with place (Kwek and Seyfert, 2017) that is accessible and translatable across a variety of scales.

Juanita Sundberg and Rebecca Elmhirst are identified by Laura Vaz-Jones as key thinkers in the realm of feminist political ecology, which open a pathway for her contribution:

A limited body of scholarship has engaged with displacement as a process severing people from the knowledge, practices, and the life-sustaining qualities of their land. This includes scholarship on indirect displacement (Vaz-Jones, 2018, p.713).

In my framing I am suggesting that displacement is a foundational aspect of how the “coloniality of being” (Maldonado-Torres, 2007; Wynter, 2003) forms social models, institutions, narratives, and ways of being that displace eels and their relations and thus displaces, denies the humanity of Indigenous societies by extension of these disconnects. Displacement is a foundational understanding for Indigenous environmental injustice. Indigenous environmental justice as its own field methodologically takes an approach of sourcing experiential and direct knowledge from people in place, people who have experienced environmental degradation or have other concerns related to injustice, land, water, and political power.

Calls for similar approaches (Sultana, 2015; Gillespie and Perry, 2018; Elias, Joshi, and Meinen-Dick, 2021) make doing political ecology compatible and malleable to serve the complex needs of an Indigenous conception of environmental justice. Like other disciplines, political ecology is at risk for overlooking the important parts of justice frameworks which make Indigenous struggles in colonized settings distinct. Leeuw and Hunt have issued a challenge to address an uneven site of power and privilege in scholarly practice:

Scholars living in settler colonial contexts, but working with Indigenous communities elsewhere, we challenge you to develop an unsettling praxis that accounts for your multiply-situated responsibilities as interconnected, just as international Indigenous struggles are interconnected (Leeuw and Hunt, 2018, p. 10).

Pursuit of activist agendas or other forms of justice through the vehicle or vessel of Indigenous communities without reciprocal relations with those communities who sustain the bodies and livelihoods of settler scholars are problematized in this way. The relationship of researchers and conservation organizations, “particularly those led by government agencies and transnational NGOs...continue to conflict with and even disrupt Indigenous knowledges, livelihoods, and ecologies” (Rubis and Theriault, 2020, p. 964). Researchers interested in justice through political ecology practices benefit from learning directly what communities are interested in, based on their own evidence and what Dian Million might call “felt theories”; Million suggests that “stories, unlike data, contain the affective legacy of our experiences” (Million, 2014, p.31). The legacy of experience is a key theme of Indigenous environmental justice approaches that reflect the reality of Indigenous people living within territory designated for Indigenous communities whether that is a ‘traditionally’ territory or one of forced relocation, or both.

One approach toward environmental justice emerged in the effort to follow a thread of documented oral history among Indigenous Elders and community members in a study from 2020 (Paul and Caplins). Community members in the Blackfeet nation have long expressed a colloquial knowledge that “something bad” may have happened to their homelands, involving dumping of toxic chemicals including plutonium, and the researchers worked with communities to, first of all, affirm their experiences and believe that their concerns were worthy of investigation. Contamination of Indigenous lands is common and reflects political and geographic design: “numerous Indian reserves in Canada are environmentally degraded, even where populations are small.... pollution flows into these lands from surrounding developments” (Borrows, J., 2018, p. 49). There is a much wider discussion and body of knowledge to refer to here, about the development of ‘sacrifice zones’, the proliferation of poor health outcomes, lack of access to clean water, and other infrastructural issues affecting First Nations territories in Canada, as well as tribes living on tribal lands in the United States. These are the result of colonially induced infrastructures and extraction schemes which persist in the present day, even when their ill effects are well established and known.

For example, Luby (2020) documents the installation of dams in the Winnipeg River watershed which modified the territory in detrimental ways; dams installed in the late 1800s were seen as ‘progress’ by non-Indigenous residents of the local area. Luby describes how it was often men who were in control of managing the rivers, and they did not communicate with Anishnabeg (p. 64). Notably, this period was a time of assimilation and the introduction of the apartheid state which restricted the movements of Indigenous communities through Indian Act legislation. The specific ways that dams

altered land created modifications that impacted seasonal activities and the character of the water itself.

Changing water patterns seriously limited Anishinaabe mobility during the winter months. Removing stop logs could break up ice roads downstream. By making ice roads unreliable, these dams made it difficult for Anishinaabe families to maintain their livelihood year-round: traplines became inaccessible to some; others feared travelling to town to trade (p. 41).

The Anishnabeg communities of the Winnipeg River watershed discussed by Luby based many of their activities on interactions with land, for subsistence and other activities, making their interest in mobility and access to land different than non-Indigenous residents who were interested in changing and modifying the land to support their “fantasies of entitlement” (Mackey, 2014, p.250). Modifications to the river and water patterns caused a rippling chain of effects on entire ecosystems; functioning of dams which involved flooding and control of water levels caused animal mortality: “beaver houses and the muskrat houses would be totally flooded, and the animals would simply drown” (Luby, 2020, p. 17). These injustices are part of a historical effort to remove and destroy the livelihoods of Anishnabe in that region, or at the very least showed a callous indifference to the worldview and needs of a society that reveres animals such as beavers and muskrats, who are prominent relatives in Creation Stories.

Gilio-Whitaker claims that “environmental justice for Indigenous people... must be capable of a political skill beyond the homogenizing of a simulationist, capitalist state” (Gilio-Whitaker, 2019, p. 25). She argues against claims made to subsume Indigenous people into minority categories such as “people of color” and rather, reinforces that in the United States (and arguably, Canada as well) the relationship of the federal government with Indigenous peoples in regard to environmental justice

concerns continues to be one of “benevolent supremacy” (p. 33) which does not reflect nation to nation and treaty agreements accurately. That relationship that is ultimately rooted in long-running historical and political interactions; tribes in the US are sovereign governments who can enact and enforce notions of self-determination to advance their identified needs toward environmental justice. The stark differences in knowledge of place and the interests of Anishnabeg wishing to continue with their seasonal activities, moving throughout their territory—are distinctive from the consumerist lifestyles of neighboring towns.

Pursuit of environmental justice for Indigenous people is a matter of political organization and social structures, as stated above, but also exists in the very mundane, everyday experience of living in environments that are either deliberately or passively contaminated with toxic materials, such as chemicals as in the case of the Blackfeet Elders referenced in Paul and Caplins. The documented existence of “cancer clusters” in the surrounding region fueled oral history that, until recently, was unaddressed. The researchers used a community-based research method to gather interviews with Elders who had knowledge or suspicions about dumping chemicals in specific areas of the territory.

Through the systematic documentation of such narratives, we may be able to prove that some of the profound health disparities faced by Native peoples are in fact due to environmental injustices. Highlighting these instances of injustice can help shift the blame for these disparities away from individuals and toward environmental exposure (Paul and Caplins, 2020, p. 34).

Paul and Caplins make an important point in stating that blame for health disparities often resides in the self-perception of indigenous peoples. People may blame themselves for their poor health, thus affecting their sense of what is possible and how

to seek support and treatment. Their article documents the beginning of a process to build community trust and uncover specific aspects of environmental justice for Indigenous people, a concept which sits at the intersections of governance, power, coloniality, and territory, which are characteristic of political ecology studies.

Borrows (2018) referring to “environmental reconciliation” adds the important nuance that Indigenous people themselves are capable of contaminating and polluting their own landscapes as well, referring to yards full of garbage strewn about in First Nations communities (2018, p. 49). It is important to avoid the essentialist trope of the “ecological Indian” (Smithers, 2015; Kim, 2020). That trope is often tied to old notions of Indigenous people as noble, simple representations of passive and ignorant denizens of wild, unkempt environments, or overly romanticized as noble, moralistic stewards. The point here is that Borrows asserts that Indigenous people are “not blameless” (2018, p. 50). My discussion here is not to suggest that Indigenous people are victims, but rather, to reflect the many specificities and contours of an Indigenous perspectives of environmental justice.

The approach must include layers that address many factors including disproportionate exposure to toxic contaminants and the history of “illegal dumping on Native lands” (Paul and Caplins, 2020, p. 28). Guthman and Mansfield suggest a move toward “spatial epidemiology” (2020) to consider the impacts of environmental contaminants which can be positioned as pillars of environmental justice vis a vis the geographic lens of “place and space.” Guthman and Mansfield describe environmental epigenetics as a convergence between “genetics/ developmental biology and environmental toxicology” (2020, p. 491). They suggest that “findings and explanations

offered by environmental epigenetics put flesh on the bone of several concepts that nature-society geographers have forwarded regarding socionature, hybridities, and materiality” (Guthman and Mansfield, 2020, p. 489). Environmental epigenetics, then, represents a way to combine multiple disciplinary conventions to assess environmental health including exposure to toxic material for humans and for animals.

Environmental contaminations are well known to Indigenous peoples and environments, and especially to *Anguillid* eels. Eel biology and the lives and epigenetic expressions of fish and all animals are affected by human activities, a fact which would seem exceedingly obvious to most Indigenous Elders and land-based practitioners. Geographers Emily Shantz and Susan Eliot (2021) suggest that exposure to toxic chemicals and other environmental contaminants is an important topic for human geographies of health, by analysing specific factors that influence genetic expressions associated with exposure to toxic chemicals and contaminants. Countless toxic substances are dispersed throughout many environments—water, air, land, soil, products, food— which can affect human development and “biological processes, taking into account the dynamic nature, potential overlap and interaction, and timing of exposure forces” (Shantz and Eliot, 2021, p. 6). Resource contamination, pollution, and dispossession facilitate lack of access to clean, healthy environments. Pollution, especially non-consensual pollution and dumping are forms of historical and environmental trauma specific to marginalized people including urban and rural Indigenous territories.

‘Historical’ trauma is a phrase often used to describe the cumulative effects of chronic stress on Indigenous people, stress I would define as stemming from

epistemicide: “there is a need for attention to communal oppression, collective trauma, and cultural distinctions in understanding and measuring trauma responses and unresolved grief” (Braveheart, et al., 2011, p. 287). These are iterations of processes associated with settler colonialism and extractive practices which have long affected Indigenous people and populations. Environmental contamination, of course, affects all people, and all forms of life but—Paul and Caplins, as well as Borrows, Gilio-Whitaker and McGregor call for a specific lens on environmental justice for Indigenous people since “health disparities may be epigenetic outcomes of social relations” (Guthman and Mansfield, 2020, p. 499). These are transdisciplinary pursuits: Amber Hickey found through studying art and artists that for Indigenous communities, “regulatory systems...are lacking...the number of communities with unmarked uranium tailings ponds is astounding” (Hickey, p. 174). Further, Indigenous environmental justice is not only for humans. McGregor aligns historical trauma to ideas of Indigenous relationality: historical trauma is something that also happened to water, not only people:

Distress that waters experience is well documented, although it is not generally expressed as trauma. Understanding water as having experienced historical trauma requires a different approach to restoration and healing, including recognition of the waters as sentient (2015, p.73).

Closing this segment, I will come back to political ecology. Lorne Mortimer suggests that political ecology can and should engender notions of environmental justice through healing, after the 2010 suggestion of political ecologist Beth Middleton who wrote about a “political ecology of healing” to respond to the many ways in which “Indigenous peoples' humanity was disregarded during and following the colonizing process” (Middleton, 2010, p. 11). Mortimer outlines the framework of political ecology noting that it is a discipline associated with processes of change:

Political ecology investigates how human societies drive environmental change by examining how people shape natural landscapes in tandem with the ways ecosystems define cultures and economies (Mortimer, 2020, p.58).

Mortimer examines the legacy of *Kateri Tekahwi:tha*, an Indigenous woman canonized as “the patron saint of environmentalism, ecologists, and orphaned children” (ibid., p. 78). Mortimer traces intricate and complex details from the life of Kateri, who lived during times when “women healed the collective traumas of warfare and captivity” (ibid., 64) in seventeenth century Catholic and Indigenous (Mohawk and Wendat) communities. Her bones, today, remain at the *Kahnawá:ke* Mohawk territory near Montreal and, for Mortimer, constitute the formation of a political ecology steeped in Haudenosaunee resilience, cosmology, sovereignty, persistence, and spirituality. She lived through iterations of political and environmental change, and her influence continues: “contemporary Indigenous movements for sovereignty, self-determination, and environmental justice have their origins in the political ecology of healing embodied by Kateri’s bones” (Mortimer, 2020, p. 55).

The presence of Kateri for the nearby Indigenous communities represents “tangible links to her ancestors, who drew life from [the landscape] centuries before European colonization” (ibid., 2020). The story of her canonization is complex; in summary, a brief description of the event follows:

In 2006, an incurable flesh-eating infection ravaged a Lummi boy’s body in a Seattle hospital. Despite a grim prognosis, the boy recovered after touching a piece of Kateri’s wrist bone while his family said intercessory prayers. Vatican officials accepted the boy’s healing as a miracle that proved Kateri’s saintliness. In 2012, Pope Benedict XVI formally canonized Kateri. Eighty thousand people attended the ceremony in St. Peter’s Square (ibid., 78).

She was moved several times and reinterred, now resting in Kahnawake's mission church; "moving her bones harked back to the Wendat practices of translating the bones of deceased relatives when the Wendat relocated their villages" (Mortimer, 2020, p. 78). The stories of Kateri are tangibly connected to the history of a people Mortimer names as Mohawk, whose history composes part of the larger historical land tenure of Haudenosaunee peoples. There is another thread in the discussion about the interference and interactions with Catholicism for Anishnabeg and others, which is another story—but for the purposes of this discussion, the key element I highlight here is that the presence of Kateri and her life history are recognized modes of healing for multiple Indigenous (and non-Indigenous) peoples across the world who come to visit and pay respects to her.

The example of Kateri and the storage and care of her physical bones is an example of the connections that foster an Indigenous sense of place connected to a deep past and the cosmological beliefs of an "ensouled" landscape. This example comes from a different ontological framing than the one proposed by Bohaker (2020) and others through *doodem* connections. Some concepts translate across ontologies and thus, Kateri is a powerful symbol of memory but also a unique example of a cross-cultural, intergenerational expression of healing.

2.4 Summary and conclusion

The concepts discussed in this chapter have complementary and overlapping claims which make for a nuanced and complex presentation of human relations and nonhuman others in the context of a "reconciliatory" environment specific to Canada (Borrows, 2018; Deckha, 2020; Noble, 2018). Following Borrows, I suggest 'reconciliation' is an aspiration which seeks to respond to the many crises affecting

humans today; it begins with the recognition of horrors committed against Indigenous children and families (TRC, 2015) but reaches into other dimensions as well.

Environmental relations are often not considered as part of reconciliation and this is a major gap which to which I contribute some methodological considerations and innovative literary approaches rooted in trans-disciplinary scholarship to privilege Indigenous knowledge in pluralistic settings.

The entrenchment of separation has been inherent to certain geographic discourses, born of a discipline with military and colonialist origins and is disrupted by the ongoing persistence of Indigenous lifeways. Acoose suggests that Anishnabe scholarship is necessarily transformative and requires regeneration.

Transforming theoretical grounds is a massive undertaking... liken(ed) to re-Creation of Being, in a post-apocalyptic world...to help re-name and re-settle *Anishnabe* relations (Acoose, 2011, p.13).

Through review of these written pieces, and the development of three concepts, I have sought a place where studying eels might offer insight to existing conversations about law, space and place, and conceptions of justice. *Doodem* relations, animal kinships, and notions of justice which come from embodied Indigenous ontology are the foundation of this entire thesis, and I propose a cognitive shift toward the epistemic justice that would recognize eels, and other lifeforms, as inherently valuable, through political ecology, in geography, in law, in a web of relations that they are a part of.

I do not see the study of this singular species of eels as a singular or isolating pursuit; by their nature, migratory *Anguillids* form connections between places, spaces, and dimensions, as my fieldwork interview will demonstrate. Through the review of these numerous forms of academic, political, and cultural discourse, I have demonstrated that working with eel as collaborator requires multiple points of

reorientation that meet the challenge of avoiding simplistic answers. Similarly, in the next chapter, I extend my foundations in Anishnabe studies and practice to describe the methods which inform how I conducted fieldwork.

Chapter 3: Indigenous methods and an Anishnabe theoretical framework

Accept these things I give you. The evidence is all around you. See it, know it, accept it! Accept this knowledge as a 'way of knowing.' Accept it as you accept the knowledge of your own shadow. When your shadow is cast on the ground you are able to see it. But even though you do not see it at times, you know that your shadow is still there. Your shadow represents your relationship to Grandfather sun and the Four Directions, and thus to the universe (Benton-Banai, 1979, p. 46).

Returning to the narrative *aadzokanag*, sacred stories, documented in the *The Mishomis Book: Voice of the Ojibway*, (Benton-Banai, 1979) these words are spoken by the 'wild man' of the forest, *Bug-way'-ji-nini*, the "oldest brother" (ibid, p. 45) of Waynaboozhoo. Waynaboozhoo, introduced in the prologue, is a central figure in Anishnabe knowing, doing, and being. I begin the chapter by respectfully evoking this teaching because, like shadows, eels are not always visible or understood; they exist in and travel through water and across land, representing and expressing relationships. For me, there is an acknowledgement of the relationships between eels, the Four Directions, and the wider cosmos which is reflected in their migration and long land tenure.

In this opening, I also choose to highlight that Anishnabe knowledge contains stories of navigating Earth through the wisdom of time-honored experience. These instructions given to Waynaboozhoo are a form of "story medicine" (Miner, 2013; Archibald, 2008). In this dissertation, I am claiming that relationships with eels and water are story medicines which are embedded with the Earth's geological history and recalled through Indigenous societies.

Widespread knowledge of that medicine has, perhaps, temporarily gone dormant in Anishnabeg. I intend to demonstrate that Anishnabe methodologies are ways in

which to retrieve and activate these dormant forms of knowledge which connects to a wider conversation about story medicines of our animal relatives. Any study of swimmers that adequately respects an existing Indigenous paradigm with plural knowledge systems would be foundationally supported by the multiple Indigenous assertions which declare that 'water is life' (McGregor, 2015; Estes, 2019; Neville and Coulthard, 2019; Gilio-Whiaker, 2019 Craft and King, 2021; Chiblow, 2021).

The layout of the chapter proceeds in three sections. First, in 3.1, I discuss the Anishnabe research paradigm and publicly distributed teachings related to the Seven Fires Prophecy. I outline my methodological roots and anchors. That material is followed by two separate sections that discuss and expand on women's knowledge and relationships with water, drawing on related scholarship from Indigenous women. Following that, I discuss what an environmental reconciliation process looks like from my view in the final section, titled 'healing and affirming life.' All sections in this chapter build an application of concepts from the foundations in the literature review.

For Anishnabeg, humans owe their lives to the benevolence, generosity, and wisdom of animals, who are third in the order of creation (Geniusz, M, 2015). Medicine in an Anishnabe context carries many meanings: medicine can be physical, emotional, material, spiritual. Water, which is also alive, can be medicine. A plant, a stone, a spiraling wind is alive and can carry, impart, and transmit medicine. Stories and songs are medicine and carry living spirits; being human is to be in relationship with knowledge, at all times. Thus, I call on the stories that have meaning to me as a matter of knowledge mobilization which forms a methodological approach: "stories as *mshkiki*, or medicine" (Miner, 2013). Medicine is in plants, in waters, in the sky, and also in

stories, which travel and carry messages that can shift the perception and potential of place and space.

Stories of migratory healing connect with the medicinal qualities of *mshkiki* at disparate times and in random geographies... these experiences confront the never-ending effects of colonialism in a way that begins to heal generations of linguistic and intellectual ethnocide (Miner, 2013, p. 334).

Mshkiki literally translated refers to “the strength of the Earth” and is often discussed in studies of plants and ethnobotanical practice (Geniusz, W., 2009; Geniusz, M., 2015) but it carries other animate and inanimate meaning in the *Anishnabemowin* (language). Knowledge mobilization is a key to action-based research (Sockbeson, 2017; McGregor, 2018). Research, although not called that, has always been in the lives and practices of the people.

Anishnabe people have always sought knowledge in systematic ways, engaging in protocols that included the proper ethics and conduct for doing so... Knowledge is a gift to share for the well-being of the people and is acknowledged by other Anishnabe scholars as the pursuit of...the good life (McGregor, 2018, p. 253).

The mobilization of knowledge here comes from a lifetime of experience in the diverse environments where I have learned and embodied “Being Anishnabe” (Acoose, 2011). “Anishnabe teaching and learning environments” (Debassige, B., 2012) include everyday life but also land-based camps, ceremonies, canoe journeys, hikes, plantings, and other activities that are overseen by the guidance of Elders and knowledge holders and indeed the Earth herself.

Indigenous scholars have been developing methodological frameworks to translate these environments for some time. Shawn Wilson suggests that researchers adhering to Indigenous values must exert “deep listening and hearing with more than

the ears," and develop a "reflective, non-judgmental consideration of what is being seen and heard," as well as "awareness and connection between logic of mind and the feelings of the heart" (Wilson, 2008, p. 59).

Wilson refers to Indigenous ceremonial traditions as guideposts for conducting research activities and plans. Sockbeson discusses the motivations behind researching, and the importance contribute to community morale: "research coupled with my life experiences has shown me that which *immobilizes* us as Native people and reminds me of the necessity to research what *mobilizes* us" (Sockbeson, 2017, p. 22, italics in original). Despite the pessimistic deficits often depicted in social science and health research about Indigenous people, I suggest here that mobilizing existing knowledge offers tangible pathways toward hopeful ideas and practices. A responsive, grounded approach in the growing paradigm includes four key process points:

The role of familial and community knowledge, the role of service, bridging personal, academic, and community-based practice, and knowledge mobilization (McGregor, 2018, p. 245).

To situate my framework and contributions, in the first section I take a scaffolded approach building from the broad and general and moving toward the hyper-specific. I begin with a discussion of Anishnabe prophecy and my view of elements that constitute teaching and learning. It is customary and necessary to locate myself in the research through the "flower" diagram offered by Absolon (2009). By tracing the approaches taken to get to this point of knowledge synthesis, I recognize that in some ways, I am "seeking knowledge that is already there" (McGregor, 2018, p. 244) and thus enter in a respectful dialogue with the milieu of collective Anishnabeg and other Indigenous knowledge.

It is to recognize beliefs and biases in understanding that knowledge is not produced, but cultivated, revealed, and nurtured. I describe the familial and other contexts which give rise to my positioning as an emerging scholar, responding to the four process points named above.

In the second section, 3.2, I refer to being *kwe*, a woman, and reading *nibi*, water, which is part of Anishnabe-kwe's responsibility and gift. I describe living in what I term, an "inverted" world and describe in that section how I understand the responsibilities of being an Anishnabe woman relating with the life-giving Earth, and the constructed human world interacting with life-taking settler colonialism. Awareness of this inversion motivates and animates my research. In the final section, I outline my practice, taking a justice-oriented position toward healing. This involves personal responsibility as well as cultivation of all that is available for me to draw upon, including material resources, ancestors, and other important tools that form my space of participation in healing and reconstructing the inverted world.

3.1 Anishnabe research paradigm

Brock Pitawanakwat, an Anishnabe language scholar, has suggested that scholarship building from Anishnabe histories has potential to be organized in a peoplehood paradigm which responds to contours of Anishnabeg knowledge; he recommends: "four branches: land, language, sacred history, and spirituality. Story represents a form of expression that can be interwoven through each of these four branches" (Pitawanakwat, 2013, pp. 371-372). Anishnabeg studies as a field has a deep and rich history with roots in ancient societies of Anishnabeg who trace their history back thousands of years. The language is key.

Anishnabeg have lived through multiple geological epochs (Wolfe, A., 1988; Benton-Banai, 1979; Johnston, B., 1995; Johnston, D., 2006). They maintain stories which originate long before contact with new visitors to Turtle Island, or North America. Danard asserts that Anishnabeg have an “inherent birthright to experience life as healthy and thriving sovereign Nations” (2016, p. 119) and that this birthright includes the pursuit of *minobimaadiziwin* which I have defined as a “balanced way of life.” Danard expands the definitions of that balance as having mental, emotional, physical, and spiritual attributes (2016, p. 118).

Craft et al. (2021) discuss the ways in which the Earth is conceptualized as a living female entity: “one of the most powerful characteristics of the ontology of Anishinaabeg legal orders is that it dissolves the binary between human/nature or environment” (p. 23). Everything, all of life, is connected to and dependent on the Earth, who is a source of nourishment for all forms of life expression, not a planet designed exclusively to serve human beings. Acoose has similarly indicated a female/mother spirit in her use of the term *Manitoukwe* which “signals a Mother Creator Land” (2011, p. 4), a concept that she clarifies as being part of a sacred body of knowledge originating with the *Midewiwin*, the ancient form of spiritual governance that constitutes foundations of Anishnabe social organization, as well as philosophy, thought, and being. Acoose clarifies the origin of her understandings:

Teachings about the Mother Creator were also gleaned in part from personal conversation with Dan Musqua, Mide Bear Clan Lodge Keeper. My discussions with him confirmed that such teachings belong to the body of Midewiwin knowledge (Acoose, 2011, p. 102).

This is important to mention because the author indicates that there has been an erosion of knowledge and an erosion of the understanding that the Earth is female, and

that all life originates from this female force. While my study of eels does not necessarily take a gendered approach, my positionality certainly reflects a gendered understanding of the world through what is called “women’s water knowledge” (Chiblow, 2021; Craft, et al. 2021). Application of that positionality informs the research, and I often ask myself how eel migration and transformation would look through the eyes of other angles, including through the perspectives of gender diverse people.

Anishnabeg is a loaded term itself; it encompasses multiple nations and communities who have endured numerous changes and adaptations. There are over 200 Anishnabeg communities in Canada and the United States from the eastern seaboard to the far north and inland across the Great Plains. Related language families are found as far north as the Yukon and as far West as present-day Montana. Anishnabeg communities are distributed throughout the Great Lakes region and beyond. In naming my place within this geography, as well as its spiritual, intellectual, social and other conventions, it is important to clarify how I am using the term.

Anishnabe is both an indicator of human being (Benton-Banai, 1979) and refers to the specific form of the human body and the position of the human in relationship to other life forms. The etymology is broken down by Benton-Banai as follows: “Ani (from whence) nishina (was lowered) abe (the male of the species)” (1979, p. 3). The language encodes teachings from the Creation Stories of Anishnabeg. The reference to “being lowered” reflects an understanding that Anishnabeg have a spiritual origin and were “placed” or “lowered” to the Earth after being and are connected both to and beyond the Earth. According to Benton, the creation of human beings involved several processes including *Kzhemnidoo* (the Great Mystery) forming the human’s body from

the “sacred elements of the Earth” (ibid.) after all other forms of life—plants, trees, birds, animals— were already existing with the Earth.

There are other translations of Anishnabe and different breakdowns of the word’s etymology. Sometimes the term Anishnabe is translated to refer to all Indigenous peoples of the Western Hemisphere. Benton-Banai also describes the Earth as female and wrote that “woman preceded man on Earth because from her come all living things” (ibid., 2). I use the term *Anishnabe* (Anishnabeg is plural) to refer to myself as both human being and also connected to my understandings of Creation Stories and other oral histories from my family, earned through ceremonial rites, and gained through life experience. The term, to others, can also refer to political structures, tribes, First Nations, and other groups.

Other spellings include Anishinaabe, Anishinabe, Nishnabeg, Nishnawbe, and there are also other regional differences in people related to this history: they may be known as Chippewa, Ojibwa, Ojibway, Ojibwe, etc. and many others. Odawa, Ottawa, Potawatomi, and other groups are closely related to Anishnabeg, all with distinct histories, territories, and stories of their own. In claiming Anishnabeg, I align my personal expression and ancestral history connected to *Omamiwininiwug* which is a term in the language that refers to “downriver people” a name used by my ancestors to refer to themselves and their location in proximity to the Ottawa river watershed.

Present day descendants and families are known today as Algonquin-Anishnabeg and are dispersed in communities, including reserves and First Nations territories, throughout Canada and the United States, with political affiliations to the Algonquin Anishnabeg Tribal Council, a group of 7 First Nations in present-day Quebec,

including Kitigan Zibi, Kebaowek, Kitchisakik, Abitibiwinni, Long Point, and Lac Simon First Nations as well as other neighboring Algonquin-Anishnabeg communities.

Kitigan Zibi is often noted for having a large land base (210 square kilometers) but the larger *Omamiwinini* territory is much larger, and “Algonquin” kinship structures and seasonal patterns show a much larger area based on the historical and material evidence of communities. There are active land claim processes and much debate about restitution for “unceded” areas within the historic homeland of the *Omamiwinini* which Kitigan Zibi has led and participated in many ways. Perhaps this level of detail is unnecessary and may seem tedious; however, there is a growing problem within academia arising from the exploitation of Indigenous identity for personal gain.

I wish to clarify here that the structures, labels, and names I draw from are presented as I understand them, and I don't wish to make any claims to represent any of these nations but rather, refer to the political structures that are used by First Nations people themselves. We live in a time where many people are seeking to recover their connections and knowledge, which is important and necessary, and some of the historical ambiguities imposed by colonization of Indigenous peoples and lands leave gaps where ambiguities can be exploited by opportunists looking to benefit from the lived experience and horror of being criminalized as a people and surviving a blatant genocide. So, I like to clarify terminology where possible to avoid ambiguity where I can, especially because I work with and alongside other Anishnabeg from other territories and wish to respect their stories and truths as well as the immense history that we are all a part of through authenticity and honesty as I am able.

In this chapter, I take an approach using “*biskaabiyang* methodologies” (Geniusz, 2009) woven throughout. *Biskaabiyang* is an *Anishnabemowin* term originating from Ojibway scholars, with a loose translation of “returning to ourselves” which refers to reclaiming the integrity of Indigenous knowledge in a modern context, perhaps what might even be called hypermodern social constructions which form “alienating colonial commitments” (Kruse, et al., 2018, p. 591). “*Biskaabiyang*” as I interpret the phrase is applied both in a reflective context and in the wider scale of retrieving and invigorating practices of being Anishnabeg, alongside other Anishnabeg and our collective of Indigenous relatives and networks.

Pitawanakwat offers that “the future of Anishnabe education draws upon the old knowledge processes and systems that North American governments have worked so hard to suppress” (Pitawanakwat, 2013, p. 368). What might be called a “submerged” knowledge and practice of Anishnabe ontology, or being, occurs within the wider framework of Indigenous studies and Fourth World politics. Through this work, I apply and invigorate the teachings of my Anishnabe ancestors, predecessors, mentors, neighbours, and contemporaries. I bring my understanding and interpretation of Anishnabe laws, principles, and knowledge into my research practice. *Biskaabiyang* holds central Anishnabe experience and focuses on not dealing with oppressive ideology on the terms of the colonial encounter. Rather, *biskaabiyang* methodologies ask that Anishnabe return to themselves through research and retrieval, affirming that the old people, the ancestors, (*kete-Anishnabeg*) have much to offer and want to work with us to support the continuation of life, or *bimaadiziwin*, for future generations.

The primary vehicle for my own *biskaabiyang* work in this regard is through activating and invigorating *doodem* relations through the land-based system of governance that gives form and structure to relationships with nonhuman kin, and between humans as well, “surviving in a toxic world” (Pujolar, et.al, 2012). *Doodem* refers to the clan system through which Anishnabeg are organized and practice their land-based governance. I apply storytelling and reflective vignettes throughout each chapter to demonstrate my practices and tethers to *biskaabiyang* (Geniusz, 2009) and *dodemiwan* (Jewell, 2018; Awasis, 2020). *Kandossiwin* (Abolson, 2009), or how we come to know, is, perhaps, a system of Anishnabe practices that can be likened to ‘epistemology.’ Chiblow uses the term “*gikendaasowin*” which is a different spelling with a similar meaning.

Practices in Anishnabe studies are focused on embodiment of doing, knowing and being. I build from the foundational elements in the texts that form an “Anishnabe research paradigm” (McGregor, 2018) or “peoplehood study” (Pitawanakwat, 2013). Because I want to think through epistemology with the contributions of other Anishnabe thinkers, there is a need to resituate power decentering myself and by sharing the space of working with literatures written by those who I wish to call in my discussion as relations. Attendant to power analysis, I recognize that land-based power and power acquired through Anishnabe expressions of *kaandossiwin* (Absolon, 2009) are different than the power that comes from hegemonic disciplinarity as is typical in other academic practices.

Anishnabe knowledge/*gkendaasowin* is a complete system itself; it forms living and dynamic methods, it touches several dimensions: ecological knowledge, customary

law, spiritual teachings, social knowledge, collective memory, knowledge of animals, plants, parenting norms, and other everyday practices all coalescing in centuries of place-based practice and society-building. Many of these forms of knowledge are quite subtle and found in the *dibaajimowinanag* (Leddy, 2017), personal stories, of families and individuals. For example, the following story about my great grandfather.

Mrs. Meness, an elder from Kitigan Zibi, once shared a story with me about how at every meal during her childhood, her father would spill the first sip of soup, or give the first bite of his meal to the trees outside their shack. The first spoon of soup or bite of a meal was given back into the Earth to the roots of the trees. That intentional interaction of sharing with the spirit world and other spiritual organisms represents the equal respect shared amongst one another. The notion of equality amongst living organisms and human beings are reflected back in understanding the importance of trees. Elder Meness explained that her father giving the first bite or sip of his food was a daily spiritual practice, one that was learned and passed down generations before him (Decontie, 2014, p. 6).

Anishnabeg have existed through several epochs and have recorded their experiences to pass onto their descendants. Their collective knowledge is informed by language, prophecy, and the practical application of dynamic ontologies united by a common intent to pass that life on to future generations of their descendants and other relatives.

Locating the moment: The Seventh Fire

Anishnabeg have formed robust, community-based systems of knowledge acquisition, transmission, and inquiry. These are “active systems that do exist...even though they might not be legitimized by academia” (Million, 2014, p.35). I embrace the foreground of “educating in the Seventh Fire” (Kruse, Tanchuk, and Hamilton, 2019) to guide my methods. The Seventh Fire is a time that was foretold generations ago; it was said by previous generations of Anishnabeg that “humanity will be forced to choose between a destructive technological path and one that reflects insight into the spiritual

dimensions of life recounted in Anishnabe teachings” (Kruse, Tanchuk, and Hamilton, 2019, p.589). In my interpretation, the reference to ‘destructive technology’ does not mean that all forms of what we call ‘technology’ now are necessarily bad; rather, the prophecy warns about forms of advanced technological innovation that are abusive, exploitative, and leave lasting damage in all sorts of ways, to humans, to the Earth, to all of life.

The Seventh Fire refers also to the degradation of the physical environment, arising from what we now see as “declines in biospheric integrity... biodiversity collapse and climate change...twin crises, representing emergencies for humanity” (Beazley and Olive, 2021, p. 1714). Indigenous scholars have suggested that these “emergencies” are tied to Western civilization’s arrival to North America, its “uneasy relationship with life” (Kruse, et al., 2019, p. 590) including the violent imposition of extractive, nonrelational environmental practices, with effects that are uneven in their distribution, unevenly impacting Indigenous peoples and societies. The Seven Fires prophecy is key to my framing and, although it is not possible to convey the fullness of the teaching here, I offer this contextualizing quote:

The prophet of the Seventh Fire of the Ojibway spoke of an *Osh-ki-bi-ma-di-zeeg* [new people] that would emerge to retrace their steps to find what was left by the trail. There are Indian people today who believe that the new people are with us in the form of our youngest generation. This young generation is searching for their native language. They are seeking out the few elders who have not forgotten the old ways. They are not finding meaning to their lives in the teachings of American society. They are searching for an understanding of the Earth as mother of all things (Benton-Banai, 1979, p. 91-92).

To this quote I add that the young generation which is here now are also seeking identity, which is found through identifying their clans and their place in the clan system,

dodemiwan. *The Mishomis Book* was first distributed in the late 1970's. Prophecies are much older than that; I was born when these teachings were just beginning to disperse among Anishnabeg and others on a wide scale though the teachings had been known and stewarded for generations. For Anishnabeg, learning is about relationships.

Learning begins with studying all of the plants, animals, insects, and Earth, so that we might, in turn, learn from our Elders about our historical, ethical, and cosmological place in reality (Kruse, et al., 2019, p. 599).

In my reading of this passage, "Elders" refers to human Elders who, like Benton, are exalted for their contributions to the continuation of sacred knowledges; Elder is a revered and recognized status in Indigenous societies. Human Elders make specific contributions to the wellness of a people in Anishnabe views: they are involved in "leadership and governance, teaching, managing the health of the community, and being doorkeepers to the spirit world" (Anderson, K., 2011, p. 127). Elders can also refer to other life forms, such as water, such as eels, who both have been engaged in the formation, evolution, and maintenance of place for countless generations.

The oratory tradition, which is where the spirit of prophecy is activated, is one aspect of practice and skill specific to Anishnabe knowledge transfer. Another is the ability to exert patience. In the time when eels were abundant in our home territories,

The use of the mind and memory were important; this is why the stories were told over and over again. The environment of that time held nothing to distract the listener and the storyteller... we are ceasing to be storytellers and listeners, and in doing so we are losing that great virtue called patience, so strongly emphasized by the grandfathers (Wolfe, A., 1988, p. xv).

I mention patience here because having a lens toward environmental history, cultural recovery, and the many complexities of understanding involves a great deal of patience. It is both an individual and collective endeavour, as suggested by Anishnabe

sociologist Patricia McGuire who describes the subjectivity of *debwewin*, or truth, which is another Anishnabe legal concept (Benton-Banai; 1979; Kruse, Tanchuk and Hamilton, 2019). Patience is a skill needed to interpret truth. McGuire (2012) emphasizes that in pursuit of truth, “you are an active agent” engaging in the interpretation of what is true. In the next segment, I offer some framing toward my own positioning and as represented through processes of growth outlined by Anishnabe researcher Kathy Absolon (2009) who developed a flower petal model, a way to demonstrate personal interconnections of worldview and methodology.

The Flower Model

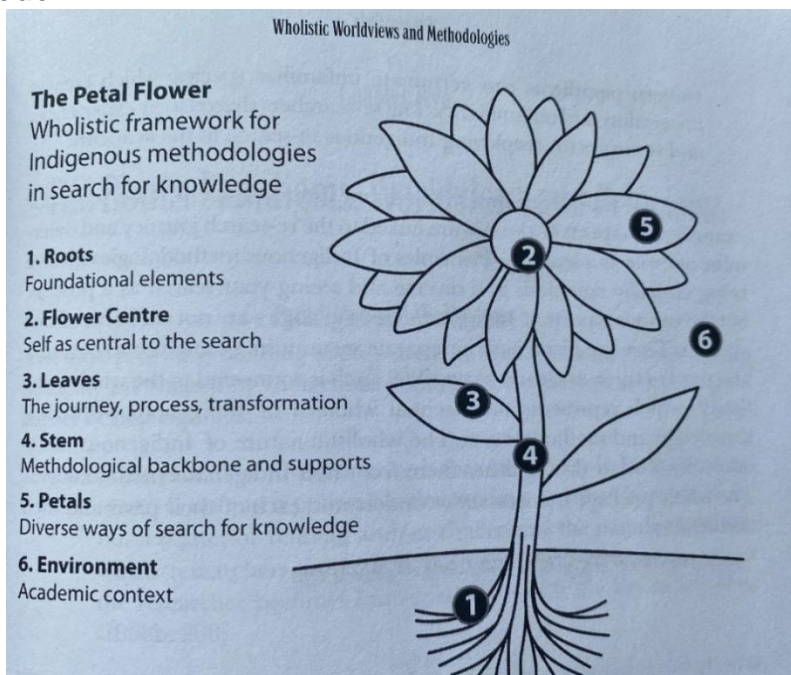


Figure 1. Flower Model (Absolon, 2009 p. 54).

Absolon discusses Anishnabe research methodologies through a “petal flower” (2011, p. 54) framework to categorize “collectively identified tendencies” (ibid., p. 50) she witnessed in working with Indigenous researchers. The flower presents a way to clarify the aspects that make the journey unique for what she terms Indigenous re-

search. According to Absolon, “re-search,” is a circuitous process of recovery, which is modeled after a growing flower and has five distinctive interconnected parts:

Roots: foundational elements;
The flower center: self is essential to the search
Leaves: the journey, process, transformation,
The stem: methodological backbone and supports,
Petals: diverse ways of search for knowledge (ibid.).

Kovach similarly stresses that grounding into an appropriate paradigm is also about connecting with ancestors; “the choices are many; there is no dogma. For this is about spirit and connecting with the ancestors. The extent to which the researcher chooses to share these efforts may be great or minimal” (Kovach, 2009, p.117). In this next section I will trace my numerous lineages and describe how each of these elements of the flower form my relationships and contributions to academic discourse. Throughout my scholarly practice as well as the intimacies of my everyday life, I am engaged in ancestral healing and reclamation work and here will discuss some of the streams that I work with most frequently.

Roots-Foundational Elements

Miskwadaynz indizhnikaaz, maymayginebig meenawa pimizi izhinikaazo nindoodem. Omamiwinini Anishinabekwe indow, kichi kabekong indoonjibaa, Kitigan Zibi meenawa Nottoway awki nindaa. I am called Painted Turtle, a woman of the Algonquin-Anishnabe people who was born at Niagara Falls and lives at the *Omamiwinini* territory (known today as *Kitigan Zibi*) and also within the contemporary lands of Haudenosaunee people. *Anishnabe introductory* greetings are as a form of customary law in Anishnabe culture and spirituality; introductions identify one’s spirit/name, clan, place of origin, affiliation with a people, and other details about who they are by offering practical information that both an affirmation of spiritual connections

to place and Peoples. Announcing one's name is also for the listener's interpretation and analysis.

To announce the words is to say who you are and who you are related to. Through these relationships and the embeddedness of meaning in names, places, and other elements of the language, my introduction facilitates an understanding of how responsibilities are identified, and how I am known throughout the four directions of the universe. In *Anishnabe Midewiwin* practice, clans (when received by descent) are passed through the father's ancestral line (Benton-Banai, 1979; Jewell, 2018). The story of my name is tied to the identity and story of my four-times-great grandmother who is an ancestor that guides my life.

My mother, Juliette, is a member of the Kitigan Zibi Algonquin-Anishnabeg Nation. My maternal grandmother, also named Juliette, along with great grandparents, and many related ancestors hail from that line of people who are now known as the Kitigan Zibi Anishnabeg. My maternal grandfather, Leroy, who was a member of the Six Nations of the Grand River and the Oglala Oceti Sakowin Lakota Oyate of Pine Ridge, South Dakota, was later adopted into Kitigan Zibi when he was able to transfer his band membership from Six Nations. His young life was formed by close affiliation with his paternal kin, including a great Auntie who was alive during the time of General George Custer and remembered the Battle of Greasy Grass in 1876 along the Little Bighorn River, often referred to as Custer's Last Stand.

Her name was Sophia and she was a seamstress and member of the Oglala Lakota Oceti Sakowin. She attended a residential school, in Virginia and was the aunt of Thomas Ferguson, my great grandfather. Thomas was also a member of the Oglala

Oceti Sakowin of Pine Ridge. Sophia, Thomas, and Leroy were three generations of a family that had been separated from their Lakota homelands. Sophia married a Haudenosaunee man and found work near Buffalo, New York, residing on the Tuscarora reservation and helping to raise my grandfather throughout his young life. My grandfather was never able to visit South Dakota while he was alive, though he wished to.

Evelyn Wilson, my maternal great grandmother, Leroy's mother, was a Mohawk, Bear Clan woman who attended the Mush Hole/Mohawk Institute in Brantford, ON, as a child and, according to family history, endured many hardships there. I did not know her at all. My grandfather believed that his grandchildren needed protection and shielding from his mother, and he kept us distant from many parts of his maternal family. I don't know much about her other than vague, anecdotal descriptions of "meanness" and stories of her eventual dislike for Native culture and phenotypical appearance, which was said to have grown strong in her old age. She had several other children and remarried after separating from my great grandfather.

I can only speculate on the trauma and abuses Evelyn suffered while imprisoned at the Mush Hole. She was a direct descendant of Thayendinega Joseph Brant whose factions of Haudenosaunee kin followed his leadership to the area now known as the Six Nations of the Grand River near Brantford, Ontario. Through Evelyn, my grandfather Leroy was an enrolled member of Six Nations until 1995, when he became a citizen of Kitigan Zibi, through a form of citizenship transfer that might be considered a type of contemporary adoption through Indian act band membership. Since the late 1980's he

had resided with my grandmother on her family's land where he is presently buried alongside and with many of my maternal ancestors.

Closeness to my grandparents, Juliette and Leroy, was a major part of my upbringing; they were respected Elders and skilled craftspeople who travelled the pow-wow trail all over the United States and Canada, bringing my sisters and me when possible. I spent summers, vacations, and every opportunity I could with them. My grandparents were more like parents, a role and relationship customary for many Indigenous families. My grandfather passed in 2003 and my grandmother passed in 2017, at the start of this dissertation journey. Their story of meeting and courting at the Hotel Niagara in the 1940s was the subject of many an evening cup of tea shared with my grandmother. They were married for over 50 years and loved by everyone.

They raised their children in Niagara Falls NY, where I was later born. My grandfather had been an ironworker and following a debilitating injury, he retired, and he and my grandmother returned to my grandmother's home and place of birth, the reserve currently known as Kitigan Zibi which was once called River Desert Band of Algonquin Indians. My grandmother maintained her practice of sewing, hide tanning, moccasin making, and other traditional Anishinabe like skills, including parenting and matriarchal family arrangement. She learned these things from her mother, Teresa, and was always practicing what she called "mom's work" of processing moose and deer hides to make moccasin, and other forms of regalia. She did this until her passing in 2017. My grandfather Leroy was a self-taught silversmith who practiced by working with Haudenosaunee trade silver and other forms of alchemical carving and creation; he

made woodwork, antler carvings, wampum jewelry, rattles, and other forms of ceremonial tools. He was an alchemist.

Our grandparents dressed me and my sisters as dancers during our youth. I grew up dancing (smoke and traditional) and attended countless powwows, sitting with my grandparents and their friends at their craft booth. They'd visit and share stories together. I mention this memory and these stories here because I learned a great deal about networks of Indigenous people and relationships while traveling throughout Anishinabe country with them, dancing at shows and gatherings, and being introduced to their many friends and relatives. I continue to hold them close to my heart and spirit. My auntie, Joni, continues to steward the physical sites where our ancestral kin are buried, at Kitigan Zibi, and I take great care to assist with this responsibility as I am able.

The oral history of our family tells us many things about how it came to be that we are tied to that First Nation reserve of Kitigan Zibi, which was established near what is now called the town of Maniwaki, Quebec. As a family we know that our history in that area did not begin with the Indian act or the reserve system, and that our more ancient homelands include the Lake of Two Mountains region as well as the area currently known as Pikwakanagan or Golden Lake. Kitigan Zibi was a former winter trapline to which the ancestors escaped (Black, 1993). They did this to avoid the rising numbers of settlers in our homelands near the Lake of Two Mountains.

Through Indian act legislation I am eligible for and hold membership in Kitigan Zibi Anishnabeg as the granddaughter of Julie and Leroy, and the descendant of Teresa Tendesi Meness and Frank Meness, my maternal great grandparents and the parents

of my late grandmother, Juliette Meness Ferguson. Older ancestors relocated to the area now known as Kitigan Zibi when the pressure of proselytizing Christianity became too much of a daily nuisance in the lives of Anishnabeg. This history is well documented in community-based knowledge and through the efforts of historians such as James Morrison.

Beginning in the late 1840s, a number of Algonquins and a few of the Nipissings moved their summer residence from the mission village at Oka to Kitigan Zibi (River Desert), a tributary of the Gatineau River which had always been part of their winter hunting grounds and began petitioning the government of the province of Canada for title (Morrison, 2005, p. 31).

As a family we know that my *anikobijiganag*, great grandparents Teresa and Frank are strong connectors between the worlds, old and new, inhabited by our peoples. In the previous chapter I mentioned the works of historian D. Fisher who documented political activity of my great grandparents, Frank and Teresa, their highly respected legacy as organizers and leaders in Anishnabeg communities who advocated for free passage of Indigenous peoples across settler-imposed borders. It is in their legacy, and the legacy of all these ancestors whose histories were such a formative part of the US/Canada divide, that I am now situated, in the ongoing persistence of our family's expressions of being Anishnabe in thought, in form and in physical being.

As well, on my father Lee's side, are many celebrated ancestors who bear intimate connection with eels throughout the land now referred to as New York state and beyond. Most of my father's ancestry comes from the Haudenosaunee ("they are building a long house") which is a confederacy consisting of five original nations who formed ancient alliances (Mohawk, Oneida, Onondaga, Cayuga, Seneca, and later, Tuscarora) that persist to this day.

Haudenosaunee also organize themselves through a clan system. My grandmother Luella was an Onondaga matriarch of the Eel clan who lived in the generations with her Onondaga mother and Tuscarora father. Luella's matrilineal ancestors all carried the Eel Clan. She took care of her six children, including my father, Lee, as a single mother. She, too, lived her life on the Tuscarora reservation, where my father was raised and where I grew up. Luella's ancestors along with other Haudenosaunee allies helped the Tuscarora people secure the reservation they currently inhabit. My uncle, Eric, has documented much family history throughout his career as a poet, novelist, painter, and storyteller.

My grandfather, Albert, was a decorated lacrosse player, veteran of World War II who attended university, and ironworker. His families came from the Tuscarora nation, Bear Clan (matrilineal) and the Tonawanda Seneca, Wolf Clan (patrilineal). In the Haudenosaunee way, mothers carry clans and pass ancestral descent of those clans as well as nation membership onto their children. This has been done in the same way for generations according to *Haudenosaunee* law (Hill, 2017). The concept of "clans" has different meanings to different Indigenous groups. Mohawk historian Susan Hill describes "*Kayaneren'kowa* – The Great Law of Peace" as a "highly structured and ordered legal system" (Hill, 2017, p. 30) which organizes clan families and members in *Haudenosaunee* society to carry out their relations and responsibilities in specific ways. There are many historical streams which feed into the stories and studies of the Haudenosaunee, which might be classified as its own disciplinary field with long origins and many contributors.

Although I acknowledge my ancestors and Haudenosaunee relations, Haudenosaunee cosmology, practice, ceremony, and law is not my purview to participate in or comment on. There is a rich canon of historical, cultural, and spiritual material written by and about Haudenosaunee peoples documenting their political agency, beliefs, and expressions. There is much activity that exists outside the academy pertaining to growing strength and revitalization of Haudenosaunee ontology and lifeways. Haudenosaunee people have been a huge part of historical formations including contributions to women's rights, democratic orders, food, sport, and many other aspects of American, Canadian, and global society. The Haudenosaunee have survived genocidal efforts of the state such as the Sullivan campaign, which caused many of my ancestors across the Haudenosaunee diaspora to migrate away from the central New York region and change their ways of life. Onondaga, my father's nation, maintains their traditional territory close to what is now called Syracuse, New York, said to be as a 'capital region' of historic Haudenosaunee homelands.

I have learned through experience and oral history that many of my patrilineal ancestors who lived in this region participated in seasonal and ceremonial celebrations of eels and all that they give to the people. Historian Rhiannon Koehler writes about the impact of the campaign of New York State's "first genocide" waged against the Haudenosaunee.

George Washington, through the Sullivan-Clinton Campaign of 1779, waged a devastating scorched-Earth campaign that contributed to the deaths of many Haudenosaunee people... The military tactics that defined the Sullivan-Clinton Campaign writ large were aimed at destroying the homeland as well as the physical bodies of the Haudenosaunee people (Koehler, 2018, p.440).

The effort to destroy the food supply included the deliberate razing of fields, destroying village food banks and preserved seeds. The campaign constituted a level of planning and rageful spite that reverberates in today's state policies and quotidian discourse concerning "Indians." This distant but very significant history continues to inform Haudenosaunee politics and communities to this day. Many historians and scholars credit these events and specifically the Sullivan campaign with the dissolution of the strength of Haudenosaunee communities and land bases. Other events would later lead to division among Haudenosaunee, events initiated by American encroachment and violation of the Gustwentha/Two Row wampum, including American wars and conflicts. The departure of Thayendinega Joseph Brant and his political faction who secured land in what is now called Ontario is also part of this history to which I am connected.

Amid complexity, the approach I take is knowing elements of this history and continually deciding how to negotiate it. Here, my desire is to speak honorably of my Haudenosaunee ancestors and recognize that many of them lived through colonial encounters while also recognizing that their experiences and perspectives hold other memory as well. Their stances may be quite different from mine given their political, religious, spiritual, material, and other affiliations, and I approach them with care and respect. I also know that grandmothers on my paternal side were all carriers of the eel clan and have deep, long running ties to eels throughout regions in the northeast.

Flower center-Self as Central

Absolon, along with many others, argues that researchers are never truly neutral, elsewhere suggested in decolonial research methodologies (Smith, 1999; Kovach, 2011; Genisuz, 2009). There is always a motivation and there are always biases, which call researchers to state their aims and find their locations:

Searching for knowledge promotes an identification of location, which... is distinctly Indigenous and goes directly against the positivist eurowestern research presumption that there is only one truth, that neutrality and objectivity are possible, and that to safeguard against researcher bias the researcher's location...must not matter (Abolson, 2011, p. 71).

By describing my familial relations and ancestral histories including the influence of colonial occupation which facilitated forced migration and an emergent diasporic relationship with territory, I attempted to foreground my ancestral homeland as a site from which my long-standing relationship with eels finds roots. In developing this project, I sought to align with an Anishnabe "ethic of responsibility" (McGregor, 2014) with intention to serve my community, but I do not come with a patronizing assumption that I am somehow going to save or help anyone or anything.

Rather, I recognize my dependency on all nonhuman life forms around me and thus I respond, as kin, as a human who holds that great gift, to dream (Johnston, 1974). It is through my dreams—waking and otherwise— that I enter the field of co-learning represented by understanding messages from eels. Throughout my work I reflect on other aspects of myself that might be brought to bear in the pursuit of co-produced knowledge with land, place, spirit, and relations. The late Anishnabe biologist Rob Macgregor was a champion of eel advocacy and research, attempting to trace the decline of eels throughout Quebec, Ontario, and New York state. He found an array of connections in interdisciplinary pursuits: "eels were a well-documented and highly valued resource for Aboriginal peoples in this area, a fact well supported by archaeological evidence extending back 4000 years" (MacGregor, et al., 2011).

The scant research directed at eels by Anishnabeg scholars is a thread I seek to pick up by retracing the steps of others who have acted out of love for Anishnabe people and knowledge, stepping forward with an integration of new insights.

Leaves-Journey, Process, Transformation

I am one of many Indigenous people seeking knowledge at this time about an Anishnabe way of life. Doing so is an embodied act and I take inspiration from embodiment practices and ideas about how to fully live in my body and in relationship with the Earth and the cosmos. Cree scholar Candace Brunette Debassige is worth quoting here, as she takes up Fanon's 'combat breathing' from Fanon's classic *The Wretched of the Earth*.

Heightening one's awareness of one's breathing cycle is a freeing practice and a primary principle of a decolonizing embodied pedagogy. Frantz Fanon, the notable anticolonial scholar, famously linked the effects of colonization to breathing patterns of the colonized:

'There is not occupation of territory, on the one hand, and independence of persons on the other. It is the country as a whole, its history, its daily pulsation that are contested, disfigured. . . . Under these conditions, the individual's breathing is an observed, an occupied breathing. It is a combat breathing' (Fanon 1965, 65)" (Debassige, C., 2018, np).

Brunette-Debassige develops a practice of embodiment, through breathing, as a way of responding to what she calls the "kinesthetic effects of colonialism (ibid)". This refers to subtle structural violence which stems from occupation and the "imperialism" (Smith, 1999) that dominates colonized environments, to include physical infrastructures, but also as Brunette-Debassige suggests, the physical body of dominated peoples.

For me, the transformation in this scholarly journey is related to learning, and relearning, how to breathe, how to accept nourishment, and how to exist in the "daily pulsation" that Fanon describes. Benton described the activation of human life as

connected to breath, whereby the Great Mystery “took four parts of Mother Earth and blew into them using a sacred shell... from the union of the four sacred elements and his breath, man was created” (Benton-Banai, 1979, p. 3). Breathing may seem like a simple, unconscious bodily function, but as I later describe in chapter 5, breathwork has been an important part of my methodology to navigate the challenges of the research process. This is one element of ‘leaves’ in the flower of my research journey.

Stem-Methodological Backbone and Supports

The land is everything. Earth is method, teacher, mentor, mother, home, and the one whose unconditional love inspires and sustains me. A similar sentiment echoes throughout all of my methodology: my work is related to and stems from water. I am dependent on the natural life forms of the Earth, and without them I would have nothing, I would be nothing. This is true for all human beings. Throughout my work, specifically chapter 5, I describe the ways in which I have worked with and through relationships with the Earth which turned out to be quite an important way of relating given the movement restrictions and spatial restraints of the COVID-19 pandemic.

Methodologies that I employ here include mobilization of my own traditional ecological knowledge (McGregor, 2014; 2018; Latulippe, 2015; Deloria, 1999; Berkes, 1997). As I mean the term, “traditional ecological knowledge” refers to the way that I express in the world and the medicines, tools, and approaches I take to navigate environments. For example, Danard and Restoule discuss the ways in which tobacco allows “ancestral knowledge to speak” (2010, p. 43) and suggest that working with tobacco changes the nature of a study and makes the data ‘difficult to control’ (ibid., 34). Tobacco, land, and application of Anishnabeg laws are the formative foundations that

created pathways for engagement and movement and in chapter 5, I must and do account for this.

In the overarching paradigm of methodologies that support Indigenous research, Linda Tuhiwai Smith writes of projects that engender an imaginative dialogue wherein “people imagine a future, that they rise above present-day situations which are generally depressing, dream a new dream and set a new vision” (Smith, 1999, p. 152) Smith also refers to projects that constitute reframing, (p. 153) returning (p.155) networking (p.156) creating, and sharing (pp. 156-7) as goals. I embrace the reframing aspect as I refer to thinking beyond the borders of the nation-states including the US and Canada. I also struggle in thinking through the geography of eels, which is perhaps disarticulated and a nascent concept here. Returning refers to travelling and being-with places that were once (and in some cases, still are) teeming with eels, and this forms the methodological “Earth dive” (Bang, et al., 2015) that takes me to places looking for them.

Petals-Diverse Ways of Searching

Here, I refer back to the concept of transdisciplinary study that I introduced in the first two chapters. Issues of Indigenous sovereignty and ontology do not neatly fit into one discipline. Indigenous involvement in research is increasingly pursued as a gateway through which to improve environmental relationships and ecologies including the development of future-minded, place-based outcomes (Latulippe, 2015; Whyte, Brewer, and Johnston, 2015; Van Der Zweek et al., 2016; Artelle, et al., 2019 McGregor, 2018; Popp et al., 2020). A robust body of literature documenting “traditional knowledge” of north American Indigenous people exists, one that is historied, “messy and contested,” (LaTulippe, 2015, P. 119) and where such knowledge related to ecology, historical

geography, land-based practices, and related subjects is approached by a “growing array of actors engaged in the field, and the myriad claims, interests, and assumptions they represent” (Latulippe, 2015, p. 119).

To study the complex and intricate life cycle of *Anguilla rostrata* is perhaps an exercise in “embracing Indigenous metaphors” (Rout and Reid, 2020) which veer into the metaphysical and ontological, as Indigenous knowledge systems operate in multilingual, multi-epistemic contexts that do not comfortably fit into Cartesian notions of space and linear time. The Dakota intellectual Vine Deloria Jr. (1999) challenged many who now occupy posts throughout Indigenous academia with significant considerations toward the legitimization of Indigenous epistemic approaches. In his 1999 text, *Spirit and Reason*, Deloria discussed the tendency of Indigenous, or ‘tribal’ methods of ‘research’ to gather information in a wholistically minded way:

In an epistemological sense there is no question that the tribal method of gathering information is... certainly more comprehensive than Western science. In most tribal traditions, no data are discarded as unimportant or irrelevant... individual experiences, the accumulated wisdom of the community that has been gathered by previous generations... dreams, visions, and prophecies, and any information received from birds, animals, and plants [are] data that must be arranged, evaluated, and understood as a unified body of knowledge (Deloria, 1999, p. 66).

“Unified knowledge,” according to Deloria, is a premise I return to, perhaps one way to affirm that “spirit is collaborative” (Henay, 2018, p. 180) and to acknowledge the historic disconnects in research practices that have stemmed from a violent tendency, to erase and abuse, in settler colonial epistemic conventions. Deloria imagined a “genuine intertribal, intercultural, and interdisciplinary inquiry that draws on Western and Indigenous pathways toward understanding the unifying reality underlying all existence”

(Anderson, J.D., 2011, p. 95). From Deloria's conception of interdisciplinarity, I position *dodemiwan* (Jewell, 2018; Awasis, 2020) as a transdisciplinary method of "unified knowledge" that weaves together the elements of unifying reality from Anishnabe framing. Deloria came from and spoke of Dakota traditions, cosmology, spirituality, history, and other elements of Dakota Peoplehood, and yet his legacy carries into other disciplines and Indigenous ontologies as well. There is a need to learn from all ways of knowing, doing, and being in respectful ways that reflect the 'pluriverse' (Escobar, 2017). These are some of the diverse ways of searching that inform my methods.

Environment-Academic context

From a young age, I did not find meaning through Western education and external society in the way that Benton-Banai (1979) describes. I attended a tribal school where I was not a member of the tribe where my family lived and experienced a lot of challenges as a 'highly sensitive' young person. Many of the processes and structures within educational systems and pursuits failed me and caused harm to many of my relatives. I acknowledge that; yet I find value in re-casting education as an avenue through which to pursuing an intellectual path and do so with the intent to retrieve what was severed. It is possible to alchemize history by studying from an empowered place, combing through archives and other records as has been documented by Wendy Geniusz who is a key thinker that developed *biskaabiyang* (2015) methods. Geniusz writes about the value of looking through the lens of settler history and documentation.

Our world has changed a lot since the time of the *Gete-anishinaabeg*, and we need to realize that things like pollution have also resulted from colonization. The colonizers caused these problems, and some of them have written a great deal about the effects of and how to work safely alongside of problems such as pollution. Resources of the colonizers, therefore, are part of the decolonization of *gikendaasowin*.

They colonized us; their knowledge will help us decolonize our knowledge and ourselves (Geniusz, 2012, p.).

In an academic context, there is much to learn through the “pluriverse” (Escobar) approach. My goal, always, is to glean from, prioritize, and elevate authentic Indigenous knowledge. Intellectual pursuits are related to the responsibilities of fish clan people (Benton-Banai, 1979, p. 74; Danard, 2016; Jewell, 2018) and eel falls under the category of fish but is also related to snakes. Benton-Banai writes of a time in the far past when there were seven “original” clans for Anishnabeg, which functioned like categories, i.e., blue jay, for example, would fall under bird, specific fish would fall under fish, and so on.

It is important to clarify here that the scale of time in Anishnabe storytelling is a factor; there are distinctive spatiotemporal orientations which align with the Seventh Fire temporality. The established clan system can and does expand to accommodate the truth of the original teaching, which is that “everyone has a clan” (Jewell, 2018) because it was a council of animals including birds, fish, and others who formed to “adopt” Anishnabeg in the original *adzokan* (story). Finding one’s place as Anishnabe in the clan system is a matter of personal responsibility and seeking. Danard clarifies:

...other distinct Clans that originated among the many Nations should also be acknowledged and recognized, such as wolf and snake for example. It is up to each of us to learn the teachings of our clan, including our clan songs and traditions (Danard, 2016, p.119).

With this foundation, I balance internal motivations and understandings to the contexts where I work, with formal training in the disciplines of English, Environmental Science and Health, and Critical Geography. My trainings serve the specific directions which emerge as the pathway unfolds. I also use standard social science methods, like interviews and surveys. Written/typed surveys create great possibility for fragmented

knowledge; it is also beneficial to collect a written statement that participants form themselves based on the preset questions.

The questions were designed to be deliberately generic given the range of experiences and knowledge within the groups and written in plain language so that the survey was accessible to as many reading levels as possible. Multi-systemic literacy is important, I do not seek to attain certifications and degrees for the purposes of self-congratulation or other things. I know that in this world, in order to exert decision making authority especially as an Indigenous woman confronting and decentering hegemonic structures, i.e., matters of water and land in highly colonized settings, one potentially requires pluralistic fluency, credentialing, and systemic literacy.

I feel particularly called to take space for multiple forms of knowledge in disciplines like geography and Indigenous environmental justice because I work from a phenomenological and ontological space that prioritizes the “felt knowledge” (Million, 2014) that might be likened to intuition or “*ah-mun’ni-soo-win*, a special sense that goes beyond the ordinary senses... a sense that few people recognize in their lives” (Benton-Banai, 1978, p.65). These are important ways of knowing from an Indigenous perspective. I have found that there is space for me to make contributions in academic discourse that might immediately and eventually benefit those who are my relations and extended families, *doodem* and otherwise, inside and outside the academy.

Overall, I wish to engage respectfully with other thinkers and other research professionals who are cognizant of the need to change our paradigms of environmental and other forms of relation, in order to sustain life. The flower petal diagram gives space and form to the ways in which my research aims, agendas, and strategies are part of an

organic, unfurling whole that has tethers to the lineage of prior generations and seeks to be relevant and connected to those of the future.

3.2 *Kwe* and *nibi*: the inverted world

To shift, I now want to present an image: an image of a floating ball moving across the still surface of water, a ball of undulating and writhing matter which is solid and held together. This phenomenon, known as an “eel ball” is formed when eels cluster together and float in freshwater lakes, creeks, and streams. Fishermen and people knowledgeable within eel habitats have documented that these balls have been seen “in deep water, offshore, at about the same time of year—just preceding late summer downriver migrations” (Medcoff, 1969, p.1102).

It is unknown why and how eels cluster together like this. The phenomena have been talked about and documented in some fisheries records and reflects the interesting behaviour of eels as they occupy and travel through sites across watersheds on their migration journey. The eel ball is an anomaly, an occurrence that speaks to the unknowns of ecological cycles that this *Anguillid* participates in. Like other mysteries, the eel ball is worth respect and consideration, an evocative image that sends a message of interdependence occurring among that population of clustered fish. In this section, I discuss relationships between mysteries and water as they relate to eels and the inherent value of an eel’s life when positioned in Anishnabeg ideas about spirit, mystery, and the “orders of life” (Geniusz, M., 2015) of which humans are only one part.

Mnidoog

Ojibway philosopher Dolleen Manning also works with imagery, one that describes her interaction with *mnidoog* who are sometimes known in Anishnabe worldview as spirits, but the word has a more complex definition:

The word '*mnidoo*' is more accurately translated, according to the late Ojibway language speaker and cultural teacher Basil Johnston, as 'a substance, character, nature, essence, quiddity beyond comprehension and therefore beyond explanation, a mystery; supernatural; potency; potential' (Johnston quoted in Manning, 2017, p. 174).

The translation of *mnidoo* and how they (*mnidoog*-plural) relate to scholarly inquiry is taken up in careful ways (Rheault, 1999; Acoose, 2011; Danard and Restoule, 2010; Manning, 2017; Corbiere, 2020). A world informed by respecting the influence of and interacting with *mnidoog* is the foundation of an Anishnabeg ontology, reflective of the "quantum reality" (Gross, 2012) supported by Anishnabe language and worldview. Corbiere suggests that *mnidoog* is essential to development and expression of Being Anishnabe.

...Professing to adopt an Anishinaabe perspective should incorporate and address the significance, influence and intercession of the *manidoog* (spirits) and *mishoomisag* (grandfathers) into Anishinaabe decision-making (2020, p. 11).

Manning carefully documents her experience as a matter of personal understanding and sensemaking: she translates her perception of intercession from the *mnidoog* through schematic drawings which reflect what she calls "mnidoo-worlding." This is a term she uses to describe "inter-relational accord amid brutal contemporary forces that compose our complex, lived Indigenous realities" (Manning, 2017, p. 168). She draws from *Lebenswelt* (lifeworld) to reflect living in a world "populated by human and other-than-human persons" (ibid.). In her work, "vignettes gather and break apart

rather like a shoal of fish or a flock of birds—in other words, with an eye for the immediate and a pulse in time with the infinite” (Manning, 2017, p. 155).

The way I read Manning’s work suggests that the interchange between *mnidoog* and everyday human experience occurs like a form of breathing, an exchange. This also reflects the influx of eels to coastal watersheds on their migratory life cycle. Every spring, a series of saltwater currents swirls north from the Gulf Stream, with “several pulses of glass eels entering and dispersing” (Tuckey and Fabrizio, 2019, p. 8) into estuaries, bays, and eventually rivers along the northeast coast. As summer arrives and morphs to fall, long, mature silver eels disperse out of the estuary toward coastal regions and toward the Sargasso where they are never again seen by human eyes. The process is both, as Manning says, ‘immediate....and in time with the infinite.’

I started with these images of “eel balls” floating in water because they are reflective of the interconnected reality Manning describes. It is difficult and complex to describe the intervention of *mnidoog* in one’s everyday life, and some of those experiences are private; yet as Corbiere offers, the presence and interaction with *mnidoog* are part of decision-making and of existing, all the time, for Anishnabeg and have a role in the research-relationship process. Sometimes the interaction is small scale and even humorous; at other times the power and influence of *mnidoog* are overwhelming; powerful, humbling: a detectable ‘something’ intervening in the path and life of a person connected to that lineage of guidance.

It is my belief and understanding that each Anishnabe will have their own stories of how they interact with *mnidoog*. For me, the clearest connections I’ve made are when interacting with lightning, water, and animals. At other times, maybe that ‘something’ is

in the form of a surfacing otter, the flick of a hawk's wing, a curious moose peering through emerald-colored spruce branches. Or, less romantically, presence of *mnidoog* is evidenced in the bantering noise of an overturned garbage crate that has been ransacked by raccoons and leaves debris and garbage strewn about. It is the trickles of blood on snow that show there was a recent dispute between bears, and something—these are the untold stories of what animals are up to. And perhaps, it's not my business to know.

When I talk about life and the preservation of life, it is the sanctity of these overlapping moments between the human sphere and nonhuman animacy which I hold dear. Humans live in a world of many overlapping *mnidoog*—of humans, of animals, of trees, places, and waters. And many others. I've been afforded opportunities to exist and be with territory where my not-so-distant ancestors lived a very different life than the one I am now living; the life I live now is punctuated by the underlying infrastructural assumption that a pinnacle of human civilization is access to running water, which facilitates the constant depositing of human waste in fresh, potable water.

This reality also accepts the defaults of roadkill, turbine mortality, and the many other forms of speciesist violence which are baked into the very fabric of modern living, *through Indigenous genocide* and the removal/forced migration of bodies, societies, the destruction of homes and, as mentioned in the literature review, sacred sites, including burial areas.

Manning calls for a response to the wrenching expressions of being alive now which she calls "brute phenomenal reality" ((Manning, 2017, p. 156) and which I term "the inverted world." It is inverted because all species are threatened, surrounded by

ongoing violence and the building of large-scale destruction. There is also an antithesis to the inverted world, *minobimaaadiziwin*, which includes instructions for a balanced way of living, which was also given to Anishnabeg, forever (Dumont, 2018). Manning suggests that every day experiences continue to be infused with interactions, intercessions/interventions of the *mnidoog* for Anishnabeg, despite the many efforts to destroy Anishnabe language and convince Anishnabeg to assimilate into the fabric of non-relational, transactional, human-dominant consumer society. In prior generations members of my own family were institutionalized and punished for wanting to remain Anishnabe, part of a larger historical pattern that Manning traces.

Indigenous ways of knowing have been delegitimized, pathologized, and reduced to obscurantism, or primitive and infantile ineptitude. As a result, the widespread social inequities and patterns of abuse that plague Indigenous communities, due to settler colonialism, evoke paradoxes that appear inconsistent with the *mnidoo* world that I am proposing here (ibid, p.157).

My interpretation of “Being Anishnabe” (Acoose, 2011) means that addressing the ‘inverted world’ is a matter of connecting with ancestors, land, water, *mnidoog*, relatives, in places, through tobacco, and from the heart. When we seek the truth of our existence, we learn as Anishnabe that we have been given so many gifts and blessings; for me, the gift of my clan and connection with water and animals has been central to recognizing and building a meaningful life. Fontaine writes that “clans were the Creator’s gift and that creation gave each of us certain responsibilities... clans remain centre of and brilliant spark to our world” (2020, p. 183). Studying my *doodem* with guidance and presence in respectful interaction with *mnidoog* is a way of honouring the gifts that I have been given and my experience of “Being Anishnabe” (Acoose, 2011). There is much more to say; here I offer a sense of how the overall methodology is

informed by these Anishnabe-specific forces which are present at all stages in my life and, by extension, my research methods.

Anishnabekwe

Anishnabe-kwe are authorities of decision making and have many responsibilities related to environmental governance. They are foundational to the basic structure of the family unit and their bodies are intimately connected to the life cycles of the Earth. Women have great authority and power in Anishnabe society (Luby, 2020; McGuire, 2020; Anderson, 2011) which is often overlooked or disregarded in ‘professional’ settings. Sockbeson clarifies the broad social context and conditions in which many Indigenous women work: “scholarship is carried out under the shadow of tragedies associated with the disproportionately high levels of our own constant socioeconomic distresses” (Sockbeson, 2017, p. 6). Epidemiological evidence shows that for Indigenous women and children, social disparities run high, and there is a great deal of evidence to show the impacts of racialization and societal indifference leading to violence, death, poor health, and other harms.¹⁴ Always correlate to epistemicide is the pursuit of epistemic justice and recovery in an effort to reflect the need for balance.

I propose the theoretical framing of Anishnabe scholar Lawrence Gross is most applicable here. Gross suggests a theory of post-apocalyptic stress syndrome (2012) which is experienced by Indigenous peoples living in the realities that result from the

¹⁴ I add here that the research period for this study was concurrent with several overlapping disasters for Indigenous peoples which affected me personally and peripherally including the opioid and crystal meth crises, the violent murder of Joyce Echequan by healthcare workers in Quebec, the 2020 Mi’kmaq lobster dispute, which is an extension of the fishing wars discussed in the prior chapter. False narratives around Indigenous conservation and land-based practices fueled violent posturing and racist threats from vigilante citizens of settler colonies against Indigenous Elders, children, and families. All these factors were, too, compounded by the coronavirus pandemic. The ongoing horror of structural epistemicide seemed, at times, to take a backseat to more spectacular forms of violence and hatred of Indigenous people in common society that dominated news headlines during 2020.

assimilations and violence-based land occupation regimes that have befallen their ancestors. Gross, like other scholars, (Tallbear, 2020; Whyte, 2018; Taylor, M., 2021) argues that Indigenous societies are already living post-apocalypse, in the remnants of changed worlds following a series of ‘apocalyptic’ events and the installation of uninvited, unelected social, legal, and cultural structures enforced by infrastructure and institutions, both physical and nonphysical. Settler colonialism facilitates land dispossession, genocide, assimilation, speciesist violence, the contamination of food and water sources, large-scale massacres, and the structural devaluation of life, all of which amount to an environment of “dystopia” (Whyte, 2018).

Gross suggests that post-apocalyptic stress syndrome can create damage “so profound that the stress can ruin people for the rest of their lives, with the attendant despair and dysfunction being picked up and carried on by subsequent generations” (Gross, 2016, p. 35). The post-apocalyptic stress syndrome that Gross presents here affects Anishnabekwe, women, in specific ways, since stresses and traumas can be specifically related to environmental degradation and the ways in which Indigenous peoples have, or do not have, access to the restorative powers of land and water, and all of their nonhuman relatives.

McGregor (2015; 2018a) Luby (2020), Chiblow (2020), and McGuire (2020) have argued that Indigenous women continue to meet their responsibilities and connection to the Earth, the mother of all living beings, through innovative expressions of relationship in place, regardless of the dystopias. Through the work of the late Josephine Mandamin, for example, people on a large scale have followed her example of “walking with the waters” as a way to reconnect their energy with the Earth and direct focus

toward the healing of polluted water: waters “are recognized as living entities imbued with both the power to heal and the need to be healed” (McGregor, 2015, p. 75). The agency and self-determination of Indigenous women has persisted, although severely threatened (Gunn Allen, 2006; Acoose, 2011; Anderson, K., 2011, McGregor, 2015; Craft and King, 2021; Chiblow, 2019; Luby; 2020).

Collective Anishnabeg history and knowledge is essential to paradigm change suggested by the Seventh Fire temporality, which would restore dignity to Indigenous peoples through human rights. Conceptualizing Indigenous rights as a distinct framework within human rights discourse is an ongoing process, renegotiated through processes of international law and domestic policy making in Canada (i.e. UNDRIP, the MMIW inquiry, the TRC). There are much longer histories to each of these efforts and all of them have been critiqued for their procedural and practical flaws, as well as the resistance of the Canadian state to truly embrace and implement recommendations that would achieve practical outcomes— to enhance the role of Indigenous women’s leadership in (for example) land management practices and decision making about water.

Despite these unideal conditions, Anishnabe-kwe continues to assert and exercise their inherent rights to relationship and responsibility with water. This is visible in the literature but is more visible in “directly lived” (Pierce and Martin, 2015) settings. Indigenous scholars mentioned here are involved in documenting ongoing and new conceptions of what it means to embrace *minobimaadiziwin*, or a balanced way of living. For Anishnabeg, that entire concept forms the purpose of being alive with the Earth.

Like so many others, I am involved in the “inheriting of transformed, colonial places” (Watts, 2016) I move next into the next section with an intent to cultivate commitment to life-affirming practices. Watts calls for Indigenous people to understand themselves through generations and through place: “place is both birth and inheritance...all new beings carry the knowledge of beings before them” (ibid). This refers to ancestors and predecessors of human and genetic memory, along with other types of relationships including *doodemag*. I recognize that modern configurations of being in place have indeed severed the full ability of Indigenous women, and Peoples more broadly, to engage in mutuality with their relatives, to receive and pass on their gifts and inheritances. I also recognize that there is also more to be said about what to ‘do’ in those conditions.

I’m not the first to suggest this. These are not problems that can be fixed by one person. In this section, I offer my understanding: different conceptions of reality-- what is real and, perhaps, important—are at odds with other notions of being and existence. Settler colonialism is a node in time, not a permanent configuration of life. The phenomenological nature of these questions, as mentioned in the literature review (Johnson, J, 2012), has yet to be evidenced seriously in geographic practice; the mentioning of *mnidoog* is a specific and tangible way to bridge learnings from phenomenology with other modes of inquiry. In the next section, I start by explaining how I understand the sovereignty of water, followed by discussion of healing, an Indigenist lens reconciling relationships with all relations, starting with water and place.

Nibi, water

The relationship between Indigenous women and *nibi*, water has been well documented; in recent movements, the call to protect water grows in strength across all

nations and demographics of people (McGregor, 2014; Chiblow, 2019; Gilio-Whitaker, 2019; Estes, 2019; McElhinny, 2021). McGuire connects the relationships of

Indigenous women to environment, body, and life:

Within Anishnabe societal knowledge(s), women's responsibility extends to the protection and preservation of Nibi, water. In these understandings, all forms of water are considered. Women generate water, while their child is within their first lodge, within their bodies. Anishnabekwe have these life responsibilities...which also encompass water animals and other beings (Mcguire, P., 2020, p. 21).

As eels arrive from the deep ocean in the spring, symbolizing new life, a new cycle of time on the Earth begins, with “the cleansing and awakening powers of spring waters” (Shirt, quoted in Anderson, 2013, p. 12). In Anishnabe society, Grandmothers and other sources of “authority and wisdom” (Anderson, 2013) who are knowledgeable about water have taught that “reading the water” is part of Anishinabe women's practices of knowledge, or *gkendassowin*: (Chiblow, 2019; Craft, et al., 2021) water is alive, water can communicate, teach and instruct and it is the responsibility of women to receive and interpret the messages that come from and to water.

In developing a concept he calls “Earth reconciliation,” John Borrows offers opportunity for direct learning and application of inherent Anishinabe legal principles. I have mentioned *zaagadowin* or love as both a legal tradition and a building block of reality. Borrows suggests that the “personality of rivers can be studied to identify analogies that provide standards about how we should extend our love to others” (Borrows, 2018, p. 54). There are many ways to do this in dialogue and consensual, active, reciprocal engagement with water, through tobacco, and through other methods which respect the sentience and agency of these life forms. Attention and practice of mutuality facilitate a willingness to learn from each other.

Rivers are constantly moving, changing, and shifting; their movement is a constant pathway toward cleansing and purification. To understand rivers, I consider and reflect on a published story of Anishinabe origin. Once again, instructive stories are offered through the teachings of the *Mishomis Book* (Benton-Banai, 1979) ground this task. In this story, Waynaboozhoo continues his journey, walking the Earth in pursuit of his father. He encounters Michi zee bee, the greatest river, to whom he offers *asema* (tobacco).

After he was shown safely across the water, the river spoke again: 'There is another river to the west who is the princess of all rivers... together, we are among the main arteries of mother Earth. We help to drain and purify her blood. You must speak with her as a boy might speak to his aunt or grandmother. I wish you well on your quest to find your father ... Now be gone! I have to be on my way, it takes seven years to complete my journey to the sea and back again (Benton-Banai, 1979, p.52).

There is much to understand in this story. Michi zee be is clearly involved in her own sense of sovereignty, engaging time and space. She is fulfilling a duty to the larger body that is the living Earth. Michi zee be is loyal to her work for the Earth. She demonstrates kindness and instruction, giving the traveler care and respect along their encounter. Her familiarity with the cycles of Earth is clear. She is aware of the places that Waynaboozhoo would encounter in his travels; there is a 'fixedness' to the order of things as exemplified in Benton's teachings. Earth has an inherent stability that all adhere to, namely water in this story. There is orientation of cardinal direction—east, west, and so on. The river displays knowledge of wider, connected ecological infrastructure (the oceans) which shows water as a continuous, but distinctive, living body with sentience, a will, and complex levels of perception.

Through the offering of *asemaa*, the life force of Waynaboozhoo honours the life in the river. The tobacco is the conduit through which messages are transmitted, translated, and received. Relationships between elements and lifeforms in the land are preexisting and have protocols associated with access and passage for Waynaboozhoo to understand. Waynaboozhoo is given instruction and kindness in exchange for the respect that he offers. He is also shown that all beings have a duty and purpose that they are fulfilling.

Michi-zee-be must complete the seven-year journey to the sea and although she offers help and kindness, she is very much doing her own thing. It is especially noteworthy that he is instructed to speak with the water as he would speak to an aunt or a grandmother, who is known in Anishnabe society to be a source of authority. The purification of water and of all life continues, initiated by an interconnected network of water: streams, creeks, ponds, lakes, rivers, all mirror the nature of eel migration.

These interspecies interactions form the basis of Anishnabe understanding in terms of place, sovereignty, authority, and a wider order of vitality which is typically denied in geography, political ecology, and other forms of scholarship. Superficial notions of place flatten other life forms to commodities, immobile actors, or inactive backgrounds. Anishnabe stories are not tales of fallacy or for the entertainment of individuals or children; they are the real living evidence of how people are to conduct themselves in relationship with places and other personhoods with their own sense of authority and purpose in the world.

I draw from these stories as instructions all of my interactions with water and with place. Building these relationships with water is a way to consider how “radical

pedagogy and the politics of action” as well as “research within living worlds” can build space for “Indigenous geographies ...(to) invite and challenge an engagement across boundaries of difference in new ways” (Coombes, Johnson, & Howitt, 2014, pp. 846-849). The current moment is charged with challenges and opportunities for the revitalization of Indigenous lifeways in the discipline of geography and beyond. For *Anishnabekwewug*, women, cognitive and epistemic justice (de Souza Santos, 2014) begins with recognition that water, who is alive, continues to attend to and show up for the responsibilities of purifying and nourishing all of life on Earth.

3.3 Healing and affirming life

I begin this section by quoting *Waubanewquay* Dorene Day, as she describes the individual’s role in *minobimaadiziwin*:

Our way of being in the world is to gain an understanding of who we are, where we come from, and where we are going. We each have our own Creation Story. We must gain an understanding of why we practice our ways differently. In our understanding, everything came into existence because our great Creator put it all in motion. It was in this great event unfolding that we find our way of understanding how it is that we came to be, and the gifts that were given to us through these events...the Anishinabe way of knowing about health and well-being, of being in the world, is based on balance. Plants, trees, animals, those that crawl, those that fly, the hooved ones, those that burrow underground, and those that swim in the waters all strive to adhere to the original instructions given them by the Creator. A balanced individual or community respects the Creator’s original instructions found in our/your Creation Story, understands the interconnectedness of all life, accepts the responsibility of his or her gifts, and strives at all times to live a *Mino Bimaadiziwin*. (Day, et al., 2014, 38-39).

Day’s words here are important to recognize as authoritative messages that come from the perspective of respecting and acknowledging traditional healers in Anishnabe society. Although people have individual *doodemag*, with very personal attachments and relationships, *doodemag/doodemiwan* is a system of relation that belongs to a

wider ontological order and environmental ethic. Traditional healing is a nascent topic in this work; for the purposes of this section, I align with Day's suggestion that "we each have our own Creation Story" and must have respect for the Creator's original instructions found in my Creation Story.

Reconciliation with all of creation is suggested by the teachings of many Elders and teachers who have insisted on Being Indigenous despite the criminalization and dehumanization tactics which have claimed so many of our ancestors and relatives. "Environmental reconciliation" (Borrows, J., 2018) is a process which is lifelong. It encompasses ancestral thinking and conceiving visions of the future to overcome legacies of trauma and stress. Experience is said to be epigenetically passed on from embedded cellular memory—both of anguish and of joy and all the gradients of emotional and affective expression in between.

The goal, for me, is in forming legacies of future generations: relatives, children and descendants who are not beset with the trauma and stress that has characterized aspects of my own life. Borrows suggests that "among our other duties to one another is one to act in healing and life-affirming terms" (Borrows, 2018, p. 55). This ongoing practice of "righting all our relations" (Acoose, 2011) forms space for me as Anishnabeg to find my place and engage in environmental, ancestral, and other forms of reconciliation in ways that are personally meaningful and are collective contributions to the wellness of my nation and communities. Indigenous learners and researchers can investigate hegemony and challenge its "impacts on our bodies, minds, and spirits" (Brunette-Debassige, 2018, np) to find new possibilities and ways out of carceral traps, cognitive, embodied, material, and otherwise.

According to Gross, “some researchers have argued that the worldview of the Anishnabeg has either collapsed or decayed” (Gross, 2016, p. 205). I suggest here that, on the contrary, it is continually emerging and bolstered by practices in scholarship, advocacy, and affirming the inherent dignity of Indigenous societies and knowledge systems; there has been a momentum in recent years.

The concept of the ‘Fourth World’ was initially introduced to the contemporary political lexicon in the early 1970’s at the beginning of the global indigenous engagement movement and the height of the North American Indian civil rights movement, with a book titled *The Fourth World: An Indian Reality* written by the late Secwepemc Chief George Manuel. Manuel advanced the idea that Indians were not just nations within states, but also nations within larger geopolitical processes. Struggling to maintain their cultural and political identities, they existed simultaneously within and beyond the conceptual limits of the state (Ryser, Gilio-Whitaker & Bruce, 2016).

To be Anishnabe cannot be extinguished by the state or its processes. An embodied Indigenous geography requires “destabilizing how we come to know Indigeneity and what representational strategies are used” (Hunt, 2013, p.2). Daigle offers up the strategy of seeing territory as an “interdependent kinship network within and across families, clans, communities, and nations” (Daigle, 2016, p. 265) and exercised through beliefs and behaviours on and through territory. To affirm and consent to the flattening brutalities of the state’s hold on land, place, and story can be overwhelming and debilitating; stress can affect epigenetic expression and the ways in which disease forms and grows in the bodies of humans, and also of animals, in water, and in other life expressions. It is worthwhile to embrace the responsibility of living life fully and in the pursuit of wellness, for the self and for all relatives who may be touched and influenced by wellness initiated by the individual. This is one expression of interdependence and a wholistic lifeworld.

My methods here may be perhaps a uniquely niche and complex conception of many interrelated streams of thought. I am suggesting the cultivation of an already existing reality, a simultaneous, expansive lifeworld codified through Anishnabe language and being which is transmitted through Anishnabe language, practice, and embodiment. The explicit engagement with specific environmental ethics informed by personhood of nonhumans is traced to interactions with *mnidoog*: “it lives exclusively with the Anishnabe—the original people—that is, those marked with a profound integrity as interconnected and co-responsive” (Manning, 2017, p. 174). This is my ancestral responsibility and inheritance.

The phenomenological and epistemic background of ancestral and *mnidoo* guidance is another layer in the many precursors to my study. I am attempting to translate principles and ontologies of my place in the clan system by engaging “brute phenomenal reality” (Manning, 2017) on my terms. I see degradation as it is and yet want to vision beyond and through it, to another reality, which ameliorates the many troubles and concerns so many Anishnabeg are currently perturbed by, the collective maladies which infringe upon our responsibilities to achieving *minobimaadiziwin*.

3.4 Conclusion

This chapter frames a way of being Anishinabekwe and researcher. The famous fascism of the Indian Act and correspondent policies in the United States were designed to “obliterate the authority of Indigenous women” (McGuire, 2020, p. 27). Processes of locating, affirming, and honouring that authority are the ancestral root of my practice. McGuire describes the lifepath of Anishnabekwe, women, as “spirit first in this world”

(2012), meaning that the spirit of a woman is a form of authority as well, spiritually connected to the Earth and other forms of life.

For Anishnabeg, operating in academic contexts or other places, it is important to remember “culture doesn’t die by changing, it brings a new beginning. We don’t ever really die as a people, but we do experience new beginnings that build on earlier foundations” (L. Borrows, 2013, p. 400). This is what I mean by suggesting that I am engaged in practices that are affiliated with healing and affirming life, on a personal scale but also throughout the generations which are part of my web of relations. In many cases prior generations have experienced exceptional tragedy, suffering, and constricted choices and circumstances.

Indigenous methodologies, practices and considerations are often named as complex, and this section and preceding chapter are certainly no exception. I don't choose complexity for its own sake; rather, the complexity of Anishnabe persistence in the configurations of our homelands and entanglements necessitates a nuanced navigation of the many systemic terrains that the Indigenous researcher encounters. Understanding the plight of eels is also complex. It is complex work compounded by multiple factors, and so in these preceding two chapters, I have endeavored to set a footing where I can describe the many tributaries that inform what might be called a winding river of knowledge that incorporates multiple approaches and starts from a place of humility (Borrows, L. 2016) to engage in acts of love and connection with nonhuman others including water (McGregor, 2015; Chiblow; 2019; Craft and King, 2021; Borrows, 2018) and of course--eels.

The next two chapters describe aspects of my fieldwork and other research which emerged from a two-year period of engagement with diverse geographies and places. Literature and other document review was necessary to fully comprehend the information that was shared with me by interview informants. I continue with my discussions of place, space, relationality, and other forms of inquiry in my discussion of eels. The writing and research are informed by different parties who have taken an interest in the lifeworld of eel migration and who participated in my study period.

Chapter 4 Who knows about eels?

In *Transit of Empire*, Chickasaw historian Jodi Byrd asks, “how did the impulse to constellate the Americas into European colonial alignment come to depend upon the lamentable but ungrievable Indian?” (Byrd, 2011, p. 39). Following Byrd, I ask the same question of ‘lamentable but ungrievable’ eels. Byrd and many other Indigenist scholars (Goemann, 2013; Mitchell, 2016; Moreton-Robinson, 2017; Pearce, 2017) have made the case that settler colonial societies deny voice and agency to the Indigenous peoples whose lands they subsume in specific ways.

I follow that undervaluation with the plight of the generally undervalued and unappreciated *Anguilla rostrata*. In this chapter, I review materials related to the conservation and management of eels as presented by studies and papers coming from different sectors: energy production, fisheries biology, bioengineering studies, historical accounts, and others. My core aim in the chapter is to demonstrate the complexity and multiscale involvement of multiple actors who take an interest in the life cycle and habitat of *Anguilla rostrata*. Studying migratory eels is challenging in a holistic sense; they are mostly active at night, can be elusive, and “at every stage of its life, the eel’s morphology changes dramatically” (Mongeau, 2017, p.3) making them difficult to identify. It is difficult to gain a true understanding of how and where they are thriving, declining, or somewhere in-between.

Relatedly, I have found mixed results in my pursuit of knowledge about the persistence and prevalence of eels as relevant in Indigenous communities in Canada and the US. It is a combination of uncertainty in some areas, and longstanding struggle for tribal sovereignty in others. Nation states continue to enact barriers and make

outrageous legal claims in policy, practice, and jurisprudence which reduce Indigenous rights. Perhaps what is sought is *inherent Indigenous* self-determination over environmental matters since policy is often muddied by political and administrative restraints of bureaucratic aspects of settler governance.

Also, some Indigenous communities have no recollection of or relationship with eels at all. There are some places where eels were historically significant to an Indigenous people but are no longer in the watersheds where they formerly migrated. Tracing sites where eel study would be welcome, reciprocal, and appropriate—and involves an Indigenous history—is a desirable research aim, and in this and the next chapter, I document some of my findings in doing so.

In the first section, I describe factors which negatively affect eel migration, commonly termed “anthropogenic pressures” (Drounieau, 2018). These include dams and other migratory barriers, but also pollutants, exploitation, environmental degradation, and related factors. I also discuss conservation status in so-called Canada and the United States and touch on some well-known and established conservation approaches.

In the second section, “things written,” I trace some of the developments documented in literature that forms common understanding of *Anguilla rostrata*. Data from scientific literature informs public policy (or lack thereof) including stories and historical accounts of what might be called ‘progressive’ approaches toward eel study in biomedical sciences. I discuss recent developments including advances in biotechnology which rely on eel bodies and the patenting of eel innards, which Raven and colleagues might call ‘biopiracy’ (2021). I offer five distinctive subframes in this

section; they are summarized as being related to the migration, global origin, sexual maturity, global demand of eels, finishing with a discussion of eel as biomedical technology. I organized and sorted the specific threads as they appeared in recent and significant developments.¹⁵

The third section is a discussion of Indigenous-led efforts at conservation and management of eels, informed by my interviews and discussions with William Allen, an archaeologist who worked with Indigenous Elders for years in tracing eels throughout Anishnabeg territories. I draw also from studies of *Anguilla rostrata* from various sources: journals, databases, subscriptions, studies and new articles; word of mouth, land-based activity, *dodemiwan* practices and relations, and anecdotal recommendations from others in their fields. I am in ongoing, constant pursuit seeking texts and other materials that inform my understanding of eels. Many of the items reviewed here were also recommended by people who participated in my fieldwork study.

As I write these words, a familiar terrain emerges: thinking about what's happening in the ocean, in the waters, and in the atmosphere affecting the waters, all throughout the range of two thousand plus miles composing eel habitat. In other words, there are more questions than assertions, a humble ontological space familiar to reviewing all matters related to eel specific research, regardless of the context or discipline. Much remains unclear. Many people have studied eels; few have made

¹⁵ I again state my limitation in noting that I come from a different research background than many of the disciplines I cite. The sciences involved in eel biology are deep, rich areas of study and the articles discussed here are only a tiny, superficial sample. Fulsome approaches of eel study through practice in disciplines which target eels through physical methods is likely a much more nuanced specialization than I offer here; yet I maintain it is important to consider their debates in consideration of differing methodological and epistemological approaches and conclusions.

connection to Indigenous Peoples and the settler colony's early dependence on abundant eel populations. The relationship between Indigenous people in North America and *Anguilla rostrata* has been under-documented and can offer innovative ways to repurpose and rethink the violent and oppressive history of colonial practices and entrenchment, which I discuss in the third section on Anishnabe, eels, and the lifeworld. To begin, a discussion that reflects current thinking about why eel populations have declined.

4.1 Identifying anthropogenic pressure

Drouineau et al. suggest that there are five specific “anthropogenic pressures” that affect migratory *Anguillid* eels. Anthropogenic pressures are defined as “human caused environmental changes” which they suggest is happening at a rate which “...can endanger even highly adaptive species” (2018, p. 903). The five pressures they list, which have a global distribution affecting multiple *Anguillid* species, are

- Global warming and ocean modification
- Increased contamination load
- Fragmentation and habitat loss
- Alien parasites
- Exploitation of eels at all stages (Drouineau et al, 2018, p. 904).

As mentioned in my Introduction, Tsukamoto and Kuroki (2014) compiled stories that trace relationships between eels and humans in several polities: The United Kingdom, Ireland, Denmark, France, Japan, Korea, China, Taiwan, New Zealand, and finally, parts of Canada and the United States. Pollution, dams, and many other factors have forced a decline in eel populations throughout all these areas which has globally “served as a wake-up call to scientists monitoring the status of all species of eel” (Casselmann and Miller, 2014, p. 163). According to legal scholar Cecelia Enger Palma and colleagues,

Unraveling the eels' mysteries is not only a matter of scientific curiosity; it is a matter of pressing urgency. American eel has already been extirpated, or are close to extirpation, from part of its historical freshwater habitat... it has been assessed as depleted throughout its distribution in the United States and it has been assessed as threatened in Canada (Enger Palma, et al., 2013, p. 130).

Here, I will focus my remarks primarily on *Anguilla rostrata* but also note that other *Anguillid* species (and the environments where they migrate) are involved in such 'trafficking' networks. Species like *Anguilla anguilla* and *Anguilla japonica*, among others, are also a necessary part of the discussion because traffickers and aquaculture practices sometimes will use *Anguillids* interchangeably since they have similar life cycles. The conservation biologist Nick Walker, who I also interviewed extensively for this project, wrote with colleagues about the known dilemma that eel eggs develop only in the wild:

Despite considerable research, no one has successfully cultivated eels from egg to maturity in captivity; hence, all American Eels that are harvested and sold, from glass eels to silver eels, are wild caught and have begun life in the Sargasso Sea (Walker, et al., 2019, p.2).

In 2010, the European Union banned the export of *Anguilla anguilla*, or "European" eels (Ebersole, 2018) setting the context for a targeting of "American" eels *Anguilla rostrata* for capture and global distribution. In terms of US policy their status remains ambiguous from a conservation perspective.

The outcome of petitions for listing the American Eel under the Endangered Species Act (ESA) were deemed not warranted by the U.S. Fish & Wildlife Service...although both assessments relied on sparse coastwide datasets. The IUCN Red List however does list the American Eel as endangered... as does the Canadian province of Ontario (Walker, et al., 2019, p. 3).

Speculative, informal discussion suggests that glass eels are potentially captured "off the record" in multiple states along the east coast of North America through the

“illegal trafficking networks” (SEG, 2018) that are said to exist. The uneven distribution of eels in diverse watersheds may contribute to the ambiguity of whether regulating parties are willing to list them as endangered, despite the clear evidence that in some areas they have been extirpated or reduced so significantly that they’re absent or undetectable. Interestingly, despite a decrease ranging in 95-100% of its most of its native range, some conservation discourse functions to advocate continued and even more aggressive ‘exploitation’ of *Anguilla rostrata* through a specific logic of place. In a policy recommendation, independent US fisheries researcher Desmond Kahn explains:

The claim that a species subject to a fishery is endangered, such as the claim made by the IUCN about American Eels (Jacoby et al. 2014), if incorrect, can have negative impacts on fisheries. Potential consumers of American Eels may avoid them, which would reduce the market for the fishery, and managers may be pressured into excessively conservative and precautionary policies, resulting in underfishing of the eel resource and reductions in income and employment opportunities for coastal communities. Responsible utilization of this resource is the best management goal for human society, as opposed to extreme conservation and underfishing (Kahn, 2019, p. 134).

Kahn’s assessment was partially based on 2015 fisheries meeting where local “watermen”/users consistently described a lot of eels falling out of their crab pots in Delaware; Kahn remarked that he gives “substantial weight to the observations of watermen who spend many days on the water and have scores to hundreds of interactions with fish and crustaceans each year” (Kahn, 2019, p. 133). His analysis is taken independently i.e., not with a federal or other regulatory agency, using reams of data based on total commercial landings of eels over a 50+ year period. There are tensions between conservation, experience on the land, and policy that Kahn brings to the fore. Despite calls for a global approach (Drouineau, 2018) it appears Kahn is suggesting a highly localized approach based on empirical observation of eels in

watersheds. The highly localized approach, for *Anguilla rostrata*, has been criticized for a “lack of insight into population dynamics” (Velez-Espino and Koops, 2009, p. 165) occurring at larger scales. It should be noted that Kahn is not alone in suggesting that the population is stable; this question of eel abundance is also connected to developing more fisheries, a hotly debated topic (Walker, et al., 2019). Some who advocate for more fisheries suggest that public consumption will create public demand, a common paradox of conservation based on capitalist logics.

The other pressures identified by Drouineau et al. (2018) and Casselman (2019) are woven throughout this section: fishing, habitat alteration, dams and hydroelectricity, and pollutants; below I have expanded a bit on each but want to mention here that “alien parasites” are also cited. In North America, there has been a running practice of trafficking *Anguillids* into different global environments. It has been common to introduce new species into new places, a practice not without risk. One of the biggest concerns related to *Anguilla rostrata* in recent decades was the introduction of parasites that occurred from bringing *Anguilla japonica* into North America.

Intercontinental trade of living *Anguillids* caused the introduction and irreversible establishment of pathogens...the most dramatic invasion was from *A. crassus*, a nematode parasite originally recorded only in the swim bladder of the Japanese eel *Anguilla japonica*... introduced into Europe and North America by the transport of living fish (Marohn, Prigge, and Hanel, 2015, p. 1745).

The parasite feeds on the swim bladder, breaking down the eel’s swimming capacity and causing chronic infection, deeply affecting both “*A. rostrata* and *A. Anguilla*.... assumed to be among the factors that initiated the decline of both species” (ibid). Next, I will continue with descriptions of other anthropogenic pressures and cursory details from the literature.

Fishing

Scientists and scholars have suggested that migrating eels face multiple, interlocking barriers to migration:

Migrating eels face a gauntlet of threats. The primary triad...is damming of rivers, overfishing, and pollution...however, there are now a host of threats beyond the three...long been considered primary (Limburg & Waldman, 2009, p. 960).

I discuss dams and pollution through later segments in this chapter. As for fishing, *Anguillid* eels have been referred to as the world's "most trafficked animal" and the global eel trade constitutes the "largest wildlife crime on Earth" (SEG, 2018) according to the Sustainable Eel Group of Severn, UK. Advocates suggest they should be 'red-listed' on an endangered species list or according to some, "maybe" they should not be, so they can be sold in areas where they still appear to be abundant and common in waters. I have sought to balance both my own knowledge of absence and decline of eels in my immediate surroundings while also realizing that different regions will be influenced by different levels of decline and population, with some eels virtually disappearing in many places while populations are perceived as overflowing in others, observations supported by my fieldwork interviews.

"Ghost." This word was the response to a question posed during one of my in-person interviews near Sodus Bay, New York, on the shore of Lake Ontario. Sitting in a coffee shop, I asked a fisheries scientist what she thought about the status of eel populations in the lake today. Her experience on Lake Ontario spanned four decades of study, considerable time spent on the lake's open waters. She spoke about the impact of dams, pollution, fishing, and general environmental degradation, human disinterest

and lack of knowledge which contributes disconnection and alienation from settling populations and their natural surroundings and resources.

She mentioned seeing glass eels in Lake Ontario at one time, earlier in her career, which was an unusual finding because most of the eels in Lake Ontario are thought to be at a later life stage, but she also talked about how she has not seen any eels, at all, sometimes for months over recent years. She recalled the easy ability of local people to fish for eels in the 1970s and 1980s on a recreational scale, and the longstanding impact of the nearby fisheries on the Saint Lawrence River which have been historically very significant to a range of cultures stretching back into the days long before European settlers arrived. Until recently, the Saint Lawrence River eel fisheries were some of the largest eel fisheries in the world (Recht, 1999; Doyon, 2005; Busch and Braun, 2014).

Currently, there are 9 glass elver fishing licenses in Atlantic Canada, and fisheries in Maine and South Carolina in the US (Jessop, 2021). There are countless other poaching operations and trafficking networks that capture glass eels (Walker, et al., 2019; SEG 2018) which affects development and outmigration. An important contour to this point is also the eel's actual life cycle: if an eel is taken from the watershed when it is in the glass stage, s/he does not develop in the estuary or freshwater system; they develop in a farmed setting. Thus, they are not able to return to the ocean to spawn, which can reduce population, a point frequently raised by critics of glass eel fishing.

Eels need to develop in water, and they breed and spawn in the open ocean. Capturing them as juveniles and growing them in farmed settings denies them that

process. The fishing element is said to be one aspect of decline; other aspects are commonly identified as habitat alterations.¹⁶

Habitat alteration focus: Salt marshes

Habitat alterations take many forms. Infrastructure—highways— buildings— dams—many of these are long-running implements, built through processes that affect migratory fish, birds, other species. Habitat alteration is a complex subject worthy of intricate study. The generic concept of habitat alteration and related phrases, such as environmental degradation, etc. are often cited as being related migratory barriers encountered by eels. I mean to say that I cannot completely do the concept of habitat alteration justice here, rather, I want to focus on a specific narrative and a possible intervention related to how we might understand locating specific, place-based examples of ‘habitat alteration.’ Wysote and Morton traced the alteration of salt marshes in Atlantic Canada, in the 1700s, a process of land alteration connected to what they call ‘pioneer lies’:

Settlers completely reconfigured the coastal salt marshlands into an intricate dyking system...dykelands...allowed for the use of mineral rich Earth for agricultural purposes through the accumulation of fertile soil next to tidal marshes (Wysote and Morton, 2019, p. 487).¹⁷

¹⁶ I often wonder, when people say that a primary contributor to the decline of eels is fishing, might they be referring to what the SEG in the UK calls “trafficking” (SEG, 2018)? Recreational fishing in the US and Canada doesn't seem to reflect *Anguilla rostrata* as a “target species” (Reid, et al., 2019). They are a favorite food item for very few people in Canada and the US (Schweid, 2002); although they are considered a delicacy and medicinal food by many Indigenous Elders (Van Der Zweek, et al., 2016). Impact of the global trade and “glass eel poaching” (Walker et al., 2019) is the subject of many sensational headlines in the United States as it appears to be a large, internationally coordinated crime network that has gained the attention of media and popular culture, which I mentioned in my Introduction. Often, in scientific literature, language such as “exploitation at all life stages” (Casselmann, 2019) is used, indicating that it is not only glass eels who are vulnerable, but all stages. This has not been clear and so I acknowledge that there is some amount of uncertainty about the role of “fishing” which informs the debate around whether commercial and large-scale fisheries are appropriate.

¹⁷ I quote use of the term “settler” here as used by Wysote and Morton. They suggest that the “white Canadian settler state has extended notions of Pax Britannica in its building of ‘peaceful progress,’ ‘law and order,’ and ‘good government’ in the conquest of Indigenous peoples and lands, beginning with the British North America Act of 1867” (480).

The alteration of salt marshes constitutes, in their framing, a narrative based on changes in topography that constitute “the way things have always been” when present-day settler communities present or speak generally about their land occupation practices. The authors critique the practice of settlers in this territory who create memorialization events to celebrate themselves as “naturalized” to Mi’kma’ki (the territory of the Indigenous Mi’kmaq). The settler narrative suggests that the land was “always irrigated, and available for European settler use and propertied ownership and control” (ibid., 488) which the authors claim is really a foundation for the logics of private property and the dispossession of Mi’kmaq communities. These are characteristic aspects of settler colonialism which begins with land appropriation and has effects beyond human social relationships.

Salt marshes are ecologically sensitive zones which have been culturally and ecologically significant sites for Indigenous peoples (Wysote, 2019) and the relationship between eels and salt marshes is understudied. Eberhardt contributed to this gap significantly, writing that “despite the abundance of eels in salt marshes, little is known about *Anguillid* use of these habitats” (2019, p. 3). She also suggests that migrating eels initiate “a large-scale movement of nutrients and energy from the highly productive salt marshes of New England to distant open ocean” (Eberhardt, 2015, p.1259). Eberhardt made the connection between eel migration and the quality of the water they migrate to. Water quality is improved and enriched by the material in the eel’s gut which disperses into streams and estuaries.

Her research documents that there is “lack of knowledge on eel ecology in estuaries and potential severity of habitat loss impacts” (2015, p. 1251) in many state

management regimes. Eberhardt has documented the shrinking of salt marshes as a contributor to the decline of eels: “37% of New England salt marshes have been lost over the last 200 years; cumulative impact of marsh loss is likely a contributing factor in the decline of *Anguilla rostrata* populations” (ibid). Over centuries, countless salt marshes and other critical habitat, such as wetlands, were altered to make way for infrastructure like paved roads, highways, and so on which directly impacts eel life cycles. Habitat alteration is procedural and affiliated with the building of infrastructures which impact “the ongoing survival of the genus *Anguilla*, which is currently being driven towards extinction” (Jellyman, 2021, p. 13). Tlingit anthropologist Anne Spice is worth quoting at length here to demonstrate the ongoing iterations of infrastructure and how it replicates into small and large-scale projects, such as pipelines, which are touted through narratives of national progress using the overreach of the state:

The government mobilizes the language of ‘critical infrastructure’ to transform oil and gas infrastructures from industry projects into crucial matters of national interest. That authority is buoyed further by the genealogy of the concept of infrastructure itself...the genealogical descendant of Enlightenment ideas about modernity and progress (Spice, 2019, p. 42).

The idea that social progress must come at the expense of environmental wellness is steeped, as Spice suggests, in outdated ideas from European thought. This is a discussion worthy of much more expansion, but for the sake of brevity I mentioned the example of saltmarshes because the connection between eel migration and physical processes, water quality, and human infrastructure are such clear demonstrations of the subtle “slow violence” (Nixon, 2011) that is initiated by “pioneer lies” and “settler tautology” (Wysote and Morton, 2019) that is embedded into environments where eels migrate.

Dams and hydroelectricity

There is a good deal of evidence to demonstrate the negative impact of hydroelectric dams to *Anguillids*: “put simply, dams kill eels” (Schweid, 2002). But the problem is not only restricted to eels; dams constitute “the most profound affront to the ecological health of a river” (Waldman, 2013, p. 127). In this way, zeroing in on the lives of eels enables a wholistic view of hydro’s devastation on total watershed health, including all residents of watersheds and especially rivers. The installation of dams has been an aggressive practice in the United States for decades; since 1936, “a true number is open to debate...estimates suggest that between 75,000 and 100,000 dams have been erected in the United States alone” (Kornfeld, 2020, p. 6). Similar patterns occurred in areas throughout Canada and elsewhere, disproportionately affecting Indigenous communities and territories.

Willow asserts that “hydroelectric projects are, first and foremost, claims of control... water becomes money” (2019, p. 64). Electricity harnessed from water is stored in reservoirs, enables the development of other infrastructures and technologies, often at the expense of marginalized groups who are forced to relocate and are subject to “environmental human rights abuses” (ibid.) along with disruption to the nonhuman life and ecosystems altered in these constructions. Willow draws on the graphic below, from the Tennessee Valley Authority, to demonstrate how hydropower extracts energy from water, noting that “hydroelectric power generation does not create new energy. Instead, it converts the kinetic energy of water in motion into electricity” (ibid.).

Clearly, in the figure, the turbine’s proximity to the free-flowing water in the river, represented by the blue on the right, creates a node in the “gauntlet” of threats that Waldman and Limburg (2009) describe. Turbines use large, sharp blades to draw water.

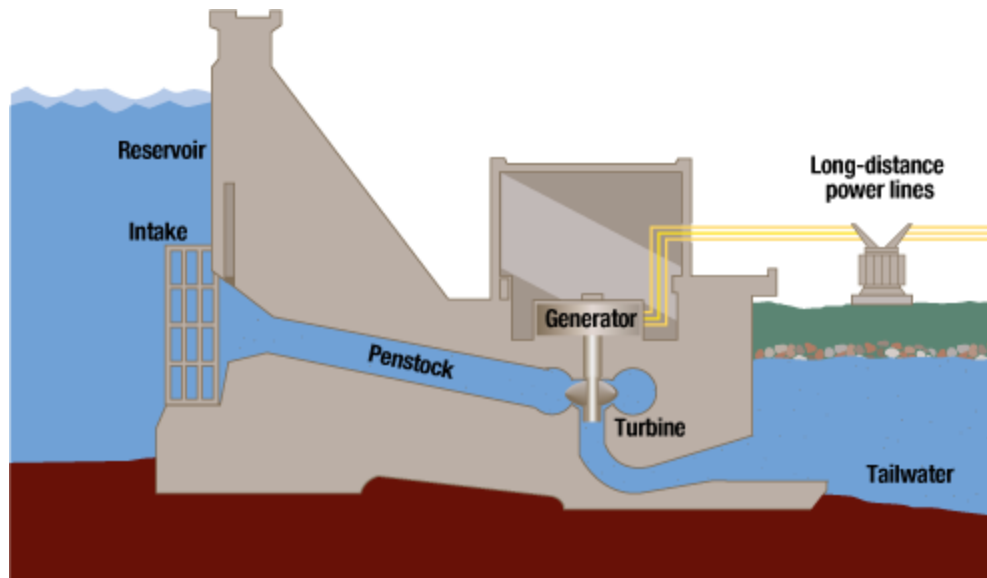


Figure 1. How hydroelectricity works. “A conventional dam holds water in a man-made lake, or reservoir, behind it. When water is released through the dam, it spins a turbine connected to a generator that produces electricity. The water returns to the river on the downstream side of the dam” (TVA, nd).

Dams have been advocated by private and government interests and their stories told as related to narratives of progress and taming land: “dams were indispensable to America’s view of itself as a strong and vital democracy: they symbolized power and the nation’s ‘can do’ spirit” (Kornfeld, 2020, p.6). Kornfeld refers to a “dam-building binge” in the United States that began in the late 1930s and slowed down in in the 1980s, spurred by dubious science pushed by developers that lacked transparency: the philosophy was “just trust us” (Waldman, 2013, p. 205) as dams were installed across the rivers of the continent. Waldman infers that the evidence used to establish the necessity of hydroelectric dams was often shaky with dam builders pressing for rapid change and with no time for public questions or opposition.

Many of these processes are affiliated with the development of the American west (Worster, 1992) in large projects like the Hoover Dam and others, but the practice of installing dams everywhere is woven throughout the Northeast as well. By the time the “binge” was winding down, a narrative around dams as progress had been firmly

entrenched and land management regimes were publicly perceived to be the domain of federal, state, and other officials who make decisions about environmental and other configurations.

Waldman (2013) calls into question the logic behind hydroelectricity and its many hidden costs, suggesting that “hydropower dams hum quietly in the surroundings, little noticed, but wreaking unseen biological havoc on an ongoing basis” (p. 126). The criticism that he brings is well founded and there is a great deal of evidence to suggest the major damage done to all life when rivers are modified with dams, the “slow violence” (Nixon, 2011) that lacks spectacle, but causes long-term harm.

Industrial and other dams harm rivers by restricting water flow, sucking water into a reservoir as depicted in figure 1. This leads to disruptions in river sediment, altering the course of natural cycles of cleansing and seasonal change. Spinning turbines also disrupt migration of fishes and birds and disturb plant life. There is a clear tie to the dispossession of Indigenous societies who depend on rivers in countless examples; Gomez-Barris (2017) clarifies that dams “silence rivers’...an important way to perceive modernization’s separation from the agency and life forms of the natural world” (p. 92). There are other costs in terms of human rights, displacement, and colonialism which lead to suffering in human and nonhuman populations.

For eels, dams are a “double threat...blocking upstream passage and causing mortality during downstream migration” (Busch and Braun, 2014, p. 299). Mensinger et al. (2021) documented, over a four-year study, that “sublethal consequences, those that ultimately result in migratory failure” (Mensing, et al., 2021, p. 1190) are another way that hydroelectric turbines slice, shred, and injure migrating eels, contributing to their

injury and eventual death. Eel ladders are implements which help eels to get up and over barriers; although eels can climb waterfalls (Schmidt, et al., 2009, p. 715) some barriers are too great; thus, ladders can be installed near or around dams that are particularly large or challenging for them to navigate. “Eel ladders” are commonly used to assist eels in overcoming the mortality of getting caught in or blocked by dams:

Migrating eels seeking a way above the dam can climb a short ramp lined with old netting and kept wet by hoses from above. These eels – most often about 3 to 6 inches in length and in the ‘elver’ stage of development – enter a bucket of circulating water that is checked twice weekly by volunteers. Sizes are recorded, and the eels are released above the dam to continue their life’s journey (Hayes, 2017, np).

Eel ladders were not proposed or available when many of today’s aging dams were installed and are not used everywhere that eels migrate. They are often critiqued as a band-aid solution. Today, especially in the northeast, many outdated and abandoned dams are sitting in rivers, non-functional, not operating, and not cleaned up. Functioning dams and turbines are specifically problematic for eels because eels are moved by currents and motions in the water. In response to survey question #12 (see appendix 1) respondent #11 wrote about eels and their attraction to moving water:

Eels are attracted by the velocity of the current to locate into the river... (so) we can imagine the impact of dams. Juveniles have to climb on the wall and jump into the river when they feel the velocity of the current upriver of a dam... when there is a fish pass, (ladder) they have to climb out of the river... studies show that climbing is a specific cognitive task and that eels learn from each other by reproducing what a leader do but some have less abilities for jumping or climbing.

Podgorniak et al. (2016) documented the interaction of interdependent eels ascending barriers:

Migration waves of glass eels through an impounded axis could be shaped by the arrival of the fish willing to explore fish passes without any

social cues and possibility of risk-assessment of such behaviour (2016, p. 9).

This information about the leadership of individual eels suggests that there are specific intelligence mechanisms which support the idea that eels have and exert self-determination on their migratory path and are intimately, consciously intertwined in communication with each other. Dams and other obstructions get in their way, but they adapt and move through barriers. Another respondent (#14) talked about balancing the need for change with small- and large-scale possibilities.

I wish the dams had never been built. Unfortunately, many of them went up before their effects were known. Today they would face much greater resistance because public opinion has shifted on dams. Since the dams are here to stay, I think we need to figure out the most efficient ways to mitigate their impacts. Removal is the best option but also the most expensive, I've seen estimates at \$250,000 or more. Not an easy thing to do when there are 3800 dams in the Chesapeake Bay watershed alone and over 80,000 nationwide. In some cases, an eelway could be added for 1/10th of that.

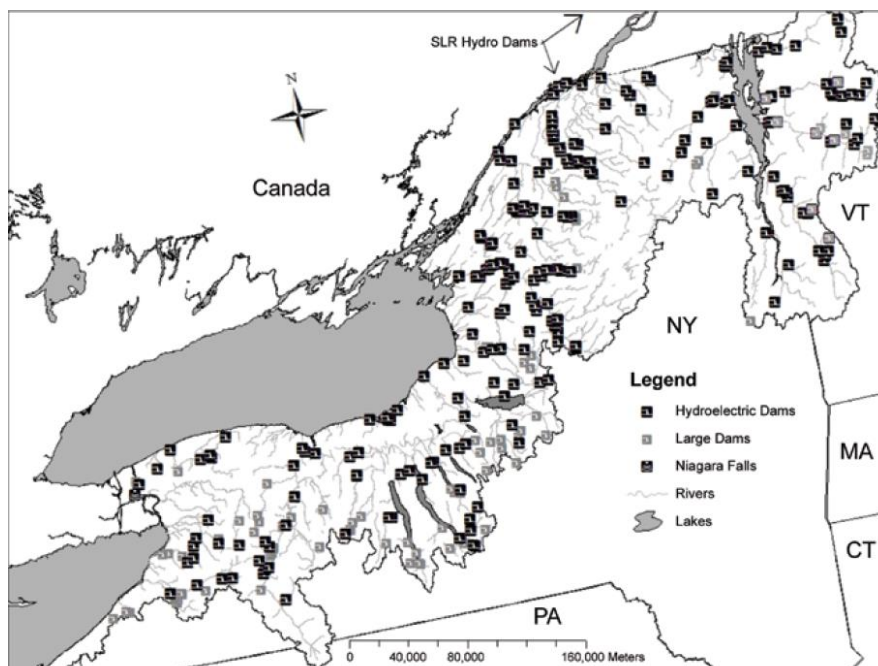


Figure 1. Hydroelectric power and other large (>15 m) dams on the U.S. tributaries of Lakes Ontario and Champlain. Map provided by D. Dittman and M. Chalupnicki, United States Geological Survey.

Figure 2. Map of hydropower sites, NY (Busch and Braun, 2014)

Figure 2, above, comes from former fisheries director Wolf Dieter Busch and independent consulting scientist David Braun, who analyzed opportunities to reestablish the presence of eels in lakes Ontario and Champlain. The map shows the many hydropower dams throughout New York State and Vermont which are tributaries of Lakes Ontario and Champlain. It is a large number. They estimated that eels once “historically comprised nearly 25% of fish biomass in Atlantic coastal streams” (Busch and Braun, 2014, p. 298). The authors trace the complex barriers to eel survival including fishing, dams and habitat loss, noting that recovery “requires a high level of coordinated jurisdictional protection throughout its range that currently does not exist” (ibid., 303). Jurisdictional collaboration is an ongoing barrier affecting local, municipal, regional, federal, and tribal/Indigenous governments. There is not one widespread solution although certain local mechanisms are implemented across some watersheds, such as eel ladders.

Eel ladders are criticized for being ultimately ineffective overall (Waldman, 2013; Busch and Braun, 2014) because they only benefit some of the fish migrating and only under certain conditions. “Nightly turbine shutdowns” are also posed as a potential solution, whereby the whirring blades of spinning turbines in dams and hydroelectric extraction devices are turned off or slowed down so that eels, who are active at night, are less likely to encounter them (Mensing, et.al, 2021, p. 1190). This does not completely decrease the risk of harming eels because their behaviour is unpredictable, and so this requires a close analysis of the movements of water, the relationship to eels and water flow, levels, and other factors.

Eels offer diagnostic evidence of negative impacts stemming from settler colonialism, extractivism, and what James C. Scott calls “authoritarian high modernism” (Scott, J., 1998, p. 87) all of which demonstrate unsustainable land use planning and practices. Scott traces the rise of “authoritarian high modernism” through the development of technocratically numbing and artificially engineered society. He documents changes in land use to align with “legibility” which benefits the apparatus of state control regimes, affiliated with a modern progressive nation state model. He suggests that the period of authoritarian high modernism (AHM) began around 1830 and went until World War 1. AHM was characterized by arrogance.

[Authoritarian high modernism includes] ... “supreme self-confidence about continued linear progress, the development of scientific and technical knowledge, the expansion of production, the rational design of social order, the growing satisfaction of human needs...and an increasing control over nature” (Scott, J., 1998, p. 89).

This time period is another node in the centuries-long effort to modify and control landscapes and specifically waterways for a foundation of settler colonialism, extractivist capitalism, and dispossession of Indigenous lifeways. The questions, again, are related to ‘power’ in social, material, and physical dimensions. The ‘dam building binge’ is one arm extending from the body of authoritarian high modernism, which may be seen as a bygone era, but new ways to extract energy and power from land remain an ongoing, central project in some forms of inquiry.

For example, a more recent study in marine ecology examined the relationship between fish species and tidal power development. Areas off coastal Maine were sites of experiment to assess the feasibility and environmental impact of harvesting energy from ocean waves as a form of alternative power generation: “areas of extreme tidal

currents are...targeted by humans for energy extraction. Harvesting tidal energy involves large, instream hydrokinetic turbines” (Viehman, et al., 2015, p. 215).

Fish that use tides and currents to move through the water “gain access to valuable intertidal foraging habitat” (ibid.) including eels, cod, salmon, sea trout, mackerel, herring, and others. The study used hydroacoustic technology to detect the presence of fishes, including their density throughout the water column, all the way down to the sea floor in the presence of a large extractive device that pulls energy from the water. The study sought to analyse the effects of the turbine itself, proposing that it could harm the fishes who depend on the tidal columns, and that its presence could also modify the behaviour of fishes who pass by the device. These technologies also pose risk to eels who sense their way through water in interdependence with the energy of water distributed in tidal columns. The study reflects that there is possibly a growing awareness in environmental assessment procedures; a small glint of change from the “authoritarian high modernism” (Scott, 1998) of the past. States continue to harvest power and energy from the landscape in ways that support their domination of land and space that form their institutions and narratives.

Swedish scholar Martin Hultman refers to dam installation as a form of what he calls “industrial masculinities” which historically are distinct, and perhaps, complementary to Scott’s concepts. Below is a description of how Hultman defines industrial masculinities:

...from engineering and neo-classical economics, favouring large-scale and centralised energy technologies and the practice of patriarchy. Examples can be drawn from large-scale hydropower, nuclear power plants and fossil fuel technologies... primarily distinguished by a separation of humans from nature (Hultman, 2017, p. 91).

This sweeping influx of dam installation is part of longer and broader processes; authoritarian high modernism, (Scott, 1998), settler colonialism, and so on. Hultman's connection to patriarchy and domination is an important link to the specificities of a masculinist governance regime over water, which Luby (2020) described in the Winnipeg River watershed as well (see chapter 2). Responding to question 5 of my digital survey (see appendix I) respondent #2 shared some of the reasons for the overabundance of dams around the Hudson Valley:

The northeast in general has gone through several waves of dam building, with the smaller mill dams built in the 18th and 19th centuries followed by more dams for aesthetics, flood control, reservoir construction, and small-scale hydropower.

Large-scale hydropower has elsewhere been critiqued as a way to further marginalize and imprint colonial identities through the subjugation of land, according to Shah and colleagues:

...dams were part of the process of nation-building and their construction processes mark the alliance between regional, national and international political, private and financial powers...dams form part of the expansionist and extractive development processes that aim to gain economic, political and cultural-discursive control over territory and resources. From the point of impact and consequences, the dams largely affected the already marginal communities and this way they mark internal colonization (Shah, et al., 2021, p. 1025).

There is mounting evidence that suggests the immense social, environmental, and other forms of harm that dams have caused (Waldman, 2009; Waldman and Limburg, 2013; Kornfeld, 2020; Gomez-Barris, 2017; Fox, Reo, Fessell, and Dituri; Magilligan, et al., 2016; Curry, et al., 2020; Quinn, et al., 2017). Dam removal has shown benefit for eels (Turner and Bednarski, 2018; Hitt. Et al., 2012) and there is a growing movement to address this history and improve watershed health, which I discuss in my Conclusion. Dam removal offers a potential way forward but is met with

social and political boundary that needs addressing. Dams are tied to colonialist practices which deny and subsume the perception that water has life, has agency, and is fulfilling a specific role by flowing in a free, self-determined, and unrestricted manner. Ameliorating their impact is essential for supporting eel life cycles and for forming governance strategies that would reflect *minobimaadiziwin*.

Pollutants

Through modern plumbing an infrastructure, freshwater sources receive wastewater from human sewage systems. Endocrine-disrupting chemicals which originate in human food chains from pesticides and other foodstuffs can cause mortality and limit or disrupt sexual development of young eels. One study (Gay, et al., 2015) revealed that cocaine and other major drugs of abuse “enter the sewage network contaminating the receiving surface waters” (p. 295). Cocaine exposure affects eel skin and intestines and can increase stress hormones. The authors concluded that, for eels exposed to cocaine through waterways, “the changes observed could threaten the ability of the eel to successfully migrate and reproduce” (ibid., 305). Eels are biologically sensitive and have large fat stores, where they also bioaccumulate toxic chemicals from contaminated water which then affects their reproductive capacity: “endocrine disrupting compounds, including estrogen and its metabolites... can impact the reproductive health and sustainability of several indigenous fish populations” (Park, et al., 2019, p. 2).

Although they are known for their survival and adaptability, particularly to toxic chemicals, Pujolar, et al. document how eels “often inhabit unproductive waters and polluted habitats...they are prone to bioaccumulation of lipophilic contaminants due to their particular ecology (benthic feeding) and physiology (high fat content)” (Pujolar, et

al., 2012). Benthic feeding refers to the consuming of random materials in the lower layers of water, making eels 'bottom feeders' at some stages of their lives. These findings suggest important links between eels' biological sensitivity; their biological need to develop in water is established. When that water is contaminated with hormones and other chemicals, and also through the intake of foodstuffs that contain such chemicals, the life cycle can be disrupted and their life span reduced.

Tsukamoto/Miller have tried to simulate marine conditions in lab settings to support aquaculture and lab growth. In one experiment they tested the response of baby eels to certain foods, an effort to simulate food available in the benthic environment where some eels migrate. They found that some eels in the glass stage feed on "marine snow" (Tsukamoto, 2021) the organic material that falls into the deep ocean from upper strata or layers, such as waste or particles of sharks. Marine snow is an essential food source for developing leptocephali—in other words, baby eels in the glass stage require the ocean environment and its foodstuffs to develop, while later stage eels will eat a wider range of things.

Tsukamoto and Miller, in their 2020 paper, are also noting that certain leptocephali will feed on other materials in a laboratory setting, or otherwise die.

Larvae will learn to eat to stay alive as an alternative to starvation. They appear to be attracted to the paste because of chemical compounds related to the egg yolk of sharks or chickens (Tsukamoto, 2021, p. 25).

The effort to get eels to feed in laboratory settings, remark the authors, is not simple:

Extensive feeding trials in aquaculture laboratories have shown that they will not ingest most things, and that a quite specific food source is required for them to grow and reach metamorphosis (ibid., 23).

New data about threats to the life cycle of eels emerge from these nuanced studies. Laboratory settings alone cannot sufficiently sustain eels, who require the open ocean environment where they originate to complete their feeding and growth cycles. These recent developments concerning larvae and glass eels are important indicators of connection between baby eels and the oceanic environment where they originate.

In conclusion, this brief survey of major anthropogenic effects: fishing, habitat alteration, dams, and pollutants, is a sample of numerous pressures that influence the development, growth, and longevity of *Anguilla rostrata* populations throughout North America. Next I move toward a more targeted read of literature where eels have been studied in specific ways as part of wider-ranging scientific discourse that focuses on their migratory behaviours, sexual development, and global origin as well as implications about their desirability.

4.2 Things written: Eels in the world

Migratory context and maps

For illustrative purposes, I begin with two maps here. The first map below (COSEWIC, ND) shows the migratory path of eels. I include the map here only for demonstrative purposes, for a visual assessment and orientation to the discussion I will bring through this section. The next map, by French anarchist geographer Elisee Reclus (1873) shows a view of the Sargasso Sea, site where eels are birthed, and where they are speculated to spawn and die, completing their life cycle.

It is critical to note that exact location of the spawning area is a matter of debate (Beguer-Pon, et al., 2015; Tesch; 1977; Prosek, 2010). This map centers the ocean; green dots represent ships lost at sea. The Sargasso Sea is known for its treacherous conditions and, notably—the so-called Bermuda triangle. Again, two of the nineteen

globally distributed species of *Anguillid* eels originate here, *Anguilla rostrata* and *Anguilla anguilla*.

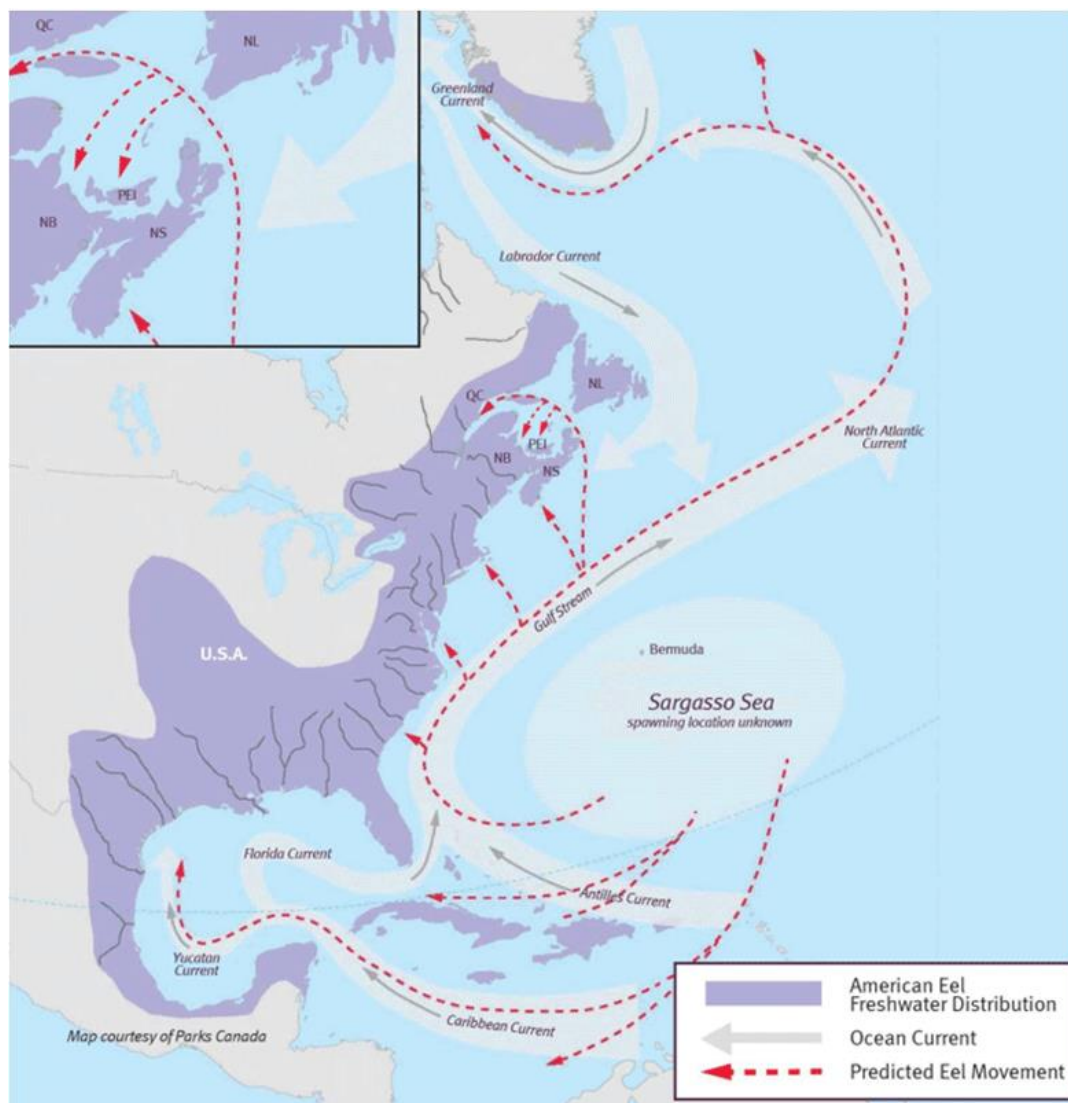


Figure 3. American eel distribution (COSEWIC)

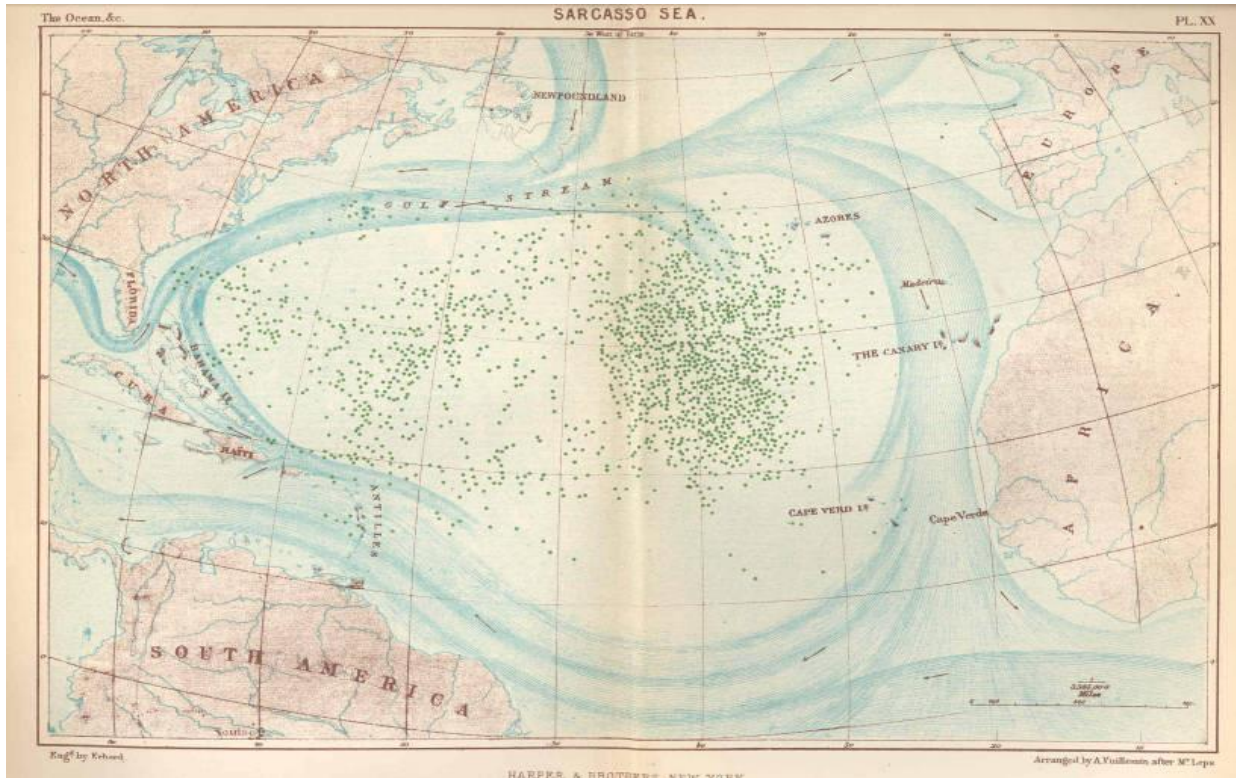


Figure 4. The Sargasso Sea, (Reclus, 1873).

Anguilla rostrata is not a pacific lamprey. It is important to state this straightaway, particularly since I've shown a map which includes the Great Lakes region where pacific lampreys have been so problematic and a vexing issue that have, by many accounts, decimated water quality and the health of other species. Summarized by the Columbia River Intertribal Fish Commission, the common mix-up stems from the fact that the two species look similar but were confused by early settlers.

When European settlers first saw the Pacific lamprey, they called them 'eels' thinking they were the same food fish found throughout the eastern United States and Europe. Despite their similar body shape, the lamprey and eel are not even closely related--lamprey are actually more closely related to hagfish and sharks. The name stuck, however, and it is common to still hear people call lamprey 'eels' (Columbia River Intertribal Fish Commission, nd).

Both migratory fish are stigmatized and seen as pests, for different reasons. One possible explanation for the influx of pacific lampreys into Lakes where they did not previously have range (such as Erie) is offered by the Welland Canal, which also made a way for Eels to swim into Lake Erie, where it was previously quite rare.

Lake Ontario was formerly isolated from the upper Great Lakes and Lake Erie by Niagara Falls but this barrier was breached by the Welland Canal in 1833. Thus, the construction of the Erie Canal may have enabled the Sea Lamprey, which was native to the Hudson River above Albany to colonize Lake Ontario and thence the other Great Lakes (Eshenroder, 2014)

Regardless, eels and lampreys differ significantly. While the lamprey is parasitic and causes injury to other fish, and has a rounded mouth with sharp teeth, eels are relatively benign and function differently throughout their migratory range as prey and predator, but with other roles as well.

For example, Galbraith et al. (2018) document the importance of “reestablishing a host-affiliate relationship” between *Anguilla rostrata* and freshwater mussels, who attach to eels and bring filtration to freshwater environments. In areas where eels and mussels re-establish their relationships, water quality improves noticeably; it is a symbiotic relationship of co-migration which reflects the interconnected, interdependent nature of biodiversity. The relationship is profound; according to the US Fish and Wildlife service, a “single mussel can filter 10-15 gallons of water every day” (McCormick, 2020) which alone is a consideration for examining the conditions where this relationship can be improved. Improving water quality is of interest and benefit to all who depend on water to survive and as a home environment.

Eel migration geography is enormous, and populations vary in different biomes due to complex factors; “not all pressures affect all habitats and individuals evenly”

(Drouineau, et al., 2018, p. 916). This is one of the complexities in managing policies and conceptions of how well eels are doing, population wise. Biologist Brian M. Jessop documents other considerations including wind, and migratory cues in ocean water, which may affect eel migration:

A long larval period may make them vulnerable to oceanic environmental effects...reduction in the speed of the Gulf Stream...wind speed and direction over the Sargasso...food availability in the Sargasso Sea...changes in the strength and location of temperature fronts in the spawning area that separate the northern Sargasso Sea from the southern Sargasso Sea...that serve as cues for adults to stop migrating and start spawning (Jessop, 2020. p. 224).

Oceanic conditions are beyond the scope of this study, yet knowledge about oceanic behaviours and conditions is still an important and developing body of information. In a context more local to me, it has been established that more than half of the biomass of Lake Ontario was once composed of eels (Busch and Braun, 2014) and yet now, eels are thought to be rare and uncommon to encounter throughout the watershed. Similarly, “the eels of the St. Lawrence River swim in the shadows of our historical consciousness” (Mongeau, 2017, p. 3) which I attempt to highlight through a multifaceted approach in this chapter.

John Casselman is a scientist who has been documenting the decline in that region—around Lake Ontario, the St. Lawrence, and surrounding areas—since the 1980s. Interestingly, in one of the presentation timelines he offers, his date range analysing eel populations starts at 1600 with moderate speculation about ‘Aboriginal’ history and quickly jumps to scientific studies in 1964 (Casselman, 2013, p. 38).

This is not a criticism at all; rather: Casselman’s work has offered comprehensive details about the relationships between eels and Indigenous peoples where available (MacGregor, et al., 2015) so my comments stem from the fact that there is limited

scholarship and directed attention given to this period overall. Casselman primarily conducts research around the Ottawa area and around the Saint Lawrence River. He contributes greatly to addressing the gaps surrounding a unified story about the influence and decline of *Anguilla rostrata*. My suggestion is that the gap in his timeline is a direct result of epistemicide and relentless colonialism, a claim broadly supported by recent scholarship connecting globally induced ecosystem collapses (Beazley and Olive, 2021; Marshall et al., 2021) to the genesis, maintenance, and reproduction of settler colonialism (Wolfe, 2006; Veracini, 2014; Wysote and Moron, 2019).

A clear theme emerges in discussing settler land relations: ignorance and indifference. The seizure and control of territory is not necessarily complemented with intimate knowledge of historical processes, or ecological knowledge supporting how to sustain life in those lands that are claimed and controlled. The land-based governance orders of Indigenous societies in many cases had to go ‘underground’ as Indigenous populations and their land bases were shrunken, or they were relocated, suppressed from travel, and threatened with punishment and criminalization for enacting their ways of life. It is no accident there is such a large gap in knowledge; in particular, study of eels requires time and dedication to place-based analysis which respects that eels are connected to multiple layers of planetary orientation and direction. They move through a ‘fixedness’ that reflects larger processes as they travel across watersheds.

Eels and the moon

Some data suggest that eels follow “celestial cues” (Cresci, et al. 2019) from the skies as they migrate. Eel migrations traverse the deep churning of fresh and salt water under guidance from and connection to the moon. They “swim deeper during the full

moon” (Cresci, et al., 2019, p. 2) and “could use electric fields present in the ocean for orientation” (ibid) which is considered remarkable given their small size and the vastness of aquatic space they travel in. In the words of Casselman, “anyone who has ever visited an eel weir on a river or stream... after a rainy night will carry away a feeling of the wonder of migrating eels for the rest of their lives” (Casselman and Miller, 2014, p.162). Eels are adaptable but they do depend on certain conditions.

Anguilla rostrata have remarkable olfactory senses and seem to carry a genetic memory, or internal mapping system that directs their migration, according to recent studies (Naisbet-Jones, et al., 2017; Cresci, et al., 2019). In one study, conducted in New Jersey, numbers of migrating glass eels were low “following the new and full moons, with higher catches dispersed over the periods from the first quarter moon to the full moon and from the third quarter moon to the new moon” (Sullivan, et al., 2009, p. 1957). There may be detectable patterns in the migration that enables speculation, but no certainty about the mechanisms of an eel’s internal cues and cognition.

However, eel behaviour is clearly influenced by the moon. Depending on their life stage, and choice of salinity zone, eels might be in the ocean or in freshwater, both of which are influenced differently by the lunar cycle. One study (Cresci, et al., 2019) suggested that eels are guided by the moon when they are in the glass stage, and at sea—the disturbances of electrical fields can influence eels to move into estuaries from the open ocean. The authors also suggest that “orientation at sea could be based on magnetic cues alone” (p. 2). Mature eel bodies contain receptors that enable them to detect and connect with magnetic fields in the Earth and the hypothesis of moon cycles affecting glass eels requires refinement and further study.

The presence of eels in rivers during new moons for eels in the yellow stage is also well-established: “high river discharge and dark periods around the new moon were favourable for upstream migration” (Castonguay and Durif, 2016, p.2). As the life cycle changes, and the body morphs, the celestial and aquatic cues direct individual and groups of eels to move at different times. Hain (1975) ran experiments to learn about silver eel migration and lunar cycles several decades ago. In the silver stage, eels move at night in total darkness during specific moon cycles.

[There were] ... “increased eel catches for *A. rostrata* beginning with the waning third quarter moon, when the moon rises later each night, providing longer periods of complete darkness, under whose cover the eels complete much, if not all, of their daily migration. Evenings are sufficiently dark until several days after the new moon (at which time the moon rises and sets with the sun). After the new moon, however, the moon sets later into the evening, providing illumination during the critical early evening hours and subsequently retarding the migration” (1975, p. 231).

As eels seem to require darkness, there is also the consideration of light pollution and constant exposure to light in and around rivers and freshwater environments from cities, streetlights, etc. This was on the radar of several of my participants; survey respondent #6 wrote about silver eels in response to question #5 (see appendix I):

Out-migration of silver eels is highly dependent on various environmental factors such water temperature, flow, and moon luminosity. When these factors are altered, they certainly will have... impact on migration.

Each stage of development reflects different conditions and zones, i.e., salinity, light exposure, and other factors. Overall, it could be said from these data that eels favor dark conditions when they are active at night, with less light exposure but as always it is difficult to generalize from the data; individual eels may prove exceptional.

Where do eels spawn?

Migrating eels have a transformative life cycle and journey, changing shape and size over time. Their biology and ecosystem relations change as well, creating unique biological, ecological, and interspecies relationships and connections in the areas where they live and migrate. *Anguilla rostrata* are found all over North America, sometimes as far from the Sargasso as Texas, Colorado, and Minnesota. They adapt to the fluctuations of land/water/stone/sea that they encounter.

They can live up to 48 hours out of the water...land is no barrier, willingness to cross land means that it is sometimes found in lakes and ponds that have no communication with other rivers or streams, causing many to believe that the eels must have been born in that same place (Schweid, 2002, p.44).

Some individuals who have contributed to the current scientific understanding of *Anguilla rostrata* have acted on great passion and personal investment, as is the case of Johannes Schmidt, a Danish biologist and researcher who ventured to the Sargasso on multiple seafaring expeditions in the 1920s. Much has been written about Schmidt who was decorated with a Darwin medal in 1930 (Chang, et al., 2020, p. 1) which some people questioned. Schmidt intensively studied eels and set out to trace the migration and emergence of larva or adults, in either the birthing or silver stage, respectively. He made numerous contributions to the discourse in terms of biological understanding.

Some have criticized the way Schmidt applied his own logic to the spawning and migration of *Anguillid* eels without ever proving the spawning location definitively. His beliefs suggested that eels most likely return to the place of their birth, and Schmidt, along with many others, based most research on that idea. Increasingly, some researchers aggressively challenge or at least question the Schmidt hypotheses.

Recent scientific efforts have emerged that contest or challenge his legacy. Of Schmidt, writer Patrick Svensson concludes in *The Book of Eels*, "after all his years on the open sea...must have felt he had the right to substitute belief for knowledge" (Svensson, 2020, p.213). The influence of Schmidt in the study of eels remains significant. Svensson traces the many years of scientific ventures that turn up the same: "no one has ever seen an adult silver eel in the Sargasso Sea, or a dead one" (2020, p. 231). This lack of evidence suggests that there are perhaps other explanations for where they spawn, despite the fact that Schmidt insisted that the theory of spawning in the Sargasso must be true, and many people continue to follow the logic.

In 2020, a paper was released by Chang et al. which refers to Schmidt's trajectory and influence on *Anguilla rostrata* research as 'dogma.' The authors propose a new theory on where *Anguilla rostrata* go during the silver stage, suggesting that they travel to a part of the ocean near "volcanically active parts of the Mid-Atlantic ridge..." (Chang, et. al, 2020, p. 3). This would mean that *Anguilla rostrata* spawns and dies within a seamount chain in the Atlantic Ocean that was identified by comparing migration and spawning behaviours of *Anguilla japonica*. The authors suggested this due to "unusual topographical features, geomagnetic anomalies, or differing water chemical composition" (Chang, et al., 2020, p. 3). They speculated that eels might be attracted toward traveling to this area because it is similar to the areas where other *Anguillids* migrate to for spawning.

The spawning location and behaviour of *Anguilla japonica*, close relative of *Anguilla rostrata* from another hemisphere, has been hypothesized and identified:

The spawning-zone of Japanese eel is positioned latitudinally between 12-15° N44.45... spawning of Japanese eel manifests all through new moon

durations.... Japanese eel spawn just right before the new moon in the vicinity of shallow saline waters (Yadav, Pandey, & Kaushik, 2020, p. 935).

Yet the same has not been identified for *Anguilla rostrata* and her even closer relative, *Anguilla anguilla*, whose life is said to originate in the same part of the Sargasso Sea. In a 2015 study (Béguer-Pon, et al., 2015) a team of scientists documented their findings as they investigated the journey of eels migrating. They captured mature eels off the coast of Nova Scotia and in the Saint Lawrence River system. They used biotechnological devices to track the long and perilous journey, over several years, looking for clues about where eels go in this late stage of their life, and how they get there.

Their results indicated that some eels stay in shallow freshwater for a period, while others migrate back through the deep ocean. The team were unable to track the migrating eels after a certain point. Speculation about biological makeup and migratory path of eels had been established through previous studies (Tesch, F., 1997; Bertin, L., 1957.; McLeave,1998; Schmidt, 1925; Tsukamoto and Aoyami, 2001). Beguer-Pon et al. had a direct observation of the migration, accomplished through electronic surveillance tags affixed to the bodies of captured eels which constituted a major research milestone.

The authors reached a conclusion related to the travels of *Anguilla rostrata*: within their sleek, elongated bodies, “eels do possess a magnetic map and true navigation abilities” (Béguer-Pon et al., 2015, p. 5). The team selected large and dense mature eels to ensure that there was minimal risk of weighing the animal down while swimming. The team built on the existing knowledge that eels are physically strong but

sensitive, that they travel in rough conditions, that their lives and journeys are precarious, and that the stakes are high in seeking knowledge about the migration. Their methods through the study reflected a sense of care in handling and tagging the bodies of eels: “all efforts were made to minimize suffering” (Beguer-Pon et al., 2015, p. 7). This is important, because the researchers approached the animal with an air of respect, not always true for those who encounter or seek to learn from eels. Their landmark study has demonstrated some important insights about the migration and about the ‘magnetic compass’ that guides eels as they travel. It also reflected that different eels do different things, which makes generalization and certainty difficult.

Theory on the global origins of Anguillids

How and why eels move to different places and choose their migratory paths seems to be both instinctual, or internal, and environmentally formed, or epigenetic (Trautner, et al., 2017), meaning the behaviour could be affiliated with an engrained tendency within the genetic structure. For example, in one study analyzing the eel’s internal connection to Earth’s magnetic fields, the results for *rostrata* showed that there is an internal magnetic compass, and that they may be responding to motions in the stars/sky, or to chemistry in ocean water.

Tidal orientation of glass eels depends on internal stimuli rather than environmental cues. During flood tide, eels were significantly oriented only in the laboratory. In the sea, eels could have integrated magnetic cues with additional information, such as celestial and chemical cues.

Conversely, when tested in the magnetic laboratory, eels displayed an orienting response based only on the magnetic compass system (that is, no other cues were available), and therefore, they might have used a different strategy to find freshwater outlets (Cresci, et al., 2017, p. 5).

Eels are guided by both their bodies and by planetary processes per the literature, but the specific mechanisms and details of how those connections work remain elusive. Comparative biology and related studies have suggested that what we now know as the configuration of Earth's continents has experienced shifting and metamorphosing through time, affecting the way continents are shaped and placed, with significant implications for eel migration and related theories about their origin. According to the "Tethys hypothesis" (Aoyama, Nishida & Tsukamoto, 2002) all catadromous *Anguillids*, including *Anguilla rostrata*, *Anguilla anguilla*, *Anguilla japonica*, and others closely related in the genus may have originated in tropical waters far away from North America.

Based on analysis of gene sequences and other data, Tsukamoto and colleagues suggest that *A. rostrata* and *A. Anguilla* swam through a narrow space above the coast of what we now call Africa some several million years ago. *Anguilla rostrata* and *Anguilla anguilla* are remarkably similar but differences between the vertebrae and scales make them distinguishable (Bertin, 1957).

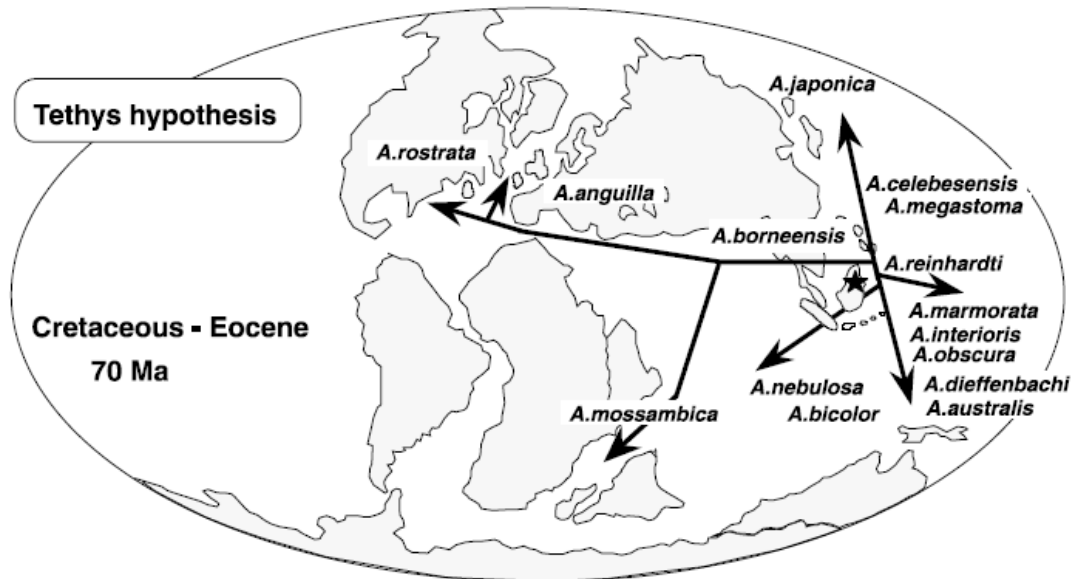


Figure 5: Aoyama, Nishida & Tsukamoto, 2002, p. 1995

The Tethys hypothesis maps routes for the origin of all *Anguillids*, all beginning near Indonesia, arriving at what authors call the “Tethys route” as the most likely route of travel for *Anguilla rostrata* & *Anguilla anguilla*, meaning that “dispersal of ancestral eels occurred westward from the eastern part of the Tethys Sea into the Atlantic as a result of the circumglobal equatorial current, which flowed from east to west, encircling the Earth along the equator” (Tsukamoto and Aoyama, 1998). Aoyama and Tsukamoto take their speculations back to the proposed Cretaceous period 100 million years ago by tracing and analysing eel DNA and molecular phylogeny to suggest what they call “probable evolutionary scenarios” (Tsukamoto and Aoyama, 1998, p. 140).

In other words, according to the theory of the Tethys route, the Sargasso Sea is not the home of *A. rostrata* & *Anguilla*, and rather, they came from another part of the ocean well before humans existed. *Anguillids* have survived several geological shifts and continental divisions. In the present day, no one has ever seen where *Anguilla rostrata* go to spawn, breed, and die, and whether or not the Tethys hypothesis is

accurate might be an ongoing question. I personally think it's interesting to consider how the evolutionary adaptation could place *Anguilla rostrata* (and *Anguilla Anguilla*) in such a vastly different geographic region from most other *Anguillids* and I wonder why they would swim through that very narrow corridor, and how and why they would end up in the Sargasso, so distinctively far from their other relatives and supposed origins.

I mention this here because often, theories taken as facts in scientific discourse contribute to entrenched understandings based on speculation, many of which are apt for investigation and challenge. Cree archaeologist Paulette Steeves writes that “an informed intellectual realises their ignorance of the world they know of, but know nothing of” (Steeves, 2021, p. 24). Since I lack the direct experience of living in these time periods and even the experience of being on the open ocean with and alongside migrating eels, I refer to the speculation on things that happened millions of years ago as ways of demonstrating how *others* think, write, and talk about eels. These debates are central to current studies and pursuits of knowledge about migration behaviours and spawning locations of *Anguilla rostrata*.

Individual development and sexual maturity

It is unclear how and why individual eels go to certain areas in water, whether it's ocean, estuary, or other zones. Some stay in saltwater and never enter the estuary or freshwater (Lamson, 2006) while others go far inland toward the center of the North American continent. Laboratory settings can yield mixed or inconclusive results, and oceanic conditions are difficult to replicate which enhances the ambiguity of some findings. In one experiment, Lamson and colleagues captured eels with fyke nets, froze their remains, and removed their ear bones. They then analyzed the ear bones using

microchemical analysis, measuring salinity saturation in the bones and other factors.

Their findings suggest that eel movements operate individually in different parts of an estuary:

Eels may choose among salinity zones, and they may also choose between sedentary and mobile... could be interpreted as searching for suitable habitat, and then settling there when they find it...however, others shifted continuously, suggesting that nomadic behavior is an inherent property of some eels (Lamson, 2006, p.1575).

Each eel finds a place and direction based on how they respond to their surroundings. Some keep moving and do not all settle into one place. Eels travel from and through the sea's layers of language and return to the deep. In this way, their bodies hold the living memory and knowledge of places and beings that humans cannot live in and rarely reach. The sensory capacity of humans to truly understand what an eel is 'up to' is limited, in the same way we might make assumptions about seagulls or coral reefs, or maple trees, or really any other species and what they're up to. Ongoing studies seek new approaches to this information, building established nuances in the field of eel biology.

As eels travel north from the Sargasso and morph from tiny eggs into glass eels, and finally, into elvers, the body lengthens and adopts a greenish pigment. Members in this category of *Anguillid* fishes develop a pigmented crown on their heads during the elver phase, before they approach a length of approximately two feet and turn again, to a rich chartreuse color, entering the phase known as yellow eel. The pigment was documented first by Belgian scientist G. Gilson and then expanded by French zoologist Leon Bertin (1957). It appears as a circular crown that seems to have a protective effect

on the brain. Bertin's text draws on the imagery of *Anguilla anguilla* based on sketches originating in laboratory studies:

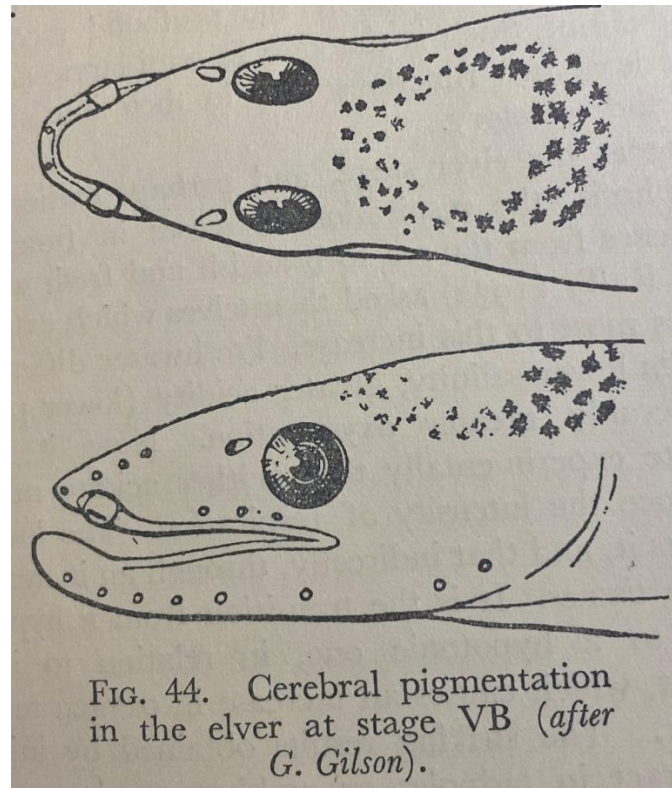


Figure 6. Pigmented crown in Elver stage, (Bertin, 1957, p. 87).

Bertin contributed this and other details to ideas about the evolution of eel growth from the yellow to silver stage. He wrote that “environment and nutrition” can determine the development of “testes or ovaries” (Bertin, 1957, p. 86). Until those organs develop, eels are considered hermaphroditic in the juvenile stage. Bertin thought the crown to be protective in brain development. *Anguillid* eel sexual development somehow is thought to correlate with necessity, meaning that when eels approach adulthood in preparation for the breeding stage, they become male, or female, based on their cellular interpretation of what is needed to reproduce. Their bodies form gender and

reproduction strategies based on their surroundings, a strain of scientific curiosity that has potentially permeated other discourse including human psychoanalysis.¹⁸

Cote et al. (2014) use the emerging science of epigenetics to consider variations in gene expression, noting that “panmixia” (the tendency to randomly mate in the open ocean) is also environmentally determined. The development of glass eels and their growth into subsequent stages is hypothesized here, through interactions between plasticity and RNA transcribing in the eel: “local genetic differences between glass eels of different origins are at least partly due to spatially varying selection translating into transcriptomic differences” (Cote, et al., 2014). Transcriptomic refers to the way that the RNA processes and transcribes information, influencing how genes are expressed. The stated purpose of the authors’ study, designed to support conservation efforts, was to consider the “endangered” status of eels as a reason to probe its genetic development.

Epigenetic studies show a range of factors affecting the sexual development of eels, and these are of interest because females are needed to develop eggs and sustain the species.

Glass eels are currently shipped live from North America to Asia for grow-out. One major issue for farming eels is that under crowded conditions, sexually undifferentiated juvenile eels tend to develop into males (Park, et al., 2019, p. 1).

¹⁸ Svensson traced the career of young Sigmund Freud who was somewhat famously perplexed by the hermaphroditic nature of young eels and frustrated by being unable to figure out the specific details of how eel testes develop, and under what circumstances. Svensson speculates that “the eel came to influence modern psychoanalysis” (Svensson, 2020, p. 61) as a result of Freud’s experience studying eels and finding reproductive details about eel anatomy elusive. He analyzed Freud’s letters and correspondences which often showed that Freud held a depth of fixation on eel gonads and reproduction as a young research student.

There have been efforts to feminize eels through the administration of injected hormones such as estradiol. Estradiol is thought to be beneficial for inducing artificial maturation and early sexual development. Adult female eels and the eggs they produce are needed for the survival of the species. In a landmark experiment, eels were injected with hormones “administered into several areas along the body, to complete oocyte maturation and induce ovulation” (Oliveria and Hable, 2010, p. 1126). The results indicate that the feminization process had limited results: “embryos that hatched...survived as long as 6 days” (ibid.). Feminization continues in some research practices.

Overall, recommendations from many who I interviewed and surveyed suggested, like the literature, that artificial breeding is not a viable solution for sustaining or supporting the lives of eels. There is a clear effort to continue refining an understanding of how to mimic enabling conditions present in the ocean for aquaculture development. This is one approach advocated in practices of eel biology which informs some conservation efforts. Artificial breeding has been somewhat successful for certain species, namely *Anguilla japonica*, but *A. rostrata* proves especially difficult (Minegishi, et.al, 2012).

Eel as biomedical technology

Motivations and approaches for studying eels vary. Recently, interest in *Anguilla rostrata* arises from the biomedical research community based on the extraction of a fluorescent protein found in eel muscles. As new technologies are sought, the glowing innards of eels and other deep-water fish are being analyzed for their potential benefit to human societies. These proteins are proposed for use in human medical experiments

including innovation and capital ventures: biotechnical devices, nanotechnologies, and other studies in microbiology (Erapaneed, et al., 2016).

At several stages of their development, eels have bioluminescent, or light-bearing material embedded in their muscle structures. One specific protein found in *Anguillid* fishes has been patented into a “product” used in microbiological studies and in the advent of biomedical devices. The patented protein is called *unaG* after the Japanese word, *unagi*, which means eel. In one experiment, the “product” was fused with human polypeptides, which some researchers describe as an opportunity to create “interesting perspectives for the realization of more advanced biomedical devices” (Bandiera, et al., 2019, p. 360). The fluorescent protein that would eventually be patented as *unaG* was first found in *Anguilla japonica*, but *Anguilla rostrata* was also examined and found to contain the protein.

[Eels have] ...bright green fluorescence in their white muscle...*unaG* can be used as a tool for the investigation of skeletal muscle physiology and metabolism during endurance exercise, with potential implications for biomedical science (Kumagai, et al., 2013, p. 1609).

Bioluminescence is a growing focus of study in marine biology and is thought to be an evolutionary adaptation with genetic variables, which influence its expression in marine fishes: “bioluminescent structures are variously used for camouflage, defense, predation, and communication” (Davis, Sparks, and Smith, 2016, p. 2). Recent studies highlighting *unaG* express a connection to conservation efforts—suggesting that the genetic expression of the protein makes eels worth conserving, understanding, and assigning value to eels in ways that were not recognized before.

This development represents a possible renewed or extended interest in preserving the lives of eels, and the aquatic environments they are connected to. The

increasingly invasive human ability to learn about physical behavior and internal characteristics of fish and other organisms is posed as a benefit to human life and health, and thus, is a linkage to other sectors, such as conservation.

Scientists in several fields continue to look for details on how and where *Anguilla rostrata* enact their reproductive activities, for the stated purposes of conservation and deeper knowledge of the ocean. Their methods include analysis of DNA to look for patterns and clues (Trautner, et al., 2017). Concurrent, ongoing scientific approaches for *Anguillid* aquaculture include mapping eel genes to better understand eel biology.

In reviewing these practices of knowledge acquisition about eels, common narratives emerge. Practitioners say that eels are elusive, that they are sensitive and have many unique characteristics, that they are both desired and disregarded, that they are valuable teachers of ecosystem interconnection. The suggestion that they return to their place of birth is a hypothesized idea with scant evidence, an idea many scientists are determined to investigate. During the autumn season, the adult silvers appear to head in the direction of the Sargasso, but other elements of the journey and story remain unclear.

One certainty is that the migratory path of *Anguilla rostrata* depends on a delicate balance of interlocking factors. The model of Tsukamoto and Kuroki rings true here: cultural, social, and natural sciences (2014) converge to demonstrate the many angles through which eels might be understood. The choice of studies here is a small sample within multiple overlapping discourses. In summary, I have discussed some publications of scientists and others who have inquired or written about eels, in laboratory settings and beyond.

According to some lines of thought, eel population decline is related to land use development that was initiated with no long-term knowledge of how to live and thrive in a place (Limburg and Waldman, 2009; Litt, et al., 2021). Colonialism and epistemicide depend on a breakdown of relationships, including the disruption of relational placemaking. A long-term understanding of environmental wellness and interdependence is missing in settler colonial structures. The purpose of reviewing these studies is an effort to reflect some of the common and obvious debates in eel biology. I am suggesting connections to the other processes that dispossess and subjugate Indigenous societies and legal orders. Next, I frame eels through a different series of perspectives related to Indigenous notions of conservation and relationship with eels.

4.3 Anishnabeg, eels, and lifeworld

Framing the lifeworld

Here, I return to Aaron Mills' suggestion of lifeworld as a concept that "establishes a range of possibility, not a set of determinate ends" (Mills, 2016). I also acknowledged in my Introduction that the term, lifeworld, is affiliated with phenomenology and hermeneutics, reflected as well in the works of other scholars from critical geography and elsewhere (Harcourt, 2020; Manning, 2017; Siriwardane, 2016; Convery, 2008). With its origins tethered "across the Austro-German and French philosophical milieu" (Siriwardane, 2016, p.2), *lifeworld* is used in different ways.

It indicates plurality; lifeworld reflects an internal worldview and the occupation of a position that is embodied in the physical. Lifeworld is also tethered to political constructions and links beyond, into the phenomenological, indicating connections to other dimensions. Harcourt clarifies the important distinction that lifeworld represents:

“epistemically, I recognise that I am not able to fully comprehend lifeworlds that are not my own” (2020, p. 1332). This is part of the reason why the term is attractive to me.

Siriwardane “unbraids” the concept to show that the term lifeworld originates in phenomenology, which may apparently have little to do with social science research.

Borne in mind that phenomenology, and consequentially early theorizations of the lifeworld, did not explicitly engage with matters of empirical research. Indeed, early phenomenological thinking stood as a distinctly philosophical (and ethical) project (2016, p.2).

However, the term does appear in recent geographic, legal, political ecology, and other scholarship as evidenced here and called for by Indigenous geographers (Johnson, 2012). Siriwardane traces ‘lifeworld’ application in empirical research to suggest that a “lifeworlds approach...enables us to acknowledge and capture nuance and ambivalence” (ibid). This is especially important when speculating on the physical and social constructions of the past, in place, which I do throughout this section.

I am gleaning from the oral history and lifeworld of *Kete-Anishnabeg Omamiwininiwug* (old Anishnabeg) whose stories are represented in literature and conversations with one of my interviewees, William Allen. I also carry this knowledge in my own sense of Being. The lifeworld that I tap into throughout this segment, of ancestral memory, is one that looks, feels, and operates very different from the lifeworld that I currently inhabit, in 2022. The world of the old people was dependent upon intimate knowledge of place, of life cycles, of environmental changes and cues as well as social and political conditions. Much of the environmental destruction I see today simply did not exist yet in the world of the old people, and their knowledge and perspectives are important to analyse, activate, and remember.

At the onset, I state my limitation and invoke my humility or *dabaadendiziwin* (Borrows, L., 2016). Humility is a principle of Anishnabe ethical conduct and one of the many “natural laws” (Borrows, 2010; McGregor, 2018a; Craft and King, 2021) that are expectations of Anishnabeg behaviour and analysis. Humility informs my conception of lifeworld and the way that I process the information from the interviews and other research activities. I want to start with a story as documented in the works of Richard Schweid who has researched and published extensively on eels. He shares a story about pilgrims and their Mayflower boat:

Half of them died during the winter, and the rest lived on meagre rations and in deep dread of the savages they believed were lurking in the vast woods around them. It was one of those savages who saved the lives of the remaining pilgrims, when he came out of the woods with a companion and approached them in April 1621. He did it even though in the early 1600s he had been captured and put to work like a slave on board an English ship-owner's vessels. *Tisquantum*, known in Euro-American history books as Squanto, was fully acquainted with the treachery of white men. By the time he was returned to New England shores by his captors, in 1619, his whole tribe had died out, extinguished by influenza introduced by the English. Yet he saved the survivors at the Plymouth settlement from their own ignorance and taught them how to live from the land and water around them. The first thing he showed them was how the Native American people had caught eels from time immemorial by wading into the river, treading them up and spearing them (Schweid, 2009, p. 98-99).

This type of narrative is typical of the early colonial period. Tisquantum's actions as told through this historic lens are often noted for his forgiveness and empathy toward the starving settlers who, according to Schweid's telling, demonized him and thought of him as someone to fear. Alternately, in other renderings, he is caricaturized as an imbecile who took pleasure obediently in supporting colonizers. The motives and decisions of Tisquantum are not told through his voice and his lifeworld of intimate

relationality with place and with eels are not discussed. Other documented stories suggest that Tisquantum was able to dig eels out of mud with his feet (Prosek, 2010).

In narratives of a similar time, Jesuits throughout New France marveled at the wealth, happiness, and abundance they witnessed among native villages during times when eel populations were plentiful. In the summer of 1652, a Jesuit priest known as “Father superior of the mission” was in the homelands and territories of Algonquin-Anishnabe people, then called New France. The villages of the Anishnabeg were described in ways that reflected a sense of balance.

The Jesuit priest recorded details of well-established relations in his journals: plentiful fish and animals, harmonious families, and happy children. The record is alight with the analysis and quantification of everything, descriptive numbers adding up “how much” of everything existed. He wrote to a provincial official about fishing up to six thousand eels in one night:

Eel constitutes a manna exceeding all belief. Experience and ingenuity have rendered us so expert in catching them that one or two men will take five or six thousand in a single night; and this fishing lasts for two whole months, in which an ample provision of them is made for the whole year; for the eels here have excellent qualities for keeping, whether dried by fire or salted, and are much better than any eels in France (Jesuit Relations, Gutenberg Project, n.d.).

Historian Sam Mongeau traces a gap in the literature and historical records, emphasizing that these snippets in historical records are often overlooked and brushed aside.

Eel fisheries are unexplored sidenotes, a trivial fact of how some people used to live. Similarly, the most research on seventeenth century eel fisheries has come from scholars interested in eels in the twentieth century. What little historical grounding they provide is interesting, but shallow (Mongeau, 2017, p. 7).

Mongeau attributes this to “epistemic erosion of the eel” (ibid., 7). Citing the *Jesuit Relations*, Mongeau analyses the experience of the first Jesuit missionary to land in New France, who said the following in the fall of 1616.

Our savages in the middle of September withdraw from the sea, beyond the reach of the tide, to the little rivers, where the eels spawn, of which they lay in a supply; they are good and fat (ibid., 9).

One theme in these historical anecdotes is that Indigenous people always knew where to find eels, in all seasons, from the east coast all the way inland, as far as the Mississippi river watershed. The extensive knowledge of where to find eels is well documented in oral history, although there is a significant gap in the written literature and historical record focused on eel research. I am certain that there are forms of archive which hold even more information relevant to an eel-focused study, and that deeply rooted relational research practices can yield further results.

I rely here on what I was able to put together during the COVID-19 pandemic and through the collaboration of my co-researchers, including eels, who I had invited to participate in the study along with many other nonhuman relations, living places and *mnidoog*. The stories of Tisquantum and New France appear here as anecdotes, from differing and disparate geographies, which both reflect that in the previous social order where Indigenous ways of relating and interacting were dominant, the world for eels looked very different and the presence of eels was embedded in the lifeworld; eels were consistently peppered throughout the environments of Indigenous societies.

Omamiwinini Aki: Talking with Bill

I interviewed the archaeologist Bill Allen for this project, who shared stories about his time with William Commanda, an Algonquin-Anishnabe Elder who passed in 2011

and spent his Elderly years advocating for many things including human rights and the restoration of Indigenous dignity in policy and practice throughout Canadian society. Commanda was also an environmental advocate and abolitionist. He was known for raising awareness of historic connections between eels and Anishnabeg along the Ottawa River. Once, referring to present-day Algonquin Park and the surrounding area, Commanda made a remark that stood out to Allen: “On 10/7/2005 we were returning from a trip to the park. This is when William Commanda made the statement: “there is no part of this land that my people did not know” (William Allen, pers. comm, January 14, 2021). Allen talked with me about his experiences with a working group devoted to advocating for eels, specifically through the research direction overseen and directed by Commanda and other Indigenous Elders.

Allen insists on the importance of including archaeological evidence and analysis of sacred sites to reconstruct relationships between the past and the status of eels. In a 2008 paper presented at a conference called the Barrier Management session in Allistom ON, Allen wrote,

Algonquin people traditionally were nomadic people who adapted cleverly to various environments. For this reason they revered nomadic species. In the eel they found a species that ranged widely the same as the people did and was highly adaptable wherever it went, a model for the nomadic people. The traditional spiritual value of eels and identification with eels is not about food. The eel’s traditional spiritual value has everything to do with Algonquin identity as a nomadic and proudly adaptable people living in harmony with the land (Allen, 2008, p. 2).

Allen also talked about the vast trade networks and traveling economies of Algonquin-Anishnabeg peoples, along the Ottawa river and beyond. He emphasized that eels are lightweight, calorie-dense, fatty, and easily preserved traveling food that keeps people full for a long time. I had been familiar with the work of Mr. Allen for many

years and found value in reading his analysis of geography, culture, Anishnabemowin, and what he calls the potential for eels to “drive a shift in power” (Allen, 2008, p.6).

What he meant by that, he explained, was that the powerful interests of development reflected an imbalanced power differential. The tension between ‘extractivism’ (Willow, 2018) and hydroelectric development alongside growing consciousness of violent impact on eels offered a meaningful pun, a shift in ‘power’ referring both to political power and to hydroelectricity.

Until very recently, executives and others representing hydroelectric development were indifferent and often hostile to adapt Indigenous perspectives into their planning and assessment procedures. Much of Allen’s work was taking place before the ‘duty to consult and accommodate’ and ‘free prior and informed consent’ (FPIC) became influential and common fabrics of Canadian common and environmental law.¹⁹

Allen described conducting his own research at the direction of Elders in years of land-based activities. He also participated in meetings and proceedings where he knew that decisions about hydroelectricity and rivers were being discussed. There was very little legal support for Indigenous voices at that time. The response he received from executives and planners was avoidant and indifferent. He suggested there seemed to be a commitment to erasing Indigenous knowledge and concerns about eels.

¹⁹ Recent scholarship on FPIC and duty to consult suggests that “the duty to consult, accommodate, and in some case, obtain consent is at best a weak version of FPIC, but it has nonetheless a profound structuring effect on relations between Indigenous peoples, regulatory authorities, and project proponents. It essentially forces the latter to engage with Indigenous peoples in the decision-making process. Failure to do so adequately is subject to court sanctions that can have a direct impact on the viability and costs of a project...” (Rodon, 2017)

Willow documents many of the notorious and egregious cases of forced hydroelectric development throughout Quebec in Cree territory, and remarks that for many people in the US and Canada, evaluating the impact of dams would cause people to “rethink the workings of the larger water-power system that makes their lives possible...it would challenge the very existence... of their society” (Willow, 2019, p. 74). The disruptions that Allen initiated were, to his thinking, necessary interventions but often, he said, there was very little progress in reaching people who were exercising decision-making power over the watershed.

Allen talked about the eel as a symbol, based on his own practice as an archaeologist and based on the teachings of Anishnabe and other Indigenous Elders who he worked with and learned from. In our discussions, he offered stories and knowledge leading up to the development of a series of curated papers he had either written individually or contributed to in co-authorship with others. He described witnessing, through time, declines in eels in the physical environment. He talked about Elders lamenting collective loss, losing multiple layers of memory and applied knowledge that was taken from Indigenous peoples’ everyday lives. He used his training in archaeology to reinforce that an interdisciplinary engagement is necessary.

Depletion of eel stocks in Ontario has led to loss of Aboriginal corporate memory about previous high use of eels... new information about traditional use of eels through documenting weirs, fishing tools, eel faunal remains and eel related language on the landscape. Even where no eel evidence is present at a site that is in former eel habitat, information about that eel habitat needs to be part of our documentation (Allen, 2007a, p.5).

The “mobility traditions” (Whyte, Talley, and Gibson, 2019) of Anishnabeg follow a seasonal progression where intimate awareness of a landscape’s carrying capacity (Witgen, 2012) and resilience inform a dynamic, adaptable society. I have stated that

minobimaadiziwin is the goal of all Anishnabeg, and its attainment is focused on balance for all living beings in each respective ecosystem. Eels were part of long-standing seasonal practices which he dated back at least 12,500 years, and possibly much older (Allen, 2007a, p.13). Allen described land activities he participated in, physically tracing sacred sites with Elders and knowledge holders from communities throughout Quebec and Ontario.

He was part of working groups which brought attention to the many things that Anishnabe Elders and scholars elsewhere have talked about. These involve the interactions between Indigenous groups as a widespread, complex network of interdependent Peoples (Witgen, 2012). Bohaker clarifies the role of clan identity and unrestricted travel through these networks which are dispersed throughout the present-day Great Lakes region and beyond.

Prior to 1650, Anishnabe peoples were...engaged in long-distance travel throughout the region as part of their annual cycles of aggregations and dispersals... widespread kinship connections and alliances... assured them access to resources as they moved throughout the regions (Bohaker, 2006, p.43).

The political structure and organization of Great Lakes Anishnabeg was related to but distinct from Algonquin-Anishnabeg territory, and all the travels and people were and are related. Recall from my Terminology section that Anishnabe Elders who put together the Algonquin Language Lexicon (McGregor, 1987) indicated that their language dialect was almost identical to other groups known as Ojibway, who were dispersed throughout the Great Lakes region. This linguistic connection suggests close cultural and economic ties between the groups which is a known reality of the Peoples

history. Those historical connections are known and established in the histories and memories of some, but not all contemporary Algonquin-Anishnabeg.

Allen offered specific connections and stories about eels connected to the “Anishnabe geography” throughout the Great Lakes and upper Canada. In one of Allen’s papers, he documented land-based knowledge of eel migration, habitat, and growth cycles familiar to Algonquin-Anishnabe subsistence practice.

In the eastern woodland when eels (*pimisi*) have grown part way to maturity and are the size and colour of a water snake, they are called *minàshkadjosh* ...and at this stage in the eel’s growth the Algonquin people shun harvesting them...That practice enhances the development of mature eels ready for the downstream migration to the sea and their spawning grounds (Allen, 2007, p.5).

Times of starvation, and times of abundance, were a known reality of the people; fluctuations of Earth, elements, atmospherics, and seasonality—all require humans to maintain respectful engagement with ecological forces and other energies. Knowledge of how and where to find eels involved specific protocols around harvesting them. This is an important part of knowing how to live and thrive in a place, an ancient form of what might today be called conservation which is inherent to Anishnabe land relations.

Today, conservation is said to be influenced by logics of “white male supremacy” (Rypel, et al., 2021) that inform which species are chosen as significant and worth saving. Eels rarely appear in those lists and are not significant to the lifeworld of settler conservation and sport fishing; they are a “nontarget species” (Reid, et. al, 2019) and are often discarded and seen as waste by anglers. They are treated as garbage.

Bill Allen’s perception was that the lives of eels and the lives of Indigenous people are interchangeable in their valuation according to policy. He suggested that “the Anishnabe migration mimics the migration journey of eels” (William Allen, pers. comm,

Jan 21, 2021) meaning that when eels enter the Saint Lawrence River and move westward, they are following a similar trail that some ancient Anishnabeg societies followed on their historic migration, documented in a version of Anishnabe's migration story written by Edward Benton (1979). Figure 7 below shows Benton-Banai's rendition of the migration journey; the similarity to eel migration is evident.

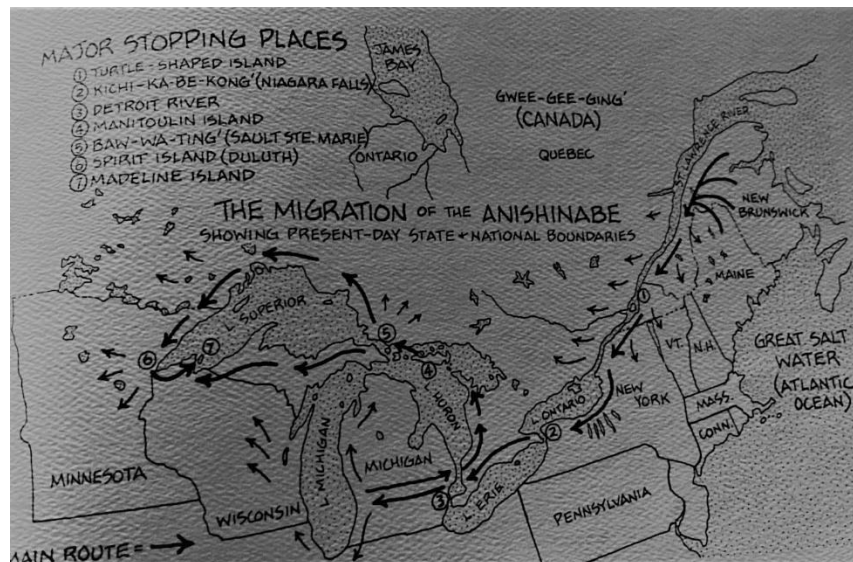


Figure 7. Anishnabe Migration, Benton-Banai, 1979, p. 99

The intertwined lives of Indigenous societies and eels are encoded in the deep memory of waterways and lands throughout the Eastern seaboard. Allen wrote about eels as the center of food gathering practices and ceremonial cycles.

The archaeological record indicates that centuries before agriculture supported aggregations of population on the land, the eels supported larger populations of Indigenous people than would have been present without the eels (Allen, 2007a, p.3).

Eels were an undeniable necessity for survival in Algonquin-Anishnabe territory, a connection which has gone dormant in the wake of settler infrastructure and other institutions insistent on razing and changing Anishnabe landscapes. For example, colonists transformed landscapes by installing ditches, dams, and other forms of what

they deemed “agricultural improvements.” Historian Sam Mongeau wrote that in the late 1600s, “eel fishing allowed various colonists to persevere on lands that had not been fully cleared yet” (Mongeau, 2017, p. 21), demonstrating that the intent to clear land was always at the heart of the colonial project, the “logic of elimination” (Wolfe, 2006; Orr, 2019; Wysote and Morton, 2019) that is so characteristic of settler colonial thought. Today’s iteration of settler colonial lifeworlds are formed from dystopian land occupation patterns that were seeded long ago. It is interesting to consider the concept of “Original Instructions” that have been established by Elders such as Benton-Banai, Alexander Wolfe (*Earth Elder Stories*) as well as others.

Nonhuman life forms for Anishnabeg include places, elements, and stories, and they have agency and aliveness. Clear instructions have been communicated to Anishnabeg people through their oral and other forms of history, some of which has been documented for public distribution. For example, returning to *The Mishomis Book*, and Waynaboozhoo’s conversations with *Bug-way-ji’-nini*, Waynaboozhoo received important advice for how to travel through territory and interact with the other forms of life. He was told by *Bug-way-ji’-nini*:

First, you must always treat the natural creation with respect. When you *must* come through my territory, honor those places with tobacco and good thoughts. Be not in fear. In that way you shall not become lost or confused and no harm will befall you. Be always in wonder and awe of all these natural works that you see; They are the hand and thought of the creator, *Gchi Mnidoo*. These works, whether they be mountains, glaciers, waterfalls, the deepest swamps, or the wildest places, should never be changed, diverted, or disturbed. They are to remain as they are now just as I am to remain in my natural way (Benton-Banai, 1979, p. 45).

This is a profound instruction. I have suggested that the term *minobimaadiziwin* refers to a “balanced way of living.” This balance involves interconnection between

multiple worlds and realms of existence; it is not restricted to human beings, or even human beings alive now. It is an intergenerational interaction with the vibrant processes of life that exist throughout the four directions of the universe. Anishnabe stories, which are interpreted as laws and legal orders (Borrows, L., 2016; Benton-Banai, 1979; Craft and King, 2021; McGregor, 2015; Chiblow, 2021; Jewell, 2018; Awasis, 2020; Stark, 2021) if followed and studied purposefully, present the contrasting vision to foreground the notion of a different type of justice and an entirely different milieu of possibility that is built on foundations of balanced, respectful relations.

This is a justice that is beyond humans, beyond individual species, beyond affinity groups in settler colonial framings—it is a justice that argues for the respecting the sacredness of *life* and human's role in life processes. Allen traced the ways in which eels held meaning for the Indigenous Elders and their interests in a modern context.

Eel, given its maltreatment in modern industrial society, provides an outstanding warning symbol of the need to widen the grip of the Rights of Nature movement and to rethink completely the way we consider proposals for hydroelectric facilities (2007a, p. 10).

As he was traveling, presenting, and learning with Anishnabe Elders, Allen described barriers to collaboration based on Quebecois political separatism and other factors throughout Algonquin-Anishnabe lands. Also, it is worth noting that countless environmental modifications went up throughout the capital region around the Ottawa River without adequate assessment processes.

Since Canadian Confederation most water control and hydroelectric dams have been built without consideration of the American eel and its need, unlike most other fish, to be able to pass successfully to reach its spawning grounds in the Sargasso Sea (Allen, 2007a, 3).

Both Canadian Confederation (in 1867) and the Indian Act of 1876 are relevant here. The Indian Act criminalized many of the spiritual and land-based practices of traditional governance that were characteristic of Algonquin-Anishinaabeg peoples and restricted the movement of Indigenous people through surveillance by Indian agents and the Pass System. The imposition of confinement, surveillance, and imposed dependency initiated by the Indian Act caused large-scale separation of families throughout present-day western Quebec and beyond.

The time frame speaks volumes; within less than 10 years, a massive transformation occurred, one that depended on the restriction of Indigenous mobility and the confinement of Indigenous populations. These historical events also corresponded with construction of structures that harm eels. In one of our interviews, Allen said,

It's uphill all the way—swimming against the current with this—I say to myself—be like the eel. The elevation of Lake Timiskaming—hundreds of feet above sea level – it's amazing and they are doing it (William Allen, pers. comm, January 19, 2021).

Lake Timiskaming, which is connected to the Ottawa River, has an elevation of over 500 feet and is thousands of miles away from the Sea where eels originate. The eel migration journey is quite remarkable and reaches into even further territories, traditionally: Allen talked about Anishnabe knowledge of eels and presence of them as migratory animals and as trade food as far west as present-day Duluth, Minnesota.

Ancient canoe routes of Algonquin-Anishnabe people along the Ottawa River are home to some of the “largest eel harvesting sites in the world” (Allen, 2007a, 12). Allen also knew and worked with the late Rob MacGregor, an Indigenous scientist and a major champion of eels. Allen suggested that all animals need a champion. He felt

especially strong that everyone can and should contribute to changing circumstances for eels because the evidence of their ecosystem connectivity is so clear and strong.

He felt that contributing to improved conditions for eels can and should represent hope, despite the horror of eel mortality in turbines, the massive population decline, and the lack of knowledge one might encounter in present-day Indigenous and other communities. Allen also shared his thoughts with me about the legacy of assimilative efforts and colonial processes.

For example, the residential school era “was not only a tragedy for the children who attended, it was a tragedy for the community” (William Allen, pers. comm, Jan. 14, 2021). He described his experience investigating archaeological sites and remains with petroglyphs inscribed on massive rock formations; in Allen’s view, many of the archaeological sites in Quebec and Ontario with petroglyph markings depict eels.

Petroglyphs are the teaching stories of ancient Indigenous societies, and some are interpreted as laws (Borrows, 2010). He was able to make these interpretations and assessments by working with the Elders who he supported, those who carried knowledge about eels and used traditional medicines and ancient Anishnabe teaching methods. Allen told me the following story, edited for clarity, describing the intergenerational loss of affective experience in how people teach and learn about eels. In this story, Allen described the impacts of installing a building near petroglyph sites.

I worked with one of the First Nations in the area...one of the Elders, for years he had gone to the petroglyphs and told stories to people from his community and other communities—as he got really elderly, he was not able to do that anymore. I arranged to have a wheelchair for him—got him out to the park...a lot of people call it *Kinomage Wabkum*—the teaching rocks—I wheeled him down the road and up the path and it had been several years since he’d been there. He really honoured me, he invited me to do ceremony on the rock and I

was his accompanist—that was a gripping experience for me—I took my shoes off, helped him with handling sage, tobacco, a little smudge, and the items with that.

This business of lost connection—he just didn't have the opportunity to teach people [anymore]. Even before there was a building built—when you have a relationship with someone like that, you learn...

There was a local First Nations fellow, who said, we don't tell many people, but some of the petroglyphs are outside the facility—the facility was intended to protect the site, but then it's not as natural. It has changed the flow of water during rainstorms. So, the old stories about the gurgling water from Elders were not part of the experience—we live in a very visual world, but this was auditory too—after the building went up, that sound went away—the water underground and babbling all over the rocks, is not there to the same extent (William Allen, pers. comm, January 19, 2021).

Here, a poignant observation arises considering the sounds of the landscape, those which are rendered mute by the imposition of buildings. Bill described newer buildings installed in Karst-rich environments which have been designed to promote the “management” of space, which render the sounds of the natural landscape silent. The erosion of wild spaces and peoples' privilege to enjoy the natural habitat of a region has been modified. The change in character of the land is an important aspect of understanding how Anishnabe teaching and learning has been modified through the presence of settler infrastructure. Allen talked extensively about the Karst formations in different areas—near Ottawa, Montreal, Peterborough, and elsewhere.

Karst is a topographical formation that occurs when water dissolves over certain types of bedrock such as limestone and other soft rocks. The result is a natural formation of underwater caves, channels of water, nonvisible streams, springs, and other forms of water drainage and flow. Allen even described encountering an eel in

New Zealand inside the cave of a Karst structure there. Eels thrive in these types of areas.

He said one of the biggest memory losses occurs in terms of how people understand the magnificence of eel migration. Some petroglyph sites are maintained by park and provincial staff, officials who don't know the full history of the site, or how to best understand its topography and other elemental values. The sounds and embodied presence of eel migration, Allen suggested, were key to knowing and experiencing the seasons (i.e., elver eels coming in during the spring, silvers migrating downstream in the fall). Being-in-place and "directly lived" (Pierce and Martin, 2015) space enabled an experience of these processes.

The ancestors' lifeworld included unrestricted stargazing, Indigenous astronomy, and sleeping outdoors. These were only some of the elements that Bill learned by spending time with Elders who shared their stories and priorities for environmental policy with him. These stories and observations from Bill Allen helped me to gain understanding of the intergenerational, material expressions of epistemicide, the "murder of knowledge" (Santos, 2014) and the ways that settler projects and logics displace and subsume everything about the Indigenous lifeworld. I am grateful for Bill's contributions, his time, and the work he did to support Indigenous perspectives and priorities related to eels and other matters. They are foundational ideas and contributions toward what an 'Indigenous-led eel conservation' might consist of.

Indigenous-led approaches toward eel conservation

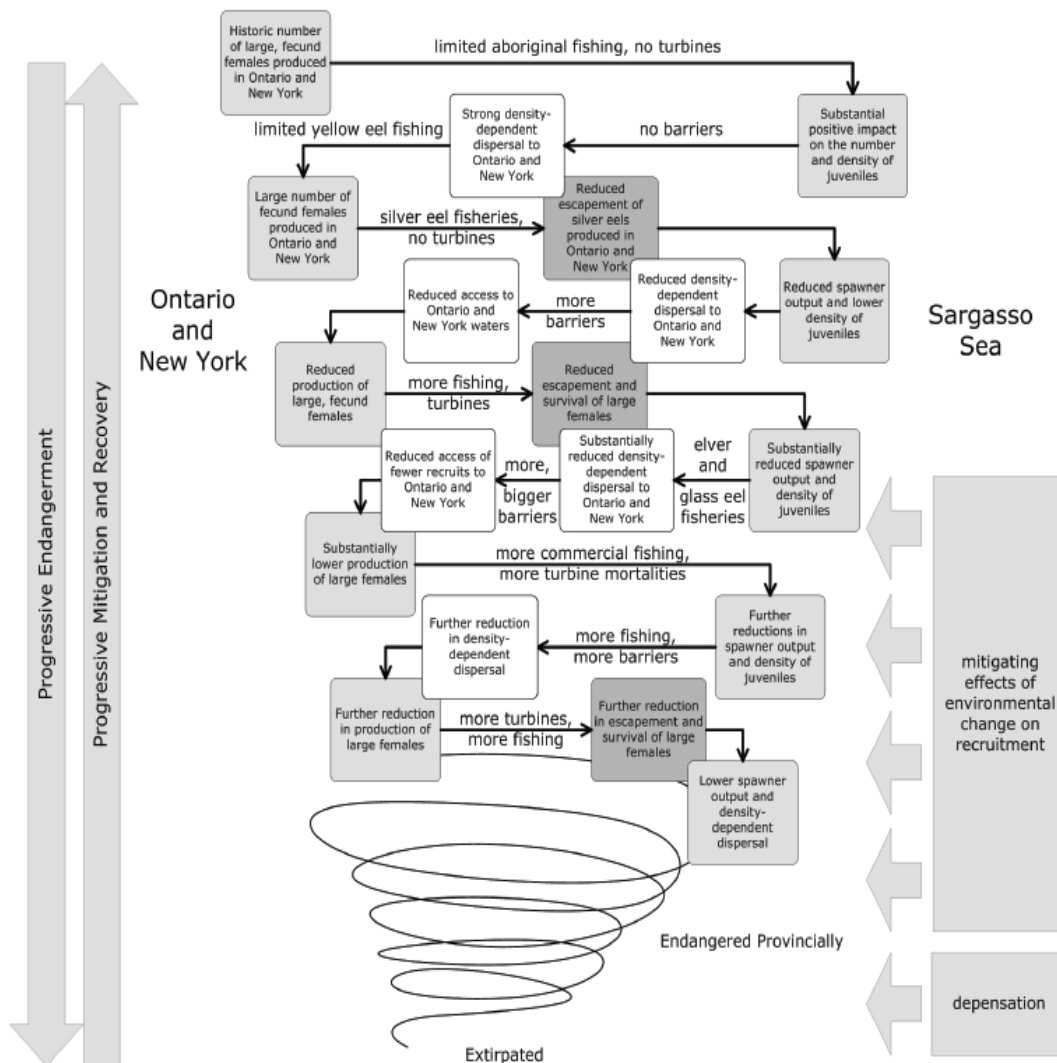


Figure 7. Hypothetical cumulative effects vortex influencing the status, distribution and abundance of American Eel. Other factors such as human-induced ecosystem change and contaminants could be added if the effects are proven, having the effect of speeding up the vortex.

Figure 5.(MacGregor, et al., 2015, p. 165)

From their “deep ocean origin” (Inoue, et al., 2010), perhaps in the Tethys Sea of days long gone, we arrive in a time where “eels slipped away virtually unnoticed by Western cultures” (MacGregor, R., et.al, 2011, p.2.) The above figure, from the late Dr. Rob MacGregor and colleagues, is showing a unique space-time analysis of how and

why eels decline, with a circuitous spinning motion that culminates through a vortex toward extirpation. The figure is an expression of possibilities.

In one set of circumstances, some conditions are imagined which might support eel regeneration: no turbines, limited Aboriginal fishing, and other attributes are shown strategies of conservation from an Indigenous perspective. As the space in the diagram moves downward, the progression suggests more fishing, more barriers, more turbines as presently occurring pathways. These activities could lead to the devastation of the species.

On the far right, the Sargasso Sea is where the eel originates, and presumably migrates back to. The diagram shows the range of possibilities and potential outcomes related to certain behaviors and situations, the varying circumstances and possibilities that could affect the life cycle of eels. It is positioned as an intervention, a road map toward likely outcomes and possibilities.

The complex diagram is fitting for the complex lifecycle of the eel. Macgregor and his colleagues were engaged in what might today be called strategies that constitute “Indigenous-led conservation” (Beazley and Olive, 2021). They advocated for a wholistic approach that respects Indigenous knowledge and relationships with eels on one hand, and on the other hand takes into consideration the many factors of settler occupation. These factors, such as development history, involve balancing the interests of industry and recreation with watershed health.

They urged use of the “precautionary principle” in balancing these interests, suggesting that “long term conservation benefits to fish and fisheries need to be placed ahead of short-term political expediency” (2015, p. 178). The period that MacGregor

and colleagues were working in was not always so open to Indigenous-led forms of conservation. Today, practices in conservation seek to operate differently, and with a sense of urgency.

Responding to the crises of ecological collapse, conservation regimes may seek to 'co-create and mobilize conservation grounded in diverse values, and thereby overcome political barriers to conservation (Beazley and Olive, 2021, p. 1720).

In a qualitative analysis of fishers along the Ottawa river, Litt and colleagues found that most anglers have no idea that they are in eel habitat; in fact, they have other ideas about eels: one angler was quoted as saying, of eels, "they eat our smaller fish... and they are invasive" (Litt, et al., 2021, p.4). Kenneth Lokensgard, scholar of religion, reminds that "some people understand their world, even such basic building blocks of reality as what is alive and what is not, differently" (Lokensgard, 20018, p.118). Knowledge about eels in a contemporary sense is largely absent in conservation practices and recreational activities, according to the analysis of Litt which was specific to the Ottawa river area.

Eels are poorly understood species, who facilitate interesting questions that reflect the state of water, along with human relationships to space and time. Eels have fed, clothed, healed, and lived among populations of diverse people. In North America, they have reliably arrived each spring, like seasons— which Indigenous peoples have interpreted along with atmospheric changes and shifts, for thousands of years.

Historically, the beliefs and practices of Indigenous peoples might be classified in academic study as "folkloric" or with otherwise diminutive labels. The general trend of hegemonic institutions leans toward suggesting that Indigenous societies and epistemologies cannot possibly have enough knowledge or insight to necessitate their

own distinctive approaches, much less disciplines. This has long contributed to policy decisions that exclude and marginalize Indigenous knowledge in fisheries and other land-based practices.

Orr and colleagues document that Indigenous Peoples in the United States are continually subject to elimination and erasure in specific ways, and that their interests and advancements are often considered suspect: “the fragility of support for American Indians is surprising and suggests the presence of a high degree of scrutiny” that is not applied to other demographics (Orr, Sharratt, and Iqbal, 2017, p. 2090). The context they speak of is specific to Indigenous tribes and individuals attempting to exercise self-determination over the allocation and use of natural resources, as well as very basic fundamental things like their identity. American Indians in the United States are judged by standards that are not applied to others, and this affects the ways that tribal involvement influences natural resource and conservation practices. This tendency toward erasure, despite the unique political status of tribes and the nation-to-nation structure of tribal sovereignty (Gilio-Whitaker, 2019), could influence the ways in which eel management is carried out in the United States.

Erasure and bigotry partially account for the lack of tribal involvement and presence in the literature in terms of integrated eel management, although a similar problem extends to Canada as well. Because I adopt an Indigenist stance, as previously stated, the borders of settler states which demarcate the United States and Canada as distinctive polities are barriers. All land and water along the present-day US/Canada border line constitutes the homelands of Indigenous communities. I seek to circumvent the reality of colonial occupation in suggesting that what needs to be developed is an

Anishnabe-focused geography of eels that honours the alliances and interests of Original People (often referred to as First Nations, tribes, etc.) who seek to influence policy and management decisions. I now turn my attention toward approaches taken by Mi'kmaq communities in so-called Canada who have advocated for improved eel fishing practices.

Indigenous biologists Giles and Denny robustly identified some of the barriers to implementing Indigenous knowledge in relation to eel fisheries. They gathered perspectives from government employees and other stakeholders, reported in their 2016 article on improving the eel fisheries in Nova Scotia. Some government employees and local residents did not see Mi'kmaq knowledge as useful or important: “the phrase ‘there is no place for it’ in reference to the cultural and spiritual components of a Mi'kmaq knowledge system.... was used repeatedly during interviews’ (Giles, et al., 2016, p. 178).

The authors documented and classified numerous benefits to collaboration between Indigenous Elders, fishers, knowledge holders, and those who represent the “other side” of treaty and constitutional agreements; notably. The cooperation, or barriers to cooperation, between parties is a common theme in eel “management” strategies, which can be driven by resistance from individuals and organizations adhering to settler colonial conservation logic and policy paradigms. A common critique suggests that fisheries management originating in state regimes, like many other conservation practices, is driven by its own limitations.

[It is] ... informed by reductionist, human–nature dichotomies...
Exclusionary conservation approaches persist, despite the significant and growing pool of compelling evidence that suggests Indigenous and local perspectives, knowledge, and practices have, and do, sustain highly

biodiverse and multifunctional ecosystems that support thriving local communities (Fletcher, et al., 2021, p. 3).

Policy is slow to catch up with what is happening in the everyday time of life on and in water. According to some lines of thought, actions to support the life cycle of eels may be an urgent matter. Increased pressure and long patterns of habitat loss stem from the ongoing “coloniality of being” (Maldonado Torres, 2007) that interrupts their migration and maturation cycles.

Overall, there is an urgent need to find practical ways to connect humans with nonhuman life in geographic practice as I have discussed in the Literature Review; “doings with the land and sea” (Barker and Pickerell, 2020) are methods for connecting people with place and history. Reconciliatory efforts in Canada which promote concepts like “two eyed seeing” (Marshall, 2021; Beazley and Olive, 2021) have been developed to combine epistemic approaches. “Two-eyed seeing” is a structured framework to blend “western science with Indigenous ways of knowing” and it is growing in practice and application, in some places, but difficult to implement in others. Relationships with eels have a role in this paradigm and there is a body of scholarship that demonstrates eels have been central to the lifeworld of Mi’kmaq people for centuries (Prosper and McMillan, 2016; Giles, et al., 2016; Van Der Zweek, 2016; Enger Palma et al., 2016).

Prosper and McMillan (2016) discuss Indigenous relationships with eel fishing as a significant element of the legal landscape for fisheries management in Canada; the famous Marshall decision of 1999 was a complex case which began with eels. The case, which began in 1993, eventually resulted in the affirmation of Mi’kmaq treaty rights and the right of Mi’kmaq fisherman Donald Marshall Jr. to go fishing for eels as he “considered to be a customary, treaty-protected practice” (Prosper and McMillan, 2016,

p. 637). In 1993, Marshall was arrested for fishing without a license, but he cited a treaty right to fish and his right was affirmed as part of long-running treaty relationships between the Mi'kmaq and Canada.

The right to fish in the so-called off season is central to the debate, as Mi'kmaq are allowed to fish without a permit during seasons when others are not. This has led to much scorn and vilification of Indigenous rights from other parties, mostly settlers who feel that they are being threatened by Indigenous exercise of rights to water, fish, and other resources. Marshall was initially convicted, but the appeal in 1999 overturned his convictions and Mi'kmaq treaty rights were upheld by the Supreme Court of Canada. The 1999 Marshall decision was unwelcomed and unappreciated by settler communities throughout Atlantic Canada and beyond, by individuals and groups who felt that they had their own rights to waters and resources. They feared that Indigenous people would engage in practices of overharvesting and thus limit their own access to local fishing opportunities including the financial benefits of fishing.

This tension remains one of the most prominently debated conflicts in the domain of so-called conservation and natural resources management. The underlying belief among some non-Indigenous land occupiers is that the rights of Indigenous people form pathways toward behaviours that they should fear, including questions about the motivations and “authenticity” (Orr, 2019) of contemporary Indigenous people participating in activities like fishing, hunting, etc. Mi'kmaq biologist Shelley Denny is worth quoting at length here to demonstrate her perspective which reflects Mi'kmaq community practices of fishing for eels—

We do not manage eels, we manage ourselves. I think that [in] our integration of the belief-knowledge-action system, you cannot really

separate what we know from what we do and what we believe. In the Indigenous context it is all one. In the Western system, knowledge is here, science is here and there are many rules on how to interact.

We have that integration of what we know and what we believe. Many of the values that we do have are a shared resource. We know we are not the only people that depend on eels; there are other animals and other fisheries that go on... It is about definite sustainability, not just for us but for other animals as well. Respect, relationship, reciprocity, and responsibility (Van der Zwaag, et al., 2016, p. 43).

Additionally, Prosper and McMillan clarify that Mi'kmaq participation in natural resources management has different aims: the communities seek to form political and economic relations "to foster the reciprocal wellbeing of people (including ancestors and future generations), communities, and the land and its resources over time" (Prosper and McMillan, 2016, p. 639) The ethical conduct of respect and interdependence informs approaches in Indigenous-led conservation, building from multiple forms of "traditional knowledge" (Latulippe, 2015) that inform Indigenous environmental ethics.²⁰

Prosper, Denny, Giles, and other Indigenous advocates in Mi'kmaw country have documented the specific approaches which constitute a relationship with eels and demonstrated a working knowledge of how they exist in the watershed. The approach they offer is not simply flexing the right to kill and sell them. Relationality, wholistic consideration, and care ethics are perhaps the most basic distinguishing factors of an Indigenous-led approach.

²⁰ It is important to clarify that "traditional knowledge" and "traditional ecological knowledge" are loaded terms. Latulippe has researched the application of "traditional knowledge" to fisheries management, forms a complex mapping of literatures related to traditional knowledge. She organizes scholarship on "traditional knowledge" into several categories that she calls a "typology" which demonstrates traditional knowledge stems from the "distinct cosmology, social context, and systems of values and ethics" (Latulippe, 2015, p. 121) of Indigenous people. Thus, traditional knowledge is a contested term that is not politically or ethically neutral. In my framing, I have used the term "lifeworld" as one that is inclusive of these forms of knowledge but carries a different connotation.

4.4 Conclusion

This chapter has presented brief overviews from a diverse body of material related to the life cycle of eels. The purpose and structure of the chapter seeks to reflect common themes in study of *Anguillid* eels and also integrate less-heard voices from Indigenous perspectives. Data analysis proved quite difficult for the dataset I acquired; participants had intricate responses which resisted neat forms of categorization. In that sense, content in this chapter is a type of “intercultural translation” (Santos, 2014, p.212) and the overall inference of eel study suggests that including such a translation is needed to lay bare several intersecting aspects of eel study.

Several people that I collaborated with are members of scientific communities with their own cultural and professional context. Many work in specialized settings where there is dedication and awareness to supporting eel migration. In neighboring populations, it is common to find lack of understanding about the presence of eels in local watersheds. Knowledge about the impacts of dams and related infrastructure can be limited, a fact also evident in the literature.

For example, in an Ottawa study, “when told that eels were in decline, respondents were asked to speculate on primary causes for their decline. Only three people (6%) directly mentioned dams as a possible cause for decline” (Litt, et al., 2020). Because I have spent a great deal of time in this dissertation setting a methodology of relationality, accountability, and Anishnabe ethics, it is appropriate for me to comment that the information I present here is certainly incomplete. I bear in mind the words of Linda Tuhiwai Smith, from *Decolonizing Methodologies*.

Researchers have the power to distort, to make invisible, to overlook, to exaggerate and to draw conclusions based not on factual data, but on assumptions, hidden value judgements, and often downright

misunderstandings. They have the potential to extend knowledge or to perpetuate ignorance (Smith, 1999, p. 176).

My goal here was an honest and humble engagement with a vast and detailed body of cultures, conventions, literatures and practices. The information here is not exhaustive by any means. The chapter functions as a glance into some of the more evident and common debates related to eels and their relationships with water, informed by the many communities in eel research. Migration barriers and physical development are two of the most common concerns I've heard about, and I have sought to reflect those concepts here both from scholarly framing as well as anecdotes from the "directly lived" (Pierce and Martin, 2015) 2015) spaces where eels migrate.

I connect eel population decline in specific places to larger processes of colonization and "slow violence" (Nixon, 2011) and "hidden violence" (White and Springer, 2018) which impacts all forms of life, including water. In Canada, eels are "at the crux of some of the most important conversations in Canadian fisheries today" (Pinchin, 2018, np) and do receive some attention in the United States as well (Ebersole, 2018, Svensson, 2020).

Indigenous-led approaches that have been underdeveloped or disregarded offer a way to reconceptualize how conservation could look, considering historic and policy factors in combination with oral and other types of history. Indigenous-led approaches offer a long ecological memory and alternate conception of 'space' which can be relevant to tracing maps and physical environments of eel habitat.

Survey #14 from my dataset returned an interesting response that informed the design of this and the preceding chapters. The participant wrote the following.

...they are sacred beings. I have learned so much with eels, including connecting to a multi-dimensional world. Eels have also brought me into contact with so many amazing people...As well, I am forever grateful that eels connected me to the life of Elder Grandfather Commanda. I learned about his efforts to bring eels into the public eye, and to place them on the species at risk list. But even more special to me is knowing that as the keeper of the 7th fire prophecy belt, that the belt was gifted by the eel spirit. I don't know why but that makes me teary-eyed. Eel spirit is helping to bring forward a new world during these challenging times.

The idea that eels, wampum, and changing worlds are all intimately intertwined is a nascent futurism for further study, a wide frame which requires specifics and dedicated analysis. This chapter is an entry point toward that conversation. The next chapter seeks to blend the elements of study proposed by Tsukamoto and Kuroki's eel model (2014)—the inclusion of material and knowledge from cultural, natural, and social sciences to integrate several layers and dimensions of thought. Through the next chapter, I present more interview and survey findings along with details of my own intimate experiences, in place, that occurred throughout the study period.

Chapter 5 Fieldwork stories with eels

In the previous chapter, I built a discussion about the life cycle of *Anguilla rostrata* from different angles, setting groundwork to name dilemmas faced by eels from a ‘big picture’ view. This chapter takes that discussion into a different direction and pivots to a more targeted geographic range. The chapter moves in three sections. First, I share a contextual story from a field work trip in late 2020. I then bring discussion of my written/survey and spoken/interview responses. Following that, I describe and share some of my own personal findings including findings from dreams. These findings were activations from embodied experiences of “Being Anishnabe” (Acoose, 2011) and have guided the project significantly. Each section has a contextual explanation in its beginning.

In 2020, I began to build relationships within a network that consisted of people mostly new to me, in a hybrid space of digital engagement and site-based visits²¹. I met many of these people when I attended the Spring 2020 Eel Town Conference hosted by Eel Town, a now-inactive nonprofit organization based in Virginia. Eel Town was focused on conservation and researching of *Anguilla rostrata* and other globally distributed *Anguillids*.

The pandemic changed the trajectory of travel and other possibilities. Working with the nonprofit and its affiliated networks was an emergent reality which was beneficial and generative. My inquiries morphed into several new collaborations and relationships in communities of persons concerned about eels.

²¹ I followed safety protocols and respected appropriate public health guidelines in my travels.

Location of surveys and interviews

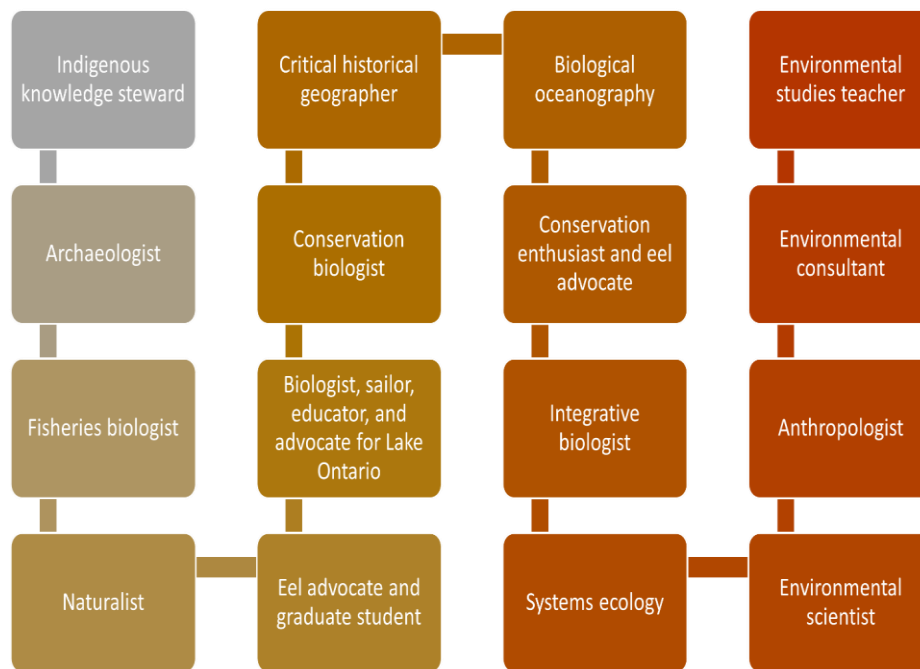
Due to travel and distancing limits, I used a mixed method of digital surveys and land-based activities to interact with people and eels in habitats where eel migration is studied. I completed my research period in early 2021 with a total of 17 interviews; some included in-person visits, others by video conference (n=5) and by telephone (n=2) along with responses to my digital survey questionnaire (n=10). Guiding questions are in Appendix i. Respondents to the digital survey portion were invited using snowball sampling, an ideal way to locate “hard to study populations” (Paul, and Caplins 2020, p. 30).

I considered this population hard to study because I was looking for very specific characteristics: people who had lived experience in place with eels, alongside knowledge of their life cycles, which I’ve found to be a relatively rare group. Recruiting participants during the COVID pandemic was another layer of challenge, but it was still possible to glean tremendous insight, even from the limited processes. The geographic locations of participants were listed as Poughkeepsie, NY; Severn, UK; Sodus Bay, NY; Bordeaux, France; Fairfax, VA; Hannacroix, NY; Orillia, ON; and Nipissing, ON.

Throughout and prior to 2020, I had also conducted land-based visits to sites on the shores of Lake Ontario and along the Ottawa and Saint Lawrence rivers. Before the pandemic was declared, in 2019 and 2020, I visited sites in New Brunswick as well as the capital region of the US (Washington, DC) and the surrounding area to view and experience the waters/rivers there, to talk with locals, and to review material in national archives. Along each of these journeys I compiled valuable information which informs the study and the structure of this chapter.

Figure 1 shows details about individuals who participated in the study. Their professions and titles are self-described and demonstrate a range of lifeworlds, experiences, and approaches.

Figure 1. Titles, fields, and self-described professions of participants in the Eels as Teachers project.



5.1 In the water: *dibajimowinan*

When I physically traveled to sites, I called on my methodological grounding; affirming that I am *kwe* (an Anishnabe woman) living in “an inverted world” (described in the methods chapter) and being in relation with *nibi* (water) as well as my *doodem* and *mnidoog*. It is standard practice and respectful expectation for Anishnabe to conduct oneself with honour when traveling and visiting sites of unfamiliar territory, to make offerings of *asema*/tobacco and other gifts which are placed with sites, beings, waters, and others. It is important to speak to and honour ancestors and spirits of the land, and to conduct oneself in a way that is respectful and not harmful, to the extent possible. It is a mindfulness and an intent.

Physical travel across territory requires an orientation that is rooted in relationality which I detailed in my Methods chapter. Generally, my participants and interviewees were not part of or aware of this, but it's notable to mention because of the way that I have described expectations for conduct in my Anishnabe theoretical framework. My research took place in areas where I was in the milieu and lifeworld of those who work with and study eels, but at times those communities have no living collaboration with Indigenous societies. Conditions in multiple watersheds were experienced and described as contaminated, riddled with chemicals and other environmental ills. In this and other areas, I witnessed degradation including litter, graffiti, and other commonplace expressions of disrespect in and around water.

Also, however, I did hear other stories about the growing movement to improve environmental conditions, including the effort to examine and remove outdated physical infrastructures, such as dams. This is a movement initiated by structural change, social awareness, and long-term data demonstrating the negative impacts on dams for eel populations as well as others including shad. Survey #12 remarked about the overall impact of industrialization in the Hudson River, for example.

All of the Hudson's migratory fish (sturgeon, striped bass, shad, eels) have been important to waves of overlapping cultures. Sadly, the last hundred years of increasing pollution and environmental stressors have turned local fish from a treasured food source to a conservation target or a recreational trophy.

Some participants remarked that many of the eel weirs and other technological implements used in some forms of eel study were derived from Indigenous fishing practices. Many were not sure how the practices were passed on and adapted. This is a significant gap that bears further study. As I traveled, I could be certain that I would encounter eels themselves which required specific forms of preparedness. Here, I share

dibajimowinanag (Leddy, 2017) personal stories and anecdotes based on things I experienced.

In the fall of 2020, I traveled to a region in Lenape territory in New York, to witness and participate in the activities of New York State conservation efforts to track and monitor migrating eels who live in creeks and streams along the Hudson River watershed. This area is well known for its citizen science initiatives, many of which are connected to the New York State Department of Conservation. Since 2008, in the spring and in the fall, there have been community-based science projects conducting eel monitoring activities with local schools, students, and community members. The state sponsors opportunities for communities, and they have funding to support monitoring such as the placement of nets in the Hudson River and tributaries used to capture, measure, and count the numbers of migrating eels.

The program is very popular and successful, and well-known in the region. It has a far reach into neighbouring municipalities. In this region where I visited, eel populations are described as consistent, meaning that they continue to run in predictable cycles throughout the spring and in the fall as glass and as silvers, respectively. The numbers fluctuate from year to year, but migrations have consistently recurred and can be anticipated based on atmospheric conditions, moon cycles, water levels, and so on.

Conditions are observed by staff of the New York State Department of Conservation and their affiliate partners who fund and conduct community science in the region. I researched the area in the Hudson Valley that I would travel to and learned some important things before going. In survey response #2, a written response

mentioned historic changes related to patterns of failure in environmental regulation in response to question 5 (see appendix I) –

Habitat alteration has shifted the range of wetlands and especially hardened and straightened the Hudson's previously convoluted shorelines for railroad and housing development. The Hudson is also famous for its legacy of pollution including PCBs and other contaminants.²²

Historian J.R. Seller traced the transformation of economic orders among colonists and Hudson Valley natives in the early days of settler colonial occupation. Attempting to confront stereotypes of roaming, aimless Indigenous societies, Seller writes about the stewardship strategies employed by early Indigenous peoples, circa 1609:

Far from moving about a static, abundant landscape, Native Americans deliberately positioned themselves along the Hudson River and actively fostered ecological succession to develop a range of resources exploitable from their base in agricultural towns (Sellers, 2016, p. 299).

In other words, there was an intelligence and design to the practices that were being used when settlers arrived, even if those practices were not understood or legible to settler colonial mindsets, because they had different goals and aspirations. Seller documents settler ignorance of regenerative land use cycles developed by Indigenous people including the Lenape. The landscape was modified changed from a rich, cultivated, biodiverse habitat to one with drained wetlands. Fertile, biodiverse land was converted to flat ground for plowing and monocultural agribusiness.

²² Per the US. EPA [<https://www.epa.gov/pcbs/learn-about-polychlorinated-biphenyls-pcbs#release>] Polychlorinated biphenyls or PCBs are man-made organic compounds that were banned in the late 70's in the US due to their toxicity and impact on human and environmental health. PCBs enter waterways through manufacturing processes, on items like plastics, paints, tapes, floor coverings, and so on. They present a threat to eels because they are thought to disrupt the endocrine system and are associated with infertility, cancer, and other hormonal disturbances which affects eels specifically due to their body composition, which is fatty. "Given that PCBs are lipophilic, it is reasonable to expect that fatter fish with some likelihood of exposure would accumulate more PCB" (Limburg, et al., 2008). Limburg et al. (2008) documented a decrease in PBCs in the Hudson tributaries, which appears to be a growing trend. In recent years, PCB levels have decreased in other areas including Lake Ontario (Hoobin, et al., 2018).

Ditches were created to mark property lines and divide farmland from pasture as early as 1663 (ibid. 307-308). In some ecological perspectives, wetlands function as lungs of an ecology; others suggest that wetlands function more like kidneys, filtering and purifying the watershed (Matys, 2022). The early practice of draining and reforming wetlands can then have an imagined effect of smothering and choking the entire ecology, it's capacity to breathe and flow and cleanse itself.

I knew that when I visited this place, I was visiting a “post-apocalyptic” (Gross, 2012; Tallbear, 2019; Whyte, 2018) environment that had been modified and changed with waves of colonialism and land degradation. I also know, from my own ceremonial and other relationships, that Lenape people who have been relocated to other areas in the United States and Canada in the late 1800s due to forced migration and federal policies still know this area as their homeland and hold oral and other forms of history related to the region.

My visit took place in an urban creek (commonly referred to in that area as a ‘kill’) that was situated on private property. As we walked in the creek, I saw an abandoned sofa, long streams of plastic waste, and other debris. The activity of the day for the conservation group was electrofishing, a method that delivers electricity into water to stun the eels out of their hiding spots underneath rocks. This is one of the methods used in conservation practice to quantify and track eels and other fish. Eels are generally inactive during the day and snooze or hide under rocks.

For electrofishing, a staff member wears a large backpack that has a cord connected to a rod device that is switched on and off, sending pulses of electricity outward. Eels emerge and scatter to be caught with large dip nets, sedated with clove

oil, measured on a plastic ruler board, and released back into the water. Sedating eels with clove oil induces a temporary paralysis and is thought to be a safe practice in conservation (Altun, Hunt & Usta, 2006).

As we assembled and lowered into the water, I heard a kerfuffle in the distance and saw two people walking toward us, a man and a woman, the woman slowly gathering up the courage to confrontationally ask what we were doing. Her husband was sort of shooing her away, and she let us know that she was going to ask her question, no matter what. *What are you doing here?* she asked. We mentioned that we were studying eels and were part of a scientific team. *Eels?* She asked, obviously disgusted. *Yuck, get rid of them all,* she said, before walking away.

It was a confrontation with settler lifeworld that occurred in a relatively benign way, minus the flaming torches and burning effigies seen in other settler forms of protest that I have witnessed via land defense, water protection, and other settings. I noted the key message of palpable disdain for eels, which was both illuminating and wrenching. That day, I held and measured migrating eels in the elver stage, talked with them and placed ceremonial offerings to support their journey, offering songs of healing and comfort. Before arriving, I had offered songs to respect the water and the eels knowing that it was necessary to apologize to them for the pain and interruption to their life that was caused, and even possibly their death.

Electrofishing is a practice that originated in England in the 1800s by inventor Isham Baggs, who proposed to “capture fish with electrified hooks, harpoons, and metal-sheathed boats...he...proposed using lenses of the gemstone tourmaline to polarize light for improved vision into water” (Reynolds and Dean, 2020, p. 229). I was

and am conflicted about my participation in and collusion with the use of electrofishing, for reasons of common sense, and because the data supporting its use tells a story of uncertainty.

For many decades, it has been understood that electrofishing can injure or kill fish...studies received little attention or concern at the time because injured fish often appeared normal when released. Also, our profession was focused on harvest and production, not fish welfare (ibid., 234).

I came to intimately understand that working with different parties in contexts of land-based practice constitutes confrontation with different forms of knowing. Through conservation logics, electrofishing methods are in some ways ideal for finding eels because eels easily blend in with the water around them, especially in the elver state where their skin is greenish and can be undetectable among rocks and algae. Per Reynolds and Dean (2020) it is quite possible that even if they don't die immediately, eels and other fish could have spinal other injuries as they swim away and eventually die from the injury of being electrocuted, even mildly.

Methods to capture fish are often referred to as either active or passive, active involving a hook (or, in this case, electricity) or some other means to disrupt and catch the fish. The other method is passive, which involves using stone weirs or nets to trap eels/fish as they travel. Knowing eel behaviour has been key to developing interactions with them: in the wintertime, eels go into a state of dormancy and burrow into mud, in deep lakes and other areas within estuaries. Their temperature drops and their bodily functions slow down. This is known by Indigenous communities who engage in winter spearing and know specific areas to find eels in all seasons (Giles, et. al, 2016).

Winter dormancy is one reason why conservation groups track and measure eels mostly in the spring and fall, and to correspond with the migration. Eels often spend a

lot of time submerged during the day and are active mostly at night, which is why starlight spearfishing with a fire-torch for light was so effective in Algonquian people, familiar oral history from my own families and relatives; there are Anishnabeg who still fish that way, usually, however, for species other than eels.

Returning to the interaction with the woman in the creek, I mention here the dubious inclusion of eels in a book by Ronald Rood called *Animals Nobody Loves* and eels' frequent inclusion in studies that seek to understand why some animals are despicable and disgusting to humans (i.e., Batt, 2009). In many of my interviews, people involved in community science and other initiatives recalled stories of affective displeasure and disgust. I have also heard about the desire to commit actual violence against eels which Litt et al. described as common among anglers (2020).

Some of my interviewees shared their experiences of seeing eels die in turbines, along with distressing images of eels grotesquely shredded into indecipherable pieces. The everyday, accepted abuse of animals evidenced in this story serves as a potent reminder. There is an ongoing need to address the injustice of "slow violence" (Nixon, 2011) that embeds into systems and processes of human design. Attending to the care of animals has the potential to "appeal for a politics of total liberation" (White & Springer, 2018, p. 160); liberation struggles have everything to do with land, space, and time. Spatial justice requires acknowledging the ways in which animals are tormented, injured, or confined, "with the intention of making hidden spaces of violence visible" (White & Springer, 2018, p. 163). This insight was not an expectation when I visited the site but emerged as an important finding.

The site visit itself was a positive experience. I had positive relational dynamics with others and appreciated the opportunity to be in place with eels in this way, through the merging of different lifeworlds which I attribute to common interest in eels; eels were enabling connections in unlikely places. They were teaching me to act with tolerance, patience, compassion, and understanding. The state has not historically been a friend to me or to my families and relations.²³

I was also working in the center of the coronavirus pandemic of 2020 which itself was its own kind of disaster, an affective emergency: “disasters are culturally, spatially, and emotionally specific” (Convery, et al., 2008, p.7). The ongoing anxiety, loss of life, and breakdown of systems initiated and exacerbated by the pandemic were all co-occurring as I was investigating epistemicide and the genocidal, ecocidal imprints of today’s material conditions affecting eels.

I name these as my context because each factor intimately influenced the study period. Human values of kindness and compassion were enhanced through this experience, by participants and through my own efforts. I saw firsthand how, even when trying to establish value and respect for eels, there is a clear structural tendency to permit behaviours that can ultimately cause harm to them. I was also reminded of people who hate them, people who are everywhere.

Harm happens even when harming eels is not an explicit intention that arises because someone has a dislike for eels—which is a separate and concurrent problem. Their abuse and injury can result as a byproduct of structures and omissions of the

²³ The trip had other affective personal consequences that unfolded through time; I had an emotional response that led to an uncontrollable crying bout, a profound feeling of sorrow that lasted for days, the origin of which I locate to several interlocking factors.

precautionary principle. In some ways, the suggestion to apply the “precautionary principle”—to do no harm (MacGregor, et al., 2015) in our dealings with nonhuman others, which is core to Anishnabe ethics, seems impossible in some configurations outside Anishnabe “teaching and learning environments” (Debassige, B., 2012). There, children and communities are taught from a young age that care ethics and intentional cultivation of love (McGregor, 2015; Kruse, Tanchuk, and Hamilton, 2017) are built into the fabric of all interactions and we should strive to live harmoniously and respectfully.

Borrows (2018) also reflects that throughout time, Anishnabeg have also been destructive and are not immune from causing harm, as evidenced by many *adzokanag*, parables and collectively shared sacred stories. Anishnabeg can and do harm in different ways on individual and collective scales. We must always be responsive to individual and collective aspirations of seeking *minobimaadiziwin*. The methods of Anishnabeg water-based governance are very different than those employed by state conservation regimes, but Anishnabeg are not simplistically immune to being harmful toward animals and toward water.

The methods are simply different. For practices in conservation, some understanding of swimmers arrives by spying on subaquatic environments through surveillance and technology, i.e., tags and tracking stations. This is certainly a different approach than the “passive” methods employed through other methods like observing the quantity of fish in weirs, and spending time on and in water in other ways to observe local, immediate, emergent phenomena. Acoustic telemetry produces information which has, as of yet, uneven application for decision making in fisheries management (Crossin, et., al, 2017) even when the practice accumulates significant amounts of data.

More recently, Zang et al., (2021) have suggested sonar monitoring is another method which provides accurate and reliable information of eel behaviour by capturing high quality video-like segments from devices placed underwater. The proposed benefit of this technology is to “increase the efficiency of hydropower operations while preserving a friendly environment for fish passage and migration” (Zang, 2021). These are some of the methods through which conservation regimes identify and measure conditions for eels and other fish.

“Biopower” (Foucault; 2008; Srinivasan, 2014; Braverman, 2015) seeks to order and control life, to decide which life is worth saving, and can be used by state regimes to promote the extension of life or express indifference to suffering, hence the “make live/let die” configuration that is so often cited from the concept. The practice of trying to facilitate the affirmation of life through decision-making based on human technological innovation and capacities has obvious limitations here.

From an Anishnabe framing, when encountering daily brutalities which include events like this, I am reminded that “it is also our responsibility to find hopefulness and opportunity for life-affirming practices” (Borrows, 2018). This story, of being confronted by settler attitudes about eels, about interacting with and potentially harming my *doodem*, and about collaborating with others from a different lifeworld constitutes expression of several interlocking facts that demonstrate some of the challenges with supporting a collective understanding of eels traveling in their ensouled landscape.

I am living in the inheritance of a “transformed world” (Watts, 2016) which has many specific contours that each Anishnabe person will grapple with. I have written several poems related to these and other experiences of working with my *doodem*. I

include one poem in Appendix iii. It is important to refer back to *doodem* and *mnidoog* here as my experiences of fieldwork all involve ‘reading the water’ and surrendering to the guidance of the unseen I outlined in the Methods chapter.

5.2 Connections: Excerpts from interview and survey responses

Finding the stories²⁴ within my dataset was an ongoing, multi-step process which I reflected in the previous chapter. “Transformative third space” as proposed by Indigenous governance scholars Shailesh Shukla and Nathalie Bartmes, is a method of looking to land-based pedagogies or learning environments that are land-based. The ‘space’ created draws upon the presence of Indigenous knowledge systems, academic practices and systems, and learners/students who bring together “two separate cultural spaces to create a new third space based in hybridity and cultural difference” (Bartmes and Shukta, 2020, p. 147). The triangulation doesn’t neatly fit here; I was an individual researcher reaching out to an established network of sometimes already interconnected people engaging in different forms of professional and community science. “Intercultural translation” (Santos, 2014) is perhaps an apt label, but the hybridity piece is essential as well, the creation of hybridity that emerged.

Some folks I worked with were employed in conservation regimes, some held personal interest, some only described themselves as scientists. The ‘third space’ I refer to here is the space of knowledge growth where my approaches, articulated in the

²⁴ Researchers enacting external inquiries into communities where they are a non-member, however well intentioned, can produce disastrous results. Vine Deloria’s prescient critique of social science research holds ever more relevant. In a personal communication, Deloria wrote, “I would suggest...that we place either a tax or a bounty on anthropologists and sociologists, that way they could provide us with some income whereas now they only take and rarely give” (Deloria, quoted in Wilkins, 2018, p. 93). This I interpret as a form of humor from Deloria but it is also not funny considering the context of harms that are enacted on Indigenous people and other marginalized communities as a result of historically problematic research design and practice. I therefore sought to take care of my work and relationships in ways that were respectful of the land and ecology I visited, through offerings to the land, the directions, the *mnidoog*, and other forms of engagement with people and place.

methods chapter, meet and encounter the lifeworlds and individuals I interviewed and learned from. Data analysis in social science research often employs software and codification i.e., NVivo to organize material into categories, an approach I know well.

I experimented with NVivo and found that the categorization method did not fit this dataset. In surveys and interviews, I heard about nonlinear journeys and pathways that individuals had taken to their chosen careers or vocations, and the interesting ways in which they found themselves immersed in a study of eels. Many shared deep and powerful encounters with individual eels and life-changing experiences which led to intense connection and curiosity to learn more about eels. Others described being surprised by their emergence in unexpected places. Survey #15 shared such a story.

I never saw a live eel until I started my fisheries degree study at U Mass Amherst. We had poisoned a pond with rotenone to prepare it for stocking with bass/bluegills. A very large dark eel crawled out and made her way across the grass. We sort of shoved her off into a little drainage ditch so she could make her way to safety. I was amazed at her dogged determination to live. And I was impressed with her durability on land. There goes one tough fish I thought.

I built relationships with collaborators where possible, to avoid an extractive approach toward collecting stories, consistent with Anishnabe methods of relationality and Indigenous forms of ethical engagement (Wilson, 2008; Absolon, 2009; Kovach, 2009; Moreton Robinson, 2017). As indicator species, eels embody and reflect the totality of overlapping environments and thus benefit from the hybrid approaches suggested by “transformative third space” (Bartmes and Shukla, 2020). Cultural norms for Anishnabe, and specifically *dodemiwan* in practice, involves visiting: “visiting with humans and nonhumans, in accordance with cultural protocols, nurtures relationship building” (Awasis, 2020, p. 838).

Similarly, Reo (2019) describes Anishnabe relationship and meaning making with *inawendiwin* (relating) “Anishnaabe inawendiwin is a way of relating to spirit and to one another that honors the interconnectedness of all our relations” (Reo, 2019, p. 68). I treated fieldwork sites as extensions of land-based relations and networks.

Visitation and relationship informs the way I have sorted the categories and sections of this chapter. I engaged where I could in forms of visiting and recall that “Indigenous epistemologies do not deploy a series of fictions to make their truth universal” (Sinclair, R., 2018, p. 99). Each eel story has unique contours. I sought a method by which I could respectfully compile and align the words of participants, without diluting or misattributing them. The very nature of categorization can constitute a flawed way of placing limitations and projections on the words of others. I take a conversational framing instead and offer a narrative approach, showing connections between the interviews.

In response to question 7 (see Appendix I) a written survey response (#2) came from a biologist who talked about insights gained studying eels in labs.

We have a lot to learn from eels, how the species changed its populations dynamics to survive... how they manage their physiology in cold waters, how they survive in frozen rivers...eels contribute to CO2 trapping... the metamorphosis they go through is crucial for their development.

In other words, it might be stated that eels *need to change* to develop and grow. They have a symbiotic relationship with climactic factors, which were also brought up by a biologist who has focused their research on impacts of changes in the Gulf Stream. Survey respondent #14 answered the same question in more specific and speculative terms.

Climate has both localized and large-scale effects. If we lose the current trajectory of the Gulf Stream due to warming of the Atlantic, then we might never see eels in North America again. But I consider that an extreme scenario. What's already happened is that with temperatures having gone up a bit in the last 150 years, you see eels migrating earlier and over a longer time period. This is because migration is cued by both temperature and salinity and more snow melting means lower spring salinity in rivers.

In survey response #15, a biologist talked about the cumulative effects of modifying and impacting the food chain. They speculated that it may be a non-factor for eels who reach certain stages of development despite their many obstacles.

The food web of the Great Lakes has been hugely re-woven in just one century so it might be that this habitat will no longer support the vast numbers of eels. Yet they are generalists. They eat about anything.

It is important to clarify here that this individual may have been talking about eels in the later life stages, most likely yellow and/or elver. In the previous chapter, the literature reflects that the glass eel larvae in the early stages of development were quite selective about their food, and only ate upon induced starvation. Baby eels preferred marine snow in the open ocean over foods offered in laboratory settings (Tsukamoto and Miller, 2020). Silver eels heading toward the ocean enter a fasting state that, presumably, persists until they die (Jellyman, 2021). So, the idea that they “eat anything” is accurate in some specific stages of life, but not others.

The point about the Great Lakes Food web is significant though; the change to industrial agriculture and large-scale farming (in addition the dams and other constructions mentioned in previous chapter) represent the “habitat alterations” that affect developing eels in younger stages. Overall, there is a call for a thoughtful, integrated approach, according to survey response #15.

There is so little known about the Sargasso... we need to look at all the places where they swim through... we need to protect all places.

In chapter 4, I mentioned the Tethys route as a proposal in oceanography that suggests all Anguillids originated near present day Indonesia. The *Anguillids* now in the western hemisphere (*rostrata* and *Anguilla*) have survived numerous changes in climate and Earth evolution. Interviewees often talked about the limits of scientific knowledge in terms of being able to provide a comprehensive portrait of what eels do, how scientists gain information about their instinctual survival mechanisms. Eels seem to operate unevenly and in somewhat uniform patterns that are part of other global processes.

Though there is much focus on the decline, there is also evidence that in some areas, they remain abundant, according to one fisheries biologist who works in New York State, survey response #6:

I have been involved in aquatic ecology and fisheries throughout college and my career and I would say that even in the early days when the projects I was working on did not focus on eels, they were a ubiquitous and profuse element of the biomass of the areas I was sampling. For example, the volume of encounters and different places I would encounter them while working on the EPA's National Stream Survey in New England instilled in me the great significance they have on the ecosystems.

Another conservation biologist (survey #14) found that it can be challenging to isolate eels and that a holistic approach is needed.

We look up and down the streams to where the eels might get shredded in the turbines. Look at all the parts where the animal moves. A 'holistic approach' is often said... it's easy to say, but it's hard to actually do. We really have to be able to work with others: anthropologists, social scientists, artists. It's a very simple concept, harder to implement.

In fisheries practices, another educator (survey #8) wrote about how the relationship of local people to eels has changed over time.

With the advent of unchecked industrial abuse to the Hudson River, the American eel lost its role as a viable food-fish. Today, the American eel serves a role in education (its incredible and unique life history), and also as live-bait for anglers.

The ecological value of eels is a matter of knowing them, to the extent that doing so is possible; according to a science educator (survey #7) who also focused on stories and eels' unique value.

We need creativity...e.g., how to get eels downstream while avoiding turbines. and commitment to valuing eels and restoring their populations... Tell their stories, get more people to understand what special creatures they are. Put pressure on power companies to look elsewhere than rivers to extract energy, for example solar.

Another educator (survey #9) made comprehensive recommendations across ecological scales: they recommended a series of specific actions, listed below.

- Installation of eel ladders and removing dams
- Conservation of the natural landscape
- Restoration of riparian areas
- Elimination of the use of lawn chemicals
- Changing land use policies
- Installing green infrastructure for stormwater management in cities, and
- Effectively addressing carbon emissions to impact climate change.

In chapter 4, I discussed the many pressures that have altered the landscape in several regions due to hydroelectric interests and other long-running forms of development. These responses from study participants demonstrate that the effects of those introduced practices continue to reverberate in the web of life today—and that there are solutions. An environmental educator and communications specialist (Survey #9) emphasized that “conversations about eels are also about greening, restoration of shoreline habitat, and climate change.” Dam removal and impervious cover change were specific recommendations that they suggested to consider improving water quality and initiate a more ecologically sound watershed. Research shows how important eels are to ecosystem health and clean water. This is significant, and not just for Indigenous peoples, as Bill Allen wrote.

Eel has taken on major symbolic significance about the gaps in values between Indigenous concern for the land on the one hand, and, on the other hand, the widespread attitude of resignation to accepting degraded natural environments (Allen, 2007a, p.3).

Degraded environments may be the norm, but this is not the only option for life.

One respondent (survey #2), who has initiated many community science endeavors, wrote about the value of eels as they mature.

Eels have tremendous ecological value. Each late winter to early spring, millions of glass eels enter the estuary and can provide food for many different animals even before the primary food webs of the Hudson 'wake up' from winter's slow period. Throughout their lives, eels wander throughout the food chain, both as prey for herons, eagles, minks, snakes, striped bass, and more, but as they mature also as top predators in small streams and brooks.

The critique of animal geography scholar Inus Braverman (2015), mentioned in the literature review, is memorable. Braverman suggested that there is danger in narrowly focusing on one animal only; however, eels are the concrete evidence of the interconnections that Braverman is so concerned about obscuring. One fisheries biologist, (survey #11) who has worked with eels in France as well as Canada, wrote the words below:

They are fascinating species that still keep its secrets and... Earth secrets and need to be protected; they are the guides of the sea, they represent a powerful animal that is protected and symbol of fecundity in mythology or ancestral tradition.

The phrase "mythology" appears in the model of Tsukamoto and Kuroki (2014) as an overlap with cultural science and conservation. Mythology might be labeled a form of storytelling, and its impact is a nascent item which bears further study. Prosek (2011) focused on mythologies of eels in tropical Indigenous cultures, and the survey respondents who mentioned mythology here highlight a need for greater research on

what those 'mythologies' are and where they originate in North American cultures. In discussion of watershed impact, an oceanographer (survey #15) wrote,

I also think there is something worth considering in the transformation of an eel. It adds to their mystery as they shift their forms both at the beginning and the end of their lives. Mythology holds that people too can be transformed into something rare and beautiful, like a silver eel as they get their angel wings and their golden harp and ascend to that heavenly vault above. Personally I don't buy it for humans.

Stories and responses in this section demonstrate how eels have affected individuals and called people to form new insights; each participant described subtle forms of communication that have real, tangible, and potentially grandiose implications. Eels demonstrate the ability to form connections between vast oceans and tiny streams and creeks at a local scale. One environmental educator (survey #9) recalled being impressed with the "calm demeanor and charismatic nature of individual eels."

I am suggesting that interactions with eels supports turning away from scientific materialism, environmental indifference, and destructive behaviours. Studying focused, specific elements of the environment, i.e., eels (but also other beings), offers practical pathways to build foundations toward stronger place-based connections that can evolve over time. These surveys and interviews demonstrated how eels offer instructive information, from the content of their lives, that supports changes in human cognition, behaviour, and infrastructure, a step toward "cognitive justice" (Santos, 2018).

The messages here indicate that there are existing and potentially evermore ways to understand eels through cultural teachings, everyday experience, and other forms of knowledge that constitute the lifeworld. There exist several approaches and opportunities to change and improve human infrastructures that would better support a

more respectfully integrated life with eels. I was fortunate to have located these communities of scientists and educators who shared so much insight.

Responses exemplified the triangulated approach suggested by Tsukamoto and Kuroki (2014) as necessary to understanding eels, a blend of “natural science, social science, and cultural science.” Although their definitions are loose and open to interpretation, application of the triangulation they offer forms an inevitable conclusion. Those who are knowledgeable about eels are clear that eels’ lives are worth preserving and supporting—for the benefit of all. I have personally approached this research from a place of embodiment and deep investment in the wellbeing of eels as a foundation toward Anishnabe history and futurity. The fieldwork period enabled learning about the investments and connections that exist in others who are supporting eels through their professions and personal efforts.

5.3 Anishnabe geography: Dream maps

For *Anishnabeg* the act of dreaming is both practical and necessary: “oral tradition provides many examples of individuals acting upon obligations given to them in dream” (Miller, 2013, p. 124). I respectfully note here that certain forms of dream would not be appropriate to share or explicate in a scholarly or, really, in any other setting. As a practicing poet and active dreamer, I have demarcated the ways in which I utilize, share, and draw upon my dreams. The dreams I speak of in this section, are interactions which prove, if only to me, the continuity and responsiveness of my connections to place, land, ancestors. My role is to understand the messages that come from and about eels. Miller writes that for Anishnabeg who dream, there is an element of exchange and gifting.

... Spiritual gifts...flow...from one entity to another, with the more powerful bestowing a part of his/her own power as a gift or blessing to one who is in need... To some extent, this was a regular part of everyday experience, because human beings were dependent on such gifts... humans were expected to seek dreams and visions (Miller, 2013, p. 122).

Here I document what I call cartographic renderings—from dreams—that have guided my work and demonstrate where I come from. In terms of understanding what might be called an “Anishinabe geography of eels” I see that such a geography is not exclusive to Earth, but is connected to her and works with her, inside, beyond and throughout her body.

Below, I describe and explain some of my experiences that came as a direct response to the circumstances of working on this project. Dreaming is not only an unconscious exercise; traveling during dreaming involves going to realms and places (which also have their own agency). These realms and places can and should inform everyday experiences if direction of *mnidoog*, mysteries, are taken seriously.

For Anishnabeg who do research: dreaming provides insight into “mental, emotional, and spiritual processes...beyond our current comprehension... cutting edge templates for the analysis of our research processes and findings” (Marsden, 2004, p.71). Shawanda (2020) suggests that messages received and travels taken in a dream state are an ongoing pursuit of wellness and balance for Anishnabeg: “we often stray away from the Mino-Bimaadiziwi in path, therefore we require assistance from the Spiritual Realm to find our way back” (Shawanda, 2020, p. 40). This was certainly true of my fieldwork and other research processes.

Jewell (2018) draws on Goeman and Million to suggest that dreaming is both individual and collective. It is a practice which “urges us to widen our knowledge to

something greater than our own subject and immediacy” (Jewell 2018, p. 59). Some of the framing of “dreams” by these scholars suggests that dreaming is ‘radical’ (Jewell, 2018; Goeman; 2013; Million, 2011) and a method by which new possibilities can be seeded. I want to trouble the language of ‘radical’ as I think that for Anishnabeg, dreaming is normative, and because the language of what constitutes ‘radical’ behaviour in academic settings remains, to me, undefined and unclear, and easily hijacked by itinerant academics with other motives.

My framing of dream as cartography is also supported by Hirt (2012), who suggests dreaming a long running tradition of “cartographic methods” in Indigenous societies. As Miller suggests above, dreaming is an expectation with Anishnabe society, while Hirt’s conceptual framework functions as a type of legal tradition. Dreams are co-constitutive of phenomenological orientation, as suggested by “*mnidoo*-worlding” (Manning, 2017) that involves the co-creation of meaning and possibility, giving and receiving spiritual support.

Since a young age, I have been guided by the documentation of my dreams and have adhered to the guidance, warnings, and instructions they offer. I call these experiences “dream maps” because they represent to me the cartography that disrupts and disarticulates the foreign powers imposed upon our homelands, Anishnabeg aki, in my everyday life. These dreams are journeys of relationality with meaning that occurs to me as time persists, a sustained interaction with *mnidoog*.

An Anishnabe cultural grounding recognizes animacy in all things, including the waking landscape; “only through immersion in the culture and the stories of Anishnabe peoples could the ensouled landscape be manifest” (Bohaker, 2006). I engage

Anishinabe studies, Indigenous geography, eel biology, and other fields. The cartographic renderings of these visuals and visitations are empirical data that sit in the periphery of my thinking. They are also central to my understanding of the questions I am asking; 'like a shoal of fish or a flock of birds' (Manning, 2017). Hirt cautions that geographic research seeking to employ dreams must be done in a careful way—

...the reason dreams should not be incorporated blindly into a research process is suggested by a simple equation: if dreams are knowledge, knowledge is power. Dreams are not disembodied; they are bound to material and Earthly concerns (Hirt, 2012, p. 117).

I have asked questions of eels and received specific, vivified answers, through dreams, where I visited with ancestors who helped to ground and broaden my inquiry. I include and share excerpts from dreams here because they are evidence and documentation of the process to find meaning could not be found through attention to literature, scientific reports, and even land-based visits.

Dream Map 1 From Field Notes

Context: I had just received word that my fieldwork activity was cancelled due to deaths in the tribal community where I was, in New Brunswick, and that my trip, which was a 9-hour flight one way, would need to be rescheduled. The leaders who had passed were important to all sectors of society. Their mourning protocols and processes, including travel arrangements, would be considerable. The community was also experiencing ongoing pressure associated with increased use of opioids and crystal meth in the region which was causing social unrest and other concern.

I did not at the time have any alternate plans and had placed lot of expectation on this fieldwork activity. While desiring to serve and support the grieving people, I also found myself distressed about the Eels as Teachers project. One night, I engaged in

meditative breathing and other breathwork exercises before falling asleep, as body-level panic was setting in and causing physical distress. Below, I use italics to indicate what I wrote in my journal when I woke up.

Saw this map in my dream. It was thirteen “zones” across the middle of what is called chi-mkinak mnising, the great Turtle Island. The marks or spaces were green and clearly part of a massive shell that correspond with a turtle ... I knew the land to be a turtle, to correspond with the shape and design of the shell. Each of the thirteen markings had meaning. The zones were sort of like oval-ish rectangles and spread across the US Canada border... why do people call it the medicine line? It started from Washington state to the East Coast and all through/over the current borders we currently know.

I could see the green shape from above the land as if I were levitating. There was a lady that was showing the map to me... it was someone like my grandmother, a cross between her and someone else I recognize, long white hair and dark skin. Very kind, so beautiful an energy, she seemed to know me and how to talk to me in a way that was comfortable. It came to my attention that this was my namesake, my ancient grandmother Miskwadaynz. She talked without words and showed me what I was looking at, the turtle, the island.

Before I had fallen asleep, I was called to pay attention to my breath and notice how the air was flowing and feeling as it moved through me. Immediately before this dream, I had difficulty falling asleep. I was carrying a feeling of something that infused into me through breathing. I heard short messages in different voices, they identified

themselves as two teachers from the turtle clan, affirmation that it was good that I was visiting this land of Mi'kmaq Aki.

Dream Map 2 From Field Notes

Context: the COVID pandemic had been underway for close to a year. I had just experienced a series of personal tragedies including serious physical injury and major medical trauma. I was suffering a concussion and experiencing doubt about my ability to tie together the many pieces of research compiled during my study period. Feelings of fear and panic set in: fear that I did not have enough, that I was not up to the task, and that my findings would be ridiculed, ineffective, or incorrect. Many fieldwork plans had already been cancelled or modified and it felt unclear whether I'd be able to continue. I had trouble breathing and struggled with body aches, spasms, migraines, and chest pain. I use italics to show that these are transcribed from my field notes, which were written in Ottawa, Ontario.

Dream: I was underwater, at some kind of meeting, or ceremony. I stood near three other people, the one in the middle was tall and sturdy, and they communicated that they were connected to eel spirit. They talked about our connections beyond this world and how eel is right between that space, an eel sits in that space. An eel presides over all of life who stands in the gateway between worlds/dimensions. It seemed like a man. I saw my great grandfather speaking to a group of us. I looked at him and he looked at me and I felt somehow safer. The others who were there were disrespectful and distracted, not listening, and he left. My great grandfather was very sturdy, spoke English, and wore moose hide and a hat. This was followed by another dream, swimming with my family, playing in the water and in the trees above us, blue jays stood on the branches, watching.

The teachings and images in the dreams are not only about me, nor are they instructive only to me, despite their highly tethered connection to specific elements of my life and *nindoodemag*. Miller (2013) takes care to document that leaders and prophets identified in Anishinabe communities are also recognized through practices of community validation and discussion. Community validation and discussion were not part of this process; I was able to recognize the meaning of each party in each dream and the messages were delivered directly to me and not in community settings.

These appearances in dreams were not visits I directly pursued; they emerged to strengthen my grounded experience of Being Anishinabe asking questions about my *doodem*. They came to me. A response came when I asked for help. Some dreams one receives are not to be shared and will remain private or discussed in collaboration with personal advisors: Elders, teachers, family members, or other people who may be relevant to or benefit from the dream.

Prior to the travels in the first dream, I had been experiencing anxiety and panic over fieldwork failures. I had engaged a process of relaxation and directed breathing; directed breathing and breathwork practices have been foundational aspects of my practice as I mentioned in my methods chapter (Brunette-Debassige, 2018). I use intuition here to make suggestions about collective knowledge and meaning making rooted in an *Anishinabe* lifeworld (Convery et al., 2008). I introduce some common Anishnabe concepts here as a foreground.

For example, Turtle Island in this dissertation is the site of North America and present-day United States, Mexico, and Canada. I also call here on the embodied concept of *aanikobijigan*, a word which is often translated literally to refer to “great

grandparents.” Gross writes about Anishnabe continuity in maintaining relationships with the dead and with prior generations of ancestors: they “want to help us live a good life while we are still here on this Earth. They continue to care for us and help us” (Gross, 2016, p.212). The visitations of these ancestors throughout the study period for this project demonstrate that effort to help, to show me how and where to direct my thinking and questions.

Remaining connected with ancestors is a naturally occurring and even necessary element of Anishnabe existence and my purpose here is to demonstrate that possibility through my own experiences of activation. Future generations and those who come behind me, Anishnabeg who are seeking a pathway, might look to this documentation and related works to learn stories and frameworks that may have relevance to their personal or educational strivings. Several times my expectations in field work were not met, and in fact, right before the second dream map appeared, my highly anticipated research activity had been cancelled and I was physically suffering. Yet, the need to prioritize the work continued and my questions about how to think through these questions were answered in another format which gave me confidence and strength to continue.

In my everyday wheel spinning, I wanted to know, where do eels go when they are adults? What am I missing in how I think about them? Why can't any of these scientists with fancy educations and expensive equipment figure it out? Other questions had been posed, many times, through *asema* (tobacco) and other offerings to land and ancestors which form the basis of Anishnabe cultural practice and relationship-building or “*inawendiwin*” (Reo, 2019, p. 68) which might be understood as a form of reciprocal

relating and building with others. *Inawendiwin* includes relationships with those not in physical forms.

Offerings are also central to building a sense of embodiment in place. My questions were witnessed, accepted, translated to the spiritual realm, and answers were presented to me, simply, intimately, and directly, if unexpected. My expectation was that any questions put forth about eels during fieldwork would receive response through conversation, or archival research, or other outward-facing research methods including extrapolation of meaning with other human beings.

In the second dream, the presence of my great grandfather and the blue jays carries specific meaning related to my *aanikobijiganag*: great grandparents. The word refers to a relationship between great grandparents and great grandchildren. When my late grandmother, Juliette, *Odayminkwe-ibun*, tried to describe the translation of this word to me, she showed me a string with a series of knots on it, and spoke of each knot as a generation. Her mother, Teresa 'Jojo' Tendesi-ibun carried the surname Tendesi which comes from and translates to 'blue jay'; her family carried *tendesi/deedens doodem* (bluejay clan) as well.

I was encircled by ancestors and *doodemag* relations in these experiences. They pointed to land and pathways that reoriented my perspective in a way that corresponds with my active, waking knowledge. Perhaps these moments show where I needed to be reminded of basic facts I already knew, but had forgotten, and the visits would serve to focus my attention throughout the project. These dreams for me are empirical evidence to consider an eel's wide and broad sea/landscape through an ancient *Anishinabe* cartographic tradition which is also innovative and specific to me.

The vantage point in the first dream, aerially suspended in the sky, recognizes the Earth and the island as living beings, and the self as guided and supported by the watchful eyes of ancestors and relations both above and below the surface of the Earth. Manning writes about an expanded rendition of the four directions framework I mentioned in the literature review:

Ojibwe Anishnabe seven directions teachings include north, south, east, west, up, down, and center. Among other applications, they offer a midpoint from which to stake ethical claims, no matter how indirect or abstract (Manning, 2017, p. 163).

Through this section, I stake the “ethical claim” that an appropriate consideration of researching eels involves taking a big picture view, represented in the aerial perspective, as well as a deep orientation in the ocean—or at least an awareness of that realm under there. North America as Turtle Island is not simply a metaphor, dreams are not metaphors, the layers of boundary in life under the ocean’s surface are not metaphors. They are actual living realities as I saw with the oval turtle markings.

The imperial borders that we currently know did not exist in the first dream. It was only the turtle’s markings. This map speaks to me also of the connection to ancient time and the disarticulation of linearity and grids of settler colonial technocratic domination represented in the increasingly violent zones of vulnerability represented by the borders of modern-day nation states.

An instruction I interpret in the second dream suggests that there is boundary and protocol associated with accessing and interpreting some forms of knowledge, space, and relationship, particularly related to accessing knowledge of or concerning eels. The act of being there in the first place, among these other beings, demonstrates that beneath the many layers of the ocean, that there are places where humans do not

go, and respect of that boundary must be paramount to all dealings. The fact that my great grandfather got annoyed and left showed that there are specific ways to listen respectfully.

Anderson writes, in the context of listening to Anishinabe and other Indigenous Elders, “the quality of listening impacts the information given” (Anderson, 2011, p. 42). When Anishinabe Elders or knowledge holders feel disrespected, it is quite possible that they will simply stop engaging, they also may show their displeasure or offer instruction for correction. They may also, as in this case, withdraw their consent to engage and restructure a boundary.

I also suggest that the work of respecting and honouring the lives of eels has interdimensional implications. I was shown these things as part of my empirical fieldwork so that I would ponder the respect of boundaries. I am free to develop cartographic methods that bear in mind the vast geography of North America as Turtle Island, with her many layers and regions, from the viewpoint of a borderless, aerial view. I do not need to limit myself to a colonially imposed geography or border. The unknown spaces of the ocean include spiritual and dimensional boundaries, and the constant presence and guidance of ancestors helps me understand a nuanced framing of my project as one that has spiritual and interdimensional support.

Interestingly, these “dream maps” were imprinted in my memory such that I returned to them time and again. When lost in the fray of fieldwork, data analysis, or dissertation writing, the images and memories returned, to disarticulate my disappointment of not being able to access all the things I desired to access, including

travel. At times, fieldwork and other ventures did not go as planned or expected. I experienced some seriously challenging events, personal and otherwise.

Through the enormity of viewing Turtle Island aerially and from well beneath the saltwater, I realized the scope of my inquiry and came to understand that there is always more to explore beyond the seen spaces in “brute phenomenal reality” (Manning, 2017). These occurrences are also an element of my proposal to trace nascent arcs of what may become an “Anishnabe geography of eels” by solidifying the images and information that came from the visitations to other realms guided by the sea, the sky, and intergenerational *doodem* relations. I recognize that for some, dreams are tedious and uninteresting, and yet repeatedly multiple forms of mentorship and guidance suggested that these are important inclusions to the fieldwork. They constitute findings of their own and speak to the relational responsibilities I described in chapter 3.

Having time to focus on my own internalization of isolated experience in the end was a benefit, i.e., the dream maps. I believe the clearing of time invited an opening in space and embodiment for other forms of intervention. This helped me to address the “kinesthetic impacts of colonialism” (Brunette-Debassige, 2018) through breathing exercises, writing poems, taking walks and swims, and participating in other activities that inform the study. I needed to learn patience, embodiment, and faith.

5.4 Conclusion

In describing the dramatic decline of eel populations throughout New York State and beyond, Limburg and Waldman use the term *ecosocial anomie* to describe the situation, defined here.

[Ecosocial anomie] is a breakdown both of expectations of what species should be present in healthy populations, and societal loss of interest... not only the loss of populations and species but also the loss of services

the species provided when their inland ecosystems were more intact (Limburg and Waldman, 2009, p. 964).

I suggest this '*ecosocial anomie*' of degraded environments absent of eels is connected to the epistemicide of Indigenous legal traditions and land-based practices. Non-Indigenous societies and their citizens live in the imprint of settler colonialism superimposed over the genocidal scorched Earth campaigns that removed prior generations and societies from their historic homelands.

Residents of today may have no idea that they are occupying a site of intergenerational disaster or the depth of violence that resulted in the statehood which makes way for their home. One participant (survey #2) talked about wanting to change the way that conservation regimes think about and "do" eel science.

The scientific community is starting to get a pretty good picture of monitoring juvenile glass eels as they come into coastal estuaries each spring. The timing and techniques are pretty good, whether linked to commercial elver harvest or just for science purposes. But we really do NOT have a good handle on the number and timing and details of adult silver eels leaving the watershed. I think this is an area where the 'two eyed seeing' of using cultural knowledge in concert with the Western scientific tradition. I don't think we can truly get at 'how eels are doing?' without getting deeper knowledge of place and over time, on levels that conservation science timelines just aren't enough. In areas lucky enough to have deep cultural connections to eels, those connections have to be respected, encouraged, and employed to answer the questions about eels.

In pursuit of the "unified knowledge" (Deloria, 1999) demonstrating relationships with eels over time, I follow de Sousa Santos who refers to creating "ecologies of knowledge" (2018, p. 275). The ecologies of knowledge in this chapter arrive from vastly different groups, a discussion of 'intercultural translation' (Santos, 2014) in practice. Returning to Veracini's suggestion that settler colonialism can be metaphorically understood as a type of bacteria, which "attach[es] to surfaces and form[s]

aggregations” (Veracini, 2014, p. 623), those aggregations can be likened to the locally specific ways that populations develop their governance and land occupation modes. Land governance modes for settler colonial and extractivist populations involves the subjugation and contamination of water, and the passive and active violence of killing and harming aquatic species including eels.

The replication of settler colonial lifeworlds continues to dominate environmental governance and yet “relationships must change... bacteria can and should evolve” (Veracini, 2014, p. 630). Veracini suggests that “mutualist relations” can and should form from awareness of the ways in which the abusive encounter replicates in behaviour and thought. In this and the previous chapter my approach uncovered “mutualist relations” (Veracini, 2014) to form “unified knowledge” (Deloria, 1999) about eels which is accomplished through visiting, exchange, and storytelling with participants.

I have structured my research findings in a particular way. I knew that I needed to meet the criteria of naming my research site and explaining the methods that I used to come to the conclusions that support my overall claims in the dissertation. In the introduction of this chapter, I met the basic requirements that are required by the institution’s guidelines: naming the site, location, and method. In the subsequent 3 sections, I applied my theoretical framework of being grounded in Anishnabe ontological framing and relationality.

I shared my embodied experience of being in place, in relationship with *nibi*, (water) *maymayginebig*,(eel) and *mnidoog* (mysteries). I proposed that my work with others constituted the formation of a “transformative third space” (Bartmes and Shukla, 2020) that arose from working in hybridity and difference. I remain consistent with the

intent to engage in “life affirming practices” (Borrows, 2018) by learning from and with those who participated in my study. I tied my suggestions and observations about how *dodemiwan* might be carried out to my fieldwork practice by including the ensouled world of dreams and ensured that I followed Anishnabe protocol by including *meegwaywin*/gifts (Fontaine, 2020) which are part of reciprocity to the land and to others. Scholarship in the “Anishnabeg research paradigm” (McGregor, 2018; Chiblow, 2021) related to women’s water governance and knowledge (Chiblow, 2019; Anderson, K., 2011; Luby, 2020) is a stream that informs my work, and is related to *dodemiwan*, “grounded in land-based power...a decentralized system generated and maintained by Indigenous people themselves” (Awasis, 2020, p. 840). Here I have sought to learn from my *doodem* in environments where they are the central focus for groups of people who share a common interest in their lives, through research, experience, or other vocations.

As I demonstrated in my short fieldwork story, in some settings, eels are the target of mistrust, abuse, disdain, fear, and repulsion. They are despised for their slimy overcoating of mucus, feared due to irrational association with snakes, or the source of disappointment for fishers who catch eels if they are a “non-target species” (Reid, et al., 2019) that then is discarded and killed for no reason; another way that Indigenous people “have to contend with other peoples’ ideas of how relationships with the waters are framed” (McGregor, 2014, p. 496). This is true for relationships with many elements and life expressions.

Political ecologist Wendy Harcourt offers the phrase “differential belonging” (2020, p. 1331) to describe how people might respond to their surroundings from different lifeworlds. While “doings with the land and sea” (Barker and Pickerell, 2020)

are experienced differently, differential belonging is a phrase that “brings a more complex, subtle, dynamic understanding of communing that incorporates an interest in the (im)possibility to comprehend what is silenced/erased” (Harcourt, 2020, p. 1333). The combination of different lifeworlds enabled a rich engagement with place and with people, that helped me to form a number of possibilities in my mind which I discuss in the next chapter.

Some of the participants who I talked and visited with on the Hudson were well aware of colonialism’s impact on the landscape, the “pioneer lies” (Wysote and Morton, 2019) of the region, and the forced relocation of Lenape communities. This to me, suggests that the prior eras of assimilative land seizure and the attempt to eradicate Indigenous presence through “bioassimilationist” (Wolfe, 2006) measures of settler colonial domination have been unsuccessful. Siriwardane and Hornidge discuss the complex interactions of lifeworld, researchers, and reflective practice by tracing the concept’s ability to explore the realities of marine and other ecologies: “lifeworld-inspired sensibilities also offer nuanced understandings of powerful yet invisible materialities” (2016, p. 10).

Differential belonging is a welcome and accurate label for what I experienced when visiting with my study participants, despite our very different lifeworlds, we found common ground. Our bonds were forged in considering how eels are part of an “*ecocsocial anomie*” (Limburg and Waldman, 2009) where they are not valued, and where they experience undue disrespect. People I talked with thought that eels must be valued and understood with dedication and respect. “Recovering place” (Johnson,

2012) that respects eels would constitute a very different, transformed world, one which I personally required ancestral support to begin visioning.

Chapter 6 Conclusion

You say that you are sent to instruct us how to worship the Great Spirit agreeably to his mind, and, if we do not take hold of the religion which you white people teach, we shall be unhappy hereafter. You say that you are right and we are lost. How do we know this to be true? We understand that your religion is written in a book. If it was intended for us as well as you, why has not the Great Spirit given to us, and not only to us, but why did he not give to our forefathers the knowledge of that book, with the means of understanding it rightly? We only know what you tell us about it. How shall we know when to believe, being so often deceived by the white people? Brother: You say there is but one way to worship and serve the Great Spirit. If there is but one religion; why do you white people differ so much about it? Why not all agreed, as you can all read the book? *Sagu-yu-what-ha* (he keeps them awake) Seneca Nation, Wolf Clan (quoted in Nicholas, 2014, p. 56-57).

These are the words spoken by *Sagu-ye-what-ha*, He Keeps them Awake, in response to a missionary request to proselytize Christianity in the villages of the Haudenosaunee people in 1805, in present day New York State. Settler colonial emergence in and through disruption of Indigenous lifeworlds, I have argued, is a cognitively formed series of structures and matrixes that have long-ranging effects in the material world. This is a famous speech of a famous event and reflects some of the long-standing ontological divides between worldviews based on domination of one group and the assimilation of others so characteristic of settler colonialism.

Indigenous Peoples carry ancestral memory living in generations, and many Peoples carry beliefs about deriving from a spiritual source, a Creator who provides and instructs people on how to live well with the Earth. Indigenous knowledge, for Anishnabeg, also emphasizes the importance of critical thinking and personal sovereignty. That sovereignty, which comes from the Creator of all life, is evident in the expressions spoken by *Sagu-ye-what-ha* in his speech. The confusion brought by Christian missionaries served to create disharmony between Peoples; similar existential

and cognitive confusions remain to this day. Collective reality for Indigenous peoples has dramatically changed as land use patterns and relationships have been modified through colonial resettlement, and cognition of all kinds has been affected and influenced by history, will, and circumstance.

Sagu-yu-what-ha, also known as Red Jacket, was a Wolf Clan chief of the Seneca Nation whose oratory skill has been studied as exemplary evidence of Haudenosaunee governance structures and practices.²⁵ Red Jacket was speaking as a representative of the combined thoughts and perspectives of the relatives in his community. Orators, in Haudenosaunee practice, are appointed and speak following processes of collective decision-making and discussion through exercising principles of the Great Law of Peace (Hill, 2017).

This speech shows that, often, the goal of Christianity-based forms of missionary proselytizing in Indigenous communities was embedded with a goal. That goal was to change the way Indigenous peoples think, to modify their belief systems and assimilate them into a Christian worldview. The words of *Sagu-ye-what-ha* demonstrate the reality inherent to today's Indigenous lifeworlds seeded long ago: "sovereignty has not in fact been eliminated. It resides in the consciousness of Indigenous peoples" (Simpson, 2014, p.20). Consciousness and temporality are relevant considerations here. I have suggested that Anishnabeg operate in their own temporality and lifeworld, informed by ancient teachings including the Seventh Fire, an orientation that is spiritual and material, conceptual and experiential.

²⁵ See Ganter, G. (2006). *The collected speeches of Sagoyewatha, or Red Jacket*, Syracuse University Press.

In his speech, Red Jacket further suggested that his communities already established and settled on their understanding of how to honour the Great Spirit and it was not a matter of debate; there was respect for collective pluralism and respect for multiple relationships with the spiritual realm. The introduction of division and confusion is a matter of “cognitive injustice” and the seed of “epistemicide” (de Sousa Santos, 2014) which has foundationally altered living conditions for many Indigenous populations today.

Importantly, though, I am not advocating a simplistic victimhood here. I do not support the suggestion that Indigenous societies are hapless victims who have been forced into anything. There are serious matters of historical choice, circumstance, and complexity to navigate, especially in relationship to spirituality and its practices in Indigenous communities. The discussion is relevant here because Red Jacket’s speech occurred during a specific space and time: one where robust dialogue and debate was common between parties. Enactment of Indigenous governance, represented by the Great Law of Peace, and in response to the colonizing bodies of settlers foreign to Turtle Island continues, and yet—this moment in time represented the pluralism which existed among Indigenous societies. Importantly—recall that Haudenosaunee peoples are an alliance of six distinct nations, each with subgroups arranged by clan and families and other forms of social ordering. The message imparted here was that they respected spirituality in a collectively peaceful and pluralistic understanding. Pluralism is an important lens toward understanding the “story medicine” (Miner, 2013; Archibald, 2008) embedded in the many phases of an eel’s life cycle.

I have talked extensively about the impact of settler colonialism on environmental processes, and less about spirituality. Mentioning spirituality here is important because spiritual worldviews and matters are such foundational elements of Indigenous societies and knowledges in many cases—especially for Anishnabeg. Anishnabe studies is a field that stands alone, a node within a wider framing of Fourth World studies which is arguably tied to spirituality. My work is connected to those systems of knowledge which flow from Anishnabe cosmology, a world guided by directional orientation (the Four Directions) as well as the involvement of *mnidoog* (Manning, 2017; Corbiere, 2020) which is sometimes translated as spirit, among other forms of Anishnabe-specific guidance. I spent considerable time outlining what that means and why I choose this path; the second and third chapters of the dissertation are devoted to framing interventions to ‘Indigenous geography’ and related fields from the tools and conventions of Anishnabe research and scholarship. Eels and water both have a spirit and part of my duty is to respect and learn from each, in material conditions and on spiritual terms. The dissertation is a contribution to expressing the depth of the ‘lifeworld’ and how elements of the lifeworld inform the physical presence of being in place and in relationship—with water, with time, and with research about eels.

Future directions

I sought to develop concepts for future study: I am interested in contributing to the definition of an Anishnabe geography, and even more specifically, an Anishnabe geography of eels. The first, an Anishnabe geography, would begin with the story of Anishnabeg Creation and other elements of Creation stories, and would require robust engagement with multiple Elders and knowledge holders from different areas familiar with Anishnabe cosmology including localized lands and sites, places with agency.

Stories and information in Anishnabe studies flows from “land, language, sacred history and spirituality” (Pitawanawat, 2013) and thus the knowledge is co-developed.

To develop an Anishnabe geography of eels, there are existing maps I allude to, specifically the map in chapter 4 from Benton-Banai which suggest that there is a migratory orientation to consider which loosely correlates with aspects of eel migration. However, I also think that other dimensions including beneath the ocean and in the star realm would need to be part of developing this geography for an “Anishnabe geography of eels” particularly because eels work with the stars and celestial realm for movement cues and other forms of direction. It also requires highly localized interactions with place and people who are knowledgeable about an area and its historical carrying capacity of eels and other aquatic life. These represent future directions of study which I intend to develop.

There is a storied body of literature that supports my assertions about the destructive nature of settler colonialism; entire disciplines are devoted to scholarship and practice that analyses its impact and the impact of related colonization and hegemonic structures. Political ecology and environmental justice are potential avenues through which “differential belonging” (Harcourt, 2020) might be a useful foundation to reveal the “agency of place” (Kassinger and Todd, 2020) reflected through multiple positionalities. There is important caution for Indigenous researchers working in these disciplines; ontological essentialism is a cognitive trap that does not serve the interspecies ‘liberation’ that might constitute de-tethering from settler colonialism. The interventions of Belcourt (2020) and Watts (2020) to critical animal studies and animal geographies, respectively, demonstrate that Indigenous ontological framing supports a

wide frame of reference that is unoppressive and inclusive to multiple ways of being for Indigenous peoples and their knowledges whose contributions in the academy are often overlooked.

The face of assimilation has both changed and morphed over time, and the structures of settler colonialism continue to evolve while its impact on land and water seeps into other categories of existence. Settlers insistent on the reconfiguring of land to suit agricultural production and an extractive, capitalist economy have often been tied to religious institutions such as churches. Their lifeworld relies on the capital accumulation that comes from converting “natural resources” into currency (Willow, 2019).²⁶ The process has been ongoing for hundreds of years and in recent decades the plight of *Anguillid* eels in North America has been a clear reflection from that suite of cumulative effects.

Like Indigenous peoples, policies and practices affecting *Anguilla rostrata* have been ‘driven toward extinction’ (Jellyman, 2021). ‘Extinction’ discourse, as it dominates some forms of Anthropocene study, suggests that there is a finite scale of resistance and the impossibility of futures otherwise.

‘Extinction’ is a deliberate strategy of largescale, sustained eliminative violence intended to eradicate Indigenous other-than human peoples. These forms of violence compound the breakage of laws...by eliminating one or more of the parties to treaties, laws and protocols; displacing Indigenous human and other peoples who uphold those

²⁶ Said another way, Bohaker (2020, p. 192) clarifies that large, non-Indigenous populations create an overwhelming strain on the environment; settlers “did not just dramatically increase the area’s population; newcomers came intent on remaking the area into an income-generating agricultural landscape” which affects the viability of *doodem* relations. She also references the Anishnabe belief that “ensouled beings are connected to the animals or plants that give Anishnabe doodem kin their name and their existence, a habitat needed to be able to support all of the beings bearing that identity, both human and other-than-human” (ibid. 193).

laws; and blocking the transmission of living knowledge that enables these acts (Mitchell, 2018, p. 918).

While *Anguilla rostrata* are not extinct, current trends suggest the possibility of extinction as their eventual destiny. They have certainly been extirpated and reduced throughout countless areas in North America. In this dissertation, I reflect some of the “scientific, cultural, and social” (Tsukamoto and Kuroki, 2014) dimensions that link their decline to global processes of modernization but also highly localized in policy decisions that depend on Indigenous dispossession, assimilation, and erasure. Dam removal represents one way to rethink and restore relationships with water, place, and Indigenous histories.

Hitt, Eyler, and Woford (2012) found that “dam removal confers ecological benefits for fish conservation and management across large spatial scales” (p. 1178). Their results suggest that dam removal has benefits that, for eels, extend beyond the immediate barrier in rivers, and reach ‘far into headwater areas’ (ibid., 1177). Dam removal also has benefits for other benthic feeders and across other communities of fish. Camhi et. al (2021) tagged migrating eels in the Bronx River and found that dams are a factor that harms or kills migrating eels, although some do survive (p. 1137). Curry et. al (2018) developed a multifaceted framework to develop a decision-making process in Canada to analyse decision-making processes that would support dam removal. Shah et. al (2012) suggested that large dams are part of globalization processes that mark national and territorial claims; the “process of nation-building... mark(s) the alliance between regional, national and international political, private and financial powers” (p.1025). They tie resistance against dams and globalizing forces to ‘social

justice' and 'ecological sustainability' which are different but complementary aims for Indigenous self-determination and environmental justice on a global scale.

North America has been, in places, repopulated through genocide and forced relocation of Indigenous populations, processes initiated to naturalize settlers and their infrastructures. Watershed modifications, in the early days of settler colonies, were seen as "improvements" to the land which made it more suitable for agribusiness (Sellers, 2016). Processes modified natural patterns in water and installed new structures, reflecting a desire to control land and water through materiality. Settler colonialism is of course material. It requires specific forms of constructed space and institutions, beginning with the reconfiguration of ecologies. It is also contemporary and immediate, informed by later aesthetics such as 'authoritarian high modernism' (Scott, 1998) or AHM which is the foundation of much infrastructure seen today as 'sophisticated.' AHM holds a claim of authority to suggest that it knows best and that it will "improve the human condition with the authority of scientific knowledge and...disallow other competing sources of judgment" (Scott, 1998, p.93).

Coloniality and the 'coloniality of being' (Maldonado-Torres, 2007; Wynter, 2003; Mignolo, 2-15) is not only cognitive, but cognition is where it begins. Coloniality facilitates the construction of a "habitus" (Convery, 2008; Bordieu, 1991) that erases and reduces the gravitas of Indigenous ecological knowledge. My work contributes to seeing 'directly lived' expressions of cognitive and material structures that facilitate "epistemicide" (de Souza Santos, 2014), which also produces disconnect between generations of eels and generations of people. The impact of settler colonialism "denigrates the sacred in all of us" (Laduke and Cowen, 2020, p. 244) which is

especially pertinent to eels as members of Indigenous historical memory which I discussed in chapter 4.

In Canada, there is a public discourse of “reconciliation” which can support Indigenous-led conservation (Beazley and Olive, 2021; Nikolakis, 2021). In the United States, there is growing awareness that dams cause harm to ecosystems and many of them need to be removed. Tribal governments and citizens have a role: “tribal involvement in dam removal provides a lens through which to investigate the emergence of new political, cultural, and ecological spaces in river restoration efforts” (Fox, et al., 2022, p. 32). New insights that integrate Indigenous perspectives form tools with which to create broad frameworks. Specific projects can be seeded and grown from addressing these historical iterations of colonizing infrastructure. Visions and actions toward wholistic ecosystem restoration and benefit-sharing can be developed to support “two eyed seeing” (Marshall, et. al, 2021) along with cultural revitalization, improved social relations, and other webs of interconnected social and environmental determinants.

Environmental healing and ‘reconciliation’ (Borrows, 2018) is a type of interspecies justice that also addresses epistemicide and “settler tautology” (Wysote and Morton, 2019). This requires a ‘multi-jurisdictional collaboration’ (Busch and Braun, 2014; Hitt, Eyler, and Woford, 2012) to include a land-based analysis of functional and non-functional dams, the feasibility of removal and dismantlement, and the possibility of eel ladder installation where applicable. State and conservation regimes typically manage this kind of thing, and yet—input of other actors is needed as well.

There is a growing movement in the UK and elsewhere that focuses on rewilding (SEG, 2018) and this work, for *Anguilla rostrata* can be supported by the evidence and advancements made in other areas that improves the lives of *Anguillids* through restoration, conservation work, and rewilding, all of which in my framing require a foundation of Anishnabe women's water responsibilities. Investigating how and why conservation regimes have adapted indigenous technologies (such as fish weirs) is another question; these represent future directions where my work will continue.

Growing in the Anishnabe research paradigm

Current environmental governance regimes contain complex dimensions of hierarchy embedded in the territorial claims of nation-states. There is documentation of gendered inequity through forced patriarchy, ecological destruction, and induced poverty and movement restriction for Indigenous peoples. This can create a type of institutionalized helplessness in those whose territories are occupied through the structure and who are positioned disadvantageously within it. I have suggested that, for Anishnabeg, attention to one's *doodem* can support what Acoose calls a "re-creation of Being" (2011). By placing a frame around the specific relationships that are part of one's individual homelands ancestry, relationships, and responsibilities, land and water are recast as the center of the framing, not the settler colonial structure.

Studying one's *doodem* offers a way to find a way into the mess of it all.

Anishnabeg and other Indigenous communities occupy spaces and nodes in time that are connected to other ways of living that circumvent settler colonialism. Awasis has suggested that 'temporal justice' is a way to enact what they call "Indigenous multi-temporalities" which "emphasize aspects of Anishnabe space-time that may be helpful for...carrying out work in temporal justice and Indigenous self-determination" (2020, p.

839). Prophecy, Elders' teachings and Anishnabe temporal orientations are the arcs through which a doorway emerges, one that makes room for *doodem* relations to be a guidepost for interpretation and activation of Indigenous legal traditions and legal systems. Anishnabe ethics suggest avoidance of wounding animals, and inherent, embedded responsibilities to engender wellness in all interactions with animals—and with all life. This is represented in the role of tobacco in research (Danard and Restoule, 2010) as well as through the careful engagement of thinking through methods of learning as a growing flower (Absolon, 2009). There is magnificent transformation and yet delicate, gradual growth, just as in the life cycle of an eel.

This delicate balance, *minobimaadiziwin*, is a challenging concept and way of living. It is also what was given to Anishnabeg as a way of navigating life with Earth. The world that has been constructed through settler colonial influence denies the role and reverence due to the *mnidoog* and to the spirit of life itself. It denies the female nature of the Earth and denies the personhood of water, it denies that place has agency, that designated sites such as burial grounds are sacred, that the landscape is a living web of relations that have supported generations of ancestors. Trauma inflicted on water (McGregor, 2015) is not given recognition and the healing of waters is not supported as a way of framing environmental wellness. These ideas about place, agency, healing, and water are all included in my methodology because water is the home of eels. In order to heal our relationship with water, awareness needs to be made about the condition of water. This can be accomplished through careful attention and relationship with place, including the nonhuman.

I have built my framework from an “Indigenist” (Capuder, 2013) position with “Anishnabe Peoplehood” (Pitawanakwat, 2013) as foundational in my approach, I have also outlined some of the contours where the work fits in a larger frame of reference. I hypothesized that people might be able to learn from eels. I suggested that eels are a medicine, and that cognition informs material conditions, that addressing epistemicide (Santos, 2014) is accomplished through embracing and extending complexity for “intercultural translation” (ibid.).

The chapters in this thesis have sought a framing toward multiple forms of justice: spatial justice; Indigenous environmental justice; epistemic justice; cognitive justice; temporal justice. They have engaged a very specific read on a wide body of materials from of several schools of thought to reflect a place in the “pluriverse” (Escobar, 2017) inclined toward recognizing complex relationships, interconnections, and ideas based on “Being Anishnabe” (Acoose, 2011). I contribute to Anishnabe studies by demonstrating that there is an alive, established body of evidence to support connections between Algonquin-Anishnabeg and eels, an area which has been under-researched and has potential implications for developing Indigenous-led conservation projects and relationship renewal. Renewing relationships with eels offers possibility for joining other efforts to create ethical and restorative land practices and water governance in response to ongoing and emerging anthropogenic threats.

I also contribute to the revitalization of Indigenous legal traditions by sharing intimate, embodied details of experiences connecting to and relating with my *doodem*. Building on the frameworks of Indigenous legal traditions, which have grown in decades of teaching and scholarship (Benton-Banai, 1979; Borrows, 2010; McGregor, 2015;

Mills, 2016; Jewell, 2018; Awasis, 2020; Craft and King, 2021; Stark, 2021) I offer an embodied analysis of how the legal principles and practices showed up in my research. Each person within the *dodemiwan*/clan system has the capability to do this; they can research and understand what makes their clan's "story medicine" unique and specific in dialogue with the living Earth and all the helpers of *Kzhemnidoo*.

I want to caution here that engaging with this type of knowledge is a form of sacred inquiry and has many protocols and processes requiring personal relationships and input and guidance from knowledge holders, sacred societies, and those who are sanctioned to act as mentors and helpers in accordance with Anishnabeg norms and social expectations. Yet, colonization has fragmented our knowledge and so there is much to learn in terms of finding graceful and honest ways of going about such searches and journeys. I do not consent to my work being used to support contributing to the confusion and inversion of the world. I have been overly transparent at times because I do not want to contribute to false identity claims. I adhere to and recommend respectful engagement with Indigenous knowledge, embracing the Anishnabe legal principle of humility (Borrows, L., 2016) as well as honesty and truth (Stark, 2021; Benton-Banai. 1979).

All the work in this thesis combines experiences provided and facilitated by the *mnidoog* who support Anishnabeg. This methodology grows from an Anishnabe ethic: "journey is one of mutual recognition—a connection is forged" (McGregor, 2015, p. 75). The same is true for applications of *doodemag*: despite many pressures, the animals of Anishnabe clan systems continue to exist in the interconnected "pluriverse" (Escobar, 2014) where these relationships are ongoing. Relationships with place, water, and

animals are the purview and right of Anishnabeg. Indigenous peoples have been the first to experience the ill effects of ecosystem disruption and are often the last to receive support in addressing environmental issues.

[Indigenous communities have] ...long advocated that the conservation and restoration of native species, the cultivation of first foods, and the maintenance of spiritual practices that require the existence of plants and animals of particular genetic parentage whose lives are woven with ecologically, economically, and culturally significant stories, knowledges, and memories (Whyte, 2018, p.207).

The loss and decline of many endeared life forms continues, while Indigenous communities continue to advocate for their human and basic rights. There is seemingly no end to the evidence of these abuses, forming a sort of spectacle in social media, news, and other outlets where Indigenous debasement is commonly seen in outrageous expressions of injustice. I refer to this as media clownery and see its patterning as another way to denigrate Indigenous peoples claims: to Peoplehood, to territory, and the right to self-determination.

As Oji-Cree MP Sol Mamakwa of the Kingfisher First Nation posted on social media on 6/28/21, to advocate not celebrating Canada Day following the revealing of mass graves of children buried at residential schools, “every Canadian pays a price for our shared history... Indigenous peoples have paid in full with our lives, our families, our languages, our way of life, and our spirituality” (Mamakwa, 2021). Mamakwa’s words call all people to serve our respective communities, and to act on an “ethic of repair” (McLaren, 2018) in complex circumstances which Anishnabeg might call the “Seventh Fire” and others might call the “Anthropocene era.”

Mamakwa’s words also demonstrate that Indigenous environmental justice is tied to these systemic histories of trauma, dispossession, and horror –even if Mamakwa

doesn't call it that, what he describes—spirituality, way of life, families, languages—are all connected to Indigenous environmental health. The “ethic of repair” (McLaren, 2018) that offers a role for all people has to do with repairing holistic ecologies that are affected by and entrenched in systems and infrastructures of coloniality. Eels demonstrate, through all the geographies they inhabit and waters they travel, the fragility of ecosystems and the importance of thinking through geographic concepts like scale, on the one hand, and range, on the other. They also are concrete indicators of cumulative effects over time that reflect changes both subtle and dramatic.

Teachings of eels

The modeling of Tsukamoto and Kuroki (2014) who recommended that eel studies encompass cultural, social, and natural sciences with several offshoots, is foundational. Included are conventions like mythology but also environment and economics as interrelated factors affecting eels. The center of their model, the urgency, is in conserving and supporting the survival of the species. Each discipline I work with has its own distinct and importantly rigorous foundations. I choose to blend them in this way because this is how I understand working with some of the nonphysical medicines of eels; they teach and instruct how to be partially in one place and partially in others, always en route, always changing, always dynamic, at the same time, always connected to worlds beyond.

In each place, migrating and metamorphosing eels demonstrate “directly lived” (Pierce and Martin, 2015) space and environmental conditions and the agency of place. Witnessing degraded environments opens up an awareness for a greater sense of interconnection and scalar impact an “emotional ecology” (Sultana, 2015) that is in need of directed care ethics. Caring for place and being attentive to what is seen and

experienced in place enables the application of Anishnabe legal concepts and expectations for conduct, such as humility, love, ancestral guidance, and patience, to specific settings. My story in chapter 5 demonstrated that conservation ethics do not always encompass this realm; recall from the literature review that Danard demarcated health and wellness as having four attributes: “mental, physical, spiritual, and emotional” (2010) which means that for Anishnabe environmental ethics, emotions are part of a holistic framing of wellness. Human emotions in place may extend from the ‘agency of place’ (Kannsinger and Todd, 2020) which affects human perception and experience. The places I visited showed different levels of care, ecosystem integrity, indifference, and desecration. There were many takeaways from site-based visits, and there was serious challenge in integrating the many insights learned on and with land—in contrast to those learned through collaborating with others and needing to adapt to screen time.

For example, in forming the “transformative third space” (Bartmes and Shukla, 2020) that I discuss in chapter 5, I needed to re-form my empirical chapters to demarcate that there were several overlapping conversations in my fieldwork studies, each requiring a different approach and creating the need for separate chapters and sections that addressed context-specific circumstances. This was a humbling choice that was much easier done by lumping everything together, but doing so would reflect impatience, and it would also disrespect the work. Grounding in Anishnabe law, thought, and philosophy emerged in pursuit of knowledge and, “cognitive justice” (Santos, 2018) that is contextually understood and framed from the lifeworld and cosmological orientation, resulting in a complex project with many interlocking pieces.

Limitations

There were many limitations in this study, beginning with my small, very targeted sample size. The epistemic differences of myself with participants risks oversimplification, misunderstanding, and mistranslation. I have done my best to avoid this, of course. In terms of method, there was decreased access to group space and facilitating the kind of dialogue that I wanted to i.e., talking circles and other forms of interactive, relational engagement. I talked to many of my participants through a mask, through a screen, in fragmented segments that were also informed by the stresses of ongoing pandemic conditions. I also only talked to people who worked with eels in positive ways. I did not acquire a contrasting opinion or seek one, other than the woman who emerged in the fieldwork story of chapter 5.

There was a lack of outreach to and formalized participation by Indigenous Elders and knowledge holders. There were specific reasons for this in consideration of the restrictions of the COVID 19 pandemic, respectful of community needs and public health concerns. The study itself, the fieldwork travels, surveys and interviews, are limited by my background and training, which are not in science and technology, and instead favor approaches from social sciences and humanities.

Yet, I am called to attention of the ways in which scientific inquiry, including conservation implements (electrofishing, etc.) and 'biopower' (Siriwardane, 2019; Foucault, 2008; Braverman, 2015) are proposed as ways to manipulate and facilitate interaction with eels, and/or take life from eels. This is accomplished through disrupting them, surveilling them, extracting material from their bodies on the one hand, and by injecting hormones into them on the other. From my view, underpinnings of both biopower and 'authoritarian high modernism' (Scott, 1998), which both seek to mediate

and control life in different ways, are woven into emerging and established research about eels in ways that may not always have benefit.

The way I have organized and analyzed the content of my fieldwork studies and reviews of literature has a logic and structure but is much less formalized than other structures used in social science and other forms of research. Research designs often seeks to create replicable results, create innovative and reusable frameworks, etc. In my work, I did not accomplish that. I drew from frameworks of others and formed multiple interventions into established discourses to mirror the constantly moving and changing nature of an eel's migration and metamorphosis.

However, I do also make contributions. I contribute to Indigenous geographies by following the line of thought from Jay Johnson (2012) who suggested that phenomenological approaches need to be taken up in geographic research and legitimized as forms of knowing and being in place. I defer to *mnidoog* intervention in explicit and unseen decision-making about my work. I discuss the creation of what I call "dream maps" and place-dreaming as a practice in the wider frame of an ongoing, constant, legitimate and expected form of interaction for all Anishinabe.

I also responded to Daigle's "spatial politics of recognition" to settler colonial sites of occupation, unintentionally but in an aligned way. I don't need academic articles to tell me what to do, but I noticed that as I followed protocols while traveling to Lenape, Mi'kmaw, and other territories, I was corresponding with some of Daigle's suggestions about how to view and circumvent coloniality. There are foundations for future studies that integrate environmental history and place-based learning for a renewed sense of being in place through "differential belonging" (Harcourt, 2020) within human circles and

scaling into the nonhuman as well. Visibility is needed for the many relatives who are harmed by the current order of things with the eel as a central focus. This is one way that reciprocity for all the gifts of life can be returned, from my view; “to be alive is always to be obliged and involved” (Rose, 2012, p. 134).

Eels reflect the ‘fixed’ order of the cosmos, represented by the interlocking factors and attributes including the Four Directions established in Anishnabe cosmograms (Borrows, 2010; Ryser and Gilio-Whitaker, 2015). A fixed order of does not suggest that change and adaptation are impossible; It simply means that there are guideposts for direction and conduct which correspond to the movement of days, the passage of time, the influx of seasons, and other elements. Life is a process of birth, death and rebirth. Anishnabeg today, living in The Seventh Fire, exist in a time of profound opportunity to regenerate Anishnabe relationships with life, to work for “the rebirth of Anishnabeg nations” (Medak-Saltzman, 2017) and to form new stories about relationships with land, water, and crucially and specifically, eels. Other populations and Peoples may be supportive partners on this journey.

Eels can represent environmental degradation and “state abandonment” (Harvey, 1989) or they can reflect potential for hope and regeneration. Living places represented in this dissertation have suggested that, despite many of the sensational headlines and pop culture commentaries around the inevitable disappearance of eel populations, there is a relatively stable population in some areas which responds well when migration barriers are removed, and when attention is given to their surroundings. Anguillid eels are therefore important markers of our collective relationships with water, with place, and with the ancient migratory journey they undertake, which has nourished

and supported Indigenous societies that thrived by living in different legal framings and ontological underpinnings.

I have suggested that 'love' constitutes the building blocks of human reality. I arrive at this translation through Being Anishnabe and knowing *love* as an embodied state, the foundation of all life. Love is inherent, it is reciprocal, and is represented in two words "*zaagi'idiwin*", and "*zhawenim*" (Stark, 2021, p. 311), both of which involve human relationships with animals, founded in respect and mutuality. This thesis has peered into a deep love for eels and asked what humans might learn from them. As I conclude, I suggest that the journey to learn from eels continues, despite the 'inverted world', into a future of nascent repair and regeneration. Through mutuality, may humans continue to recognize the value and wonder of simplicity and consistency represented by eel migration. Like a flower, may *Anguilla rostrata* continue to regenerate and grow, an expansive rebirth of connections between waters, a rebirth of fluency between Peoples and places.

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Appendices

Appendix i: Guiding interview questions

1. When did you first encounter eels?
2. When did you begin to interact with eels?
3. How long would you say humans have been interacting with eels in your area?
4. Are there any stories about eels that guide your relationship to them?
5. Have you seen changes in the environment that affect the lives of eels?
6. Would you say that eels have played a role in the history of your community?
7. Do you feel that eels have anything to teach humans?
8. In our modern context, eels and other fish are seen as having value that is specifically linked to money. Do you think there are other ways of valuing eels?
9. Does your knowledge of eels extend into geographies outside your immediate area?
10. In some areas, eel numbers are increasing, and in some areas, eels have been absent for several generations. Do you have any thoughts about these shifts?
11. Many people say that overfishing has caused major problems for eels and other migratory fish. What is your perspective on overfishing?
12. Hydroelectric dams are said to be a major barrier for eels. Do you have thoughts or experience related to the installation or maintenance of dams and how they affect eels?

13. Habitat alteration is said to be increasing in some areas in connection with global environmental/climate change. Do you see these as a threat or a benefit to the life cycle of eels?
14. What do you think can be done to help enhance opportunities for eels to survive?
15. Are efforts to help eels restricted to your area, or is it a wider effort?
16. Is there anything you would like to say specifically about the future of eel life cycles?
17. What do we need to remember about eels?

By participating in this study, you may be contributing to important discussions related to environmental governance and resource management, and your perspective may be presented alongside other groups who have similar interests. The study may serve as a catalyst for further integrations of policy work alongside or among Indigenous peoples related to caring for eels in a reciprocal way.

Voluntary Participation and Withdrawal:

Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer, to stop participating, or to refuse to answer particular questions will not influence the nature of the ongoing relationship you may have with the researchers or study staff, or the nature of your relationship with York University either now, or in the future.

If you decide to stop participating, you may withdraw without penalty, financial or otherwise, and you will still receive the promised inducement.

In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible. Should you wish to withdraw after the study, you will have the option to also withdraw your data up until the analysis is complete.

Intellectual Property:

Any knowledge you share about fish, fishing, waters and other aspects of your culture and history are acknowledged as belonging to you and your web of relationships. You will be consulted about how to best represent this knowledge in any written or digital materials.

Confidentiality:

- Unless you choose otherwise, all information you supply during the research will be held in confidence and unless you specifically indicate your consent, your name will not appear in any report or publication of the research.
- The data will be collected by handwritten notes or video/audio tapes on a digital recorder. Handwritten notes will be kept in a locked office and digital data will be safely stored in a password-protected hard drive. Only the researcher will have access to this information.

- The data will be stored on a private device and in private storage until December 2021, at which point digital data will be erased from storage and handwritten notes shredded.
- Confidentiality will be provided to the fullest extent possible by law.
- The data collected in this research project may be used – in an anonymized form - by members of the research team in subsequent research investigations exploring similar lines of inquiry. Such projects will still undergo ethics review by the HPRC, our institutional REB. Any secondary use of anonymized data by the research team will be treated with the same degree of confidentiality and anonymity as in the original research project.

Questions About the Research? If you have questions about the research in general or about your role in the study, please feel free to contact me by email [lganswor@yorku.ca] or my supervisor, Dr. Patricia Burke Wood [pwood@yorku.ca] and/or (416) 736-2100 Ext: 22448. You may also contact the Graduate Program in Geography [gradgeog@yorku.ca] and/or (416) 736-5106.

This research has received ethics review and approval by the Delegated Ethics Review Committee, which is delegated authority to review research ethics protocols by the Human Participants Review Sub-Committee, York University's Ethics Review Board, and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, please contact the Sr. Manager & Policy Advisor for the Office of Research Ethics, 5th Floor, Kaneff Tower, York University (telephone 416-736-5914 or e-mail [ore@yorku.ca])

Legal Rights and Signatures:

I, _____ consent to participate in "Eels as Teachers" conducted by Leora Gansworth. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

Participant Signature

Date

Signature of Principal Investigator

Date

Additional consent (where applicable)**1. Audio recording**

I consent to the audio-recording of my interview(s).

2. Video recording or use of photographs

I, _____ consent to the use of images of me (including photographs, video and other moving images), my environment and property in the following ways (please check all that apply):

In academic articles	[] Yes	[] No
In print, digital and slide form	[] Yes	[] No
In academic presentations	[] Yes	[] No
In media	[] Yes	[] No
In thesis materials	[] Yes	[] No

 Participant Signature
3. Consent to waive anonymity

I consent to the use of my name in the publications arising from this research.

 Participant Signature

Appendix iii: To Carry Life

To Carry Life

Anything that comes from the water
 return the bones to that water
 I held her in the grip of my two fists
 her body writhed
 in the space between my hands,
 the space between her head and her edges
 all of her wriggling to be free

The wars amongst them occur in my name
 before I was born, dollars accepted
 deals made, futures &
 failures of imagination. I pay for all of this
 The rage of short sightedness is what I speak on here

Someone said, the womb
 is a protector. She protects herself
 from the influence
 of impure conceptions. And so I was born

Crinkled, inert, body lays on the floor
 for months perhaps years, oh some babies
 did not survive, and the men who seeded them
 melted away, fire-scorched
 they disappeared into a pool of writhing neon

Babies, still, would have been an extension of my life
 so there is mourning, there is my mourning
 to match the mourning of the land, faith says
 they are well where they went

With this life I carry on, whale spray, sun spray, protected
 nascent mist on the horizon
 of each new day. Before me
 my grandmothers carried my future bundles
 in their *jiiimanaag*, they managed the rivers
 with their biceps

On discovery of haunting
 I tell you I say that I'm not well I tell you
 that I am lost and stood on the shoal of the ocean
 Stood on an edge where to negotiate with myself
don't cling to this life was the voice of reason
 or other self

