COMPARING PERCEPTIONS OF NATURE IN LAND-USE AND CONSERVATION PLANS AT THREE SITES OF VIOLENCE AGAINST THE DOUBLE-CRESTED CORMORANT

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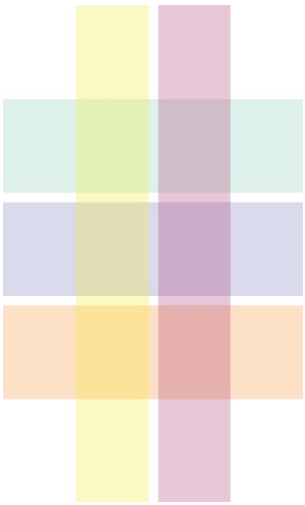

ABSTRACT

The central goal of this research is to clarify the roles of land-use planning and conservation planning in the human-nature relationship. To do this, I analyze the language used to describe nature in land-use plans and conservation plans at three sites in the Great Lakes of an age-old conflict between humans and one particular form of nature, the double-crested cormorant.

Some human-wildlife conflicts are so persistent that they require renewed investigation across many human generations to move closer to reconciliation and human-cormorant conflict is one such as this. Land-use plans provide a novel perspective on this conflict, a conflict which is currently only addressed in conservation plans. I found that nature is not thoroughly addressed in in the land-use plans in this study. Yet, land-use planning is a major force that influences human-nature relations. Through its maps, goals, and recommendations planning prescribes the way people interact with, and think about, nature. However inadequate nature's representation in land-use plans may be, they are nonetheless an interesting place to look for insight into human-nature relations.

Land-use plans do not usually deal with specific human-wildlife interactions, and I knew this going into the research. The investigation therefore needed a counterpoint, so I included conservation plans, which deal directly with human-wildlife interactions. Together, these two types of plans manage the human-nature relationship. I found that where land-use plans treat nature in broad, general terms, conservation plans treat nature in specific, detailed terms. The conceptualization of nature in each type of plan is very different. In the paper I ask how language might affect the human-nature relationship. In particular, I look at the way humans describe their relationship with species that cross a plan's boundaries, such as double-crested cormorants.

This research aims to help land-use and conservation planners imagine, and write, the human-nature relationship otherwise. This relationship is currently structured by an anthropocentric hierarchy, but that must change if we hope to resolve conflicts like the one

between people and cormorants, or reach larger environmental sustainability goals. When humans and nature have a relationship structured by equality and reciprocity, cormorants may no longer be culled. Of course, this change must occur in culture as much as in plans, if not more. But plans have creative power as world-building endeavours. A plan casts an image of the future into the present. It is a form of collective imagining. This research, an investigation of the power of language, can encourage planners and policy writers to consider the words they use as a source of creative power that influences society's relationship with nature.

FOREWORD: CONNECTING POLITICAL ECOLOGY TO PLANNING

My Plan of Study, “Planning Through Political Ecology”, is designed to develop expertise in environmental planning through a political ecological framework. Environmental planning and political ecology are both concerned with issues that involve environmental ideologies, but each discipline has a distinct way of approaching these issues. Environmental planners apply environmental ideologies to land and resource development projects through assessments, reports, and policy. They act out environmental ideologies as government administrators. Political ecologists study environmental ideologies by looking at the relationship between the political, social, and biophysical realities of a place. These analyses contribute to a critical understanding of human-nature relations. Political ecological analyses offer an environmental planning student a unique path towards a comprehensive understanding of what I understand now to be a professional planner’s role and power in the human-nature relationship.

This study, which provides a critical analysis of the role of planning in mediating the relationship between humans and nature, supports the development of this expertise. It compares two types of plans from three places that are home to double-crested cormorants and their human neighbours. All three places are sites of conflict between cormorants and humans, where the relationship between people and nature is shaped by violence. The central question is, “What part do plans have in this violence?”. Answers to this question provide a better understanding of the way planning influences the human-nature relationship.

I have specific ideas about how that relationship should be. These ideas are far from the relationship’s current status. Changing the relationship between people and nature from hierarchical and extractive to equal and reciprocal is central to my interest and purpose in environmental planning, and it is the reason my degree is focused on political ecology.

DEDICATION

To the double-crested cormorants of Toronto's Leslie Street Spit, for being beautiful, loud, and odorous.

ACKNOWLEDGEMENTS

Thank you,

To Gail Fraser, my supervisor, for sharing your expert knowledge on cormorants and wildlife management, for your dedication to this form of nature, for your practical advice and encouragement, and for all the editing.

To Laura Taylor, my advisor, for the pep talks, critical feedback, editing and steadfast support.

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To Lane Myer, for helping me connect old learning to new.

To Mom, for your love and long phone calls.

To Dad, for teaching me how to think differently.

To Bonny, for seeing me. And babysitting.

To Hart, for teaching me how to let go.

To Jamie, for everything.

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PREFACE

Perspective. It is a writer's responsibility to inform their reader of their relationship to the knowledge they are presenting. This enables the reader to have a clear understanding of writer's point-of-view. Declaring one's positionality to knowledge is an epistemological practice that many Indigenous nations have been engaged in for millennia. Professor Julian Robbins introduced me the importance of positionality in creating knowledge in his class *Reshaping research with Indigenous peoples,* in the winter of 2020. Our guiding text in that class, *Indigenous Research Theories, Practices, and Relationships*, (McGregor, Restoule, & Johnston, 2018) describes the position of a researcher relative to themselves, their subject, and their audience:

> "The researcher is nested in concentric circles of relationships. The researcher must consider their relationship with self, with family, with those that provide guidance in carrying out the research, with the research participants, with the broader community, with the ancestors and future generations, with the environment and land, and with the Creator (drawing upon Suchet-Pearson, Wright, Lloyd, Burarrwanga, & Hodge, 2013, pp 20-36). Because researchers are constituted by their relationships, and their research is the relationship between themselves and the knowledge they are seeking, a researcher must begin by exploring their own location and subjectivities…knowing the researcher's location allows others to assess the researcher's credibility, and thus the validity of the research. It also makes the researcher conscious of their biases (drawing upon Kovach, 2009, p. 26). What usually emerges from locating oneself is an understanding of one's reasons for undertaking the research (drawing upon Absolon, 2011, pp. 22-42)" (2018, p. 11).

It is to these ends that I introduce myself here.

Hello. My name is Samantha Anderson. I am a white settler writing from Toronto, Ontario, a land with a millennia long history of care and connection by many Indigenous nations (Talking Treaties Collective, 2023). I came to Toronto in 2017 and have since been learning about my Treaty responsibilities to this land. I have Elder Garry Sault, Chief Dave Mowat of Alderville First Nation, Dean Jacobs of Walpole Island First Nation and Professors Dayna

Scott and Andrée Boiselle of Osgoode Hall Law School to thank for my introduction to treaties during the Shared Path Symposium and Annual General Meeting on September 13, 2019. Other guides in this relationship have been Professor Deborah McGregor of Osgoode Hall Law School and Jayce Chiblow of the Indigenous Peoples and Environmental (In)Justice team at York University, whose programs, symposiums, discussions, and resources have been invaluable. Most recent contributors to my understanding of Toronto's history, and my place therein, is the Talking Treaties Collective who published *A Treaty Guide for Torontonians* in 2022 and hosted (in collaboration with York's FEUC) a seminar series, *Polishing the Chain,* which I attended throughout 2021 and 2022 (Talking Treaties Collective, 2023).

I was born in Salem, Massachusetts, a coastal town on the eastern edge of North America with its own millennia-long history of Indigenous nations, including the Wampanoag and Nipmuc nations (Massachusetts Office of Travel and Tourism, 2023). My father grew up in the same area, though his great grandfather came to this continent from Scandinavia, which is where my name derives. My mother grew up farther south on the east coast, in Bayshore, Long Island, New York. Her grandparents were refugees of the Jewish Pogroms in Poland, and immigrated to the United States in the 1920's.

My father's mother, Norma, was an artist, avid birder, and entrenched hippie. She was a dedicated environmentalist, feminist, and mountaineer. She survived a climbing accident in her early twenties and went on to bear three children and summitted many peaks (some with me) before her time came in 2013. Her maiden name was Hart, which I have given to my new son in her honour.

My mother's mother, Joyce, was a psychologist and cultural critic. She was, like my father's mother, a dedicated feminist. She was, like many women, a frustrated intellectual force. Her acuity was palpable even talking about minutiae over the phone, and undiminished by eight decades of life. She took responsibility for her grandchildren's cultural education, and I have her to thank for some of my most beautiful experiences. She died of COVID-19 just a few weeks after Hart's birth, in January 2021.

I came to the research for this paper a year after the confluence of these factors--pandemic, death, and birth. These were lessons in the limits of control as a way of relating to any form of nature. My research proposal had been designed before I had the experience of losing control over my interior and exterior worlds. I had written a proposal which took for granted the power and primacy of policy and plans as tools for controlling nature, and therefore focused my inquiry on the impact of plans and policies on the treatment of one particular, controversial species. But when I actually began my research in 2022, my questions moved away from analyzing the impact of policy and planning on one species toward analyzing the ideological foundations of policies and plans toward nature at large. Eventually, I located ideological meaning within the language of plans, the documents which enact environmental regulation, and traced the route back from language, to ideology, to the human-nature relationship. In my investigation I found plans that were embedded with the relational assumption that humans are separate and above nature, a point-of-view which lacks recognition of, and respect for, nature's powerful agency. Pandemic, pregnancy, birth, and death shattered this delusion in my personal life, and brought its existence to the fore in my research. The effect was to tune my forthcoming research into a key of humility.

INTRODUCTION

Nature—defined in this paper as any non-anthropogenic force of life---does not readily capitulate to human attempts at bordering and containing. These control methods are easily resisted. Sometimes it is a mundane resistance: rivers cross borders, birds migrate, raccoons eat garbage, foxes make dens under our decks. Sometimes it is an awesome resistance: a microscopic virus upends the global economy and social structure. Some forms of nature flare our fear and anger more than others. One such form is a bird called the double-crested cormorant. Over generations of conflict, humans have devised elaborate methods to attempt to control this bird, including shooting and egg-oiling. A long history of legislation, policies, and plans tell the story of these control attempts. Despite a lack of scientific justification (Artelle, et al., 2018; Seefelt, 2018) and inadequate ethical foundation (Batavia & Nelson, 2018) violence is still the most prevalent method used to control double-crested cormorants.

The double-crested cormorant is a colonial waterbird, meaning it lives in large colonies or groups near water (Dorr, Hatch, & Weseloh, 2020). Cormorants are conspicuously good at fishing. Their guano is both very smelly and very acidic, defoliating the trees on which they roost (McDonald et al., 2018; Wires, 2014). Colony sites can look a little apocalyptic to human eyes, with their leafless trees and glossy, black birds stumbling around, wings outstretched, squawking (Wires, 2014). Leading cormorant scholar Linda Wires writes, "The distinctiveness of the double-crested cormorant, its truly exceptional fishing and architectural abilities, and its tendency to concentrate in great numbers are features that have strongly influenced how the bird has been perceived by humans. Its unique appearance has inspired fear and disgust, and its fishing skill has inspired anger and hatred. Its transformative powers are judged destructive, and its populations have been deemed far too large" (Wires L. , 2014, p. 39).

Wires' landmark book, *The Double-crested Cormorant Plight of a Feathered Pariah,* tells a detailed history of human-cormorant relations since European colonists descended upon North America in the seventeenth century with their particularly violent and extractive environmental ideologies. Though cormorants survived the initial European onslaught, a time when "seemingly infinite numbers of finned, furred, scaled, shelled, and tusked creatures were harvested until their populations vanished or became remnants of what they once were" (p. 49), double-crested cormorants did not receive relief from human persecution until 1972 when the U.S. *Migratory Bird Treaty Act* was amended to include them, among other species (p. 88). The *Migratory Bird Treaty Act* and its associated legislation in the U.S., Canada, and Mexico turned out to be an effective shield from human persecution that, in combination with other changes in human behaviour like the use of pesticides, encouraged an increase in cormorant populations across the continent. As the twentieth century neared its end, however, generations of humans had interacted with landscapes devoid of any significant cormorant population and the birds' population growth was not welcomed by all (p. 95). A new cormorant management regime took hold, driven by the cultural, political and economic interests of humans competing with cormorants over fish, landscape aesthetics, and habitat for other, protected species. The U.S. government issued multiple standing depredation orders to legalize lethal cormorant management by

state authorities or private citizens under certain conditions (p. 163). Wires describes the cumulative effects from the 2004 Public Resource Depredation Order: “Across much of the eastern United States, feeding areas, roosting sites, and breeding colonies were transformed into killing fields…The exact number of cormorants legally destroyed in the United States since the first depredation order was established in 1998 is not known, but reasonable estimates indicate that by the end of 2011 the number had exceeded some half million birds [and] an untold number of nests and eggs were destroyed” (Wires L. , 2014, p. 159).

In July 2021, the U.S. Fish and Wildlife Service increased cormorant management in the U.S. to allow expanded “take” activities by State or Tribal fish and wildlife agencies with a special permit for double-crested cormorants. The aim of the special permit is to “reduce or prevent conflicts associated with cormorants” over aquaculture, human health and safety, impacts to threatened and endangered species, damage to property and assets, and depredation of public fish stocks (U.S. Fish and Wildlife Service, n.d.)

Twenty-first century cormorants in Canada have not fared much better than their U.S. kin. In Ontario, provincial authorities have increased cormorant reduction strategies as well. First, in 2016, the government removed legal protection for cormorants from the *Fish and Wildlife Conservation Act*, 1997 (Ontario Ministry of Natural Resources and Forestry, 2016). Then, on July 31, 2020, double-crested cormorants became a game bird subject to an open hunting season from September 15-December 31 (Ontario Ministry of Natural Resources and Forestry, 2020). The bag limit and possession limit for double-crested cormorants is higher than any other game bird in the Province. The hunting range includes all 95 of the Province’s Wildlife Management Units, a geographic scale unmatched by any other game bird in the province (O. Reg. 670/98, Table 7, 2023).

Ontario removed legal protection from the double-crested cormorant and opened a public hunting season despite the advice of experts and widely accepted scientific evidence that cormorants are rarely the cause of ecological woes (Artelle, et al., 2018; Batavia & Nelson, 2018; Seefelt, 2018; Wires & Weseloh, 2018). In an open letter to Minister John Yakabuski and Premier Doug Ford , 51 ecologists, fisheries scientists, and natural resource managers

responded to the government's decision with a detailed critique of the cormorant hunt, including severe ethical and ecological consequences. The authors point out that Ontario's cormorant hunt is ethically untenable and violates "two of the seven principles of the North American Model of Wildlife Conservation. First that wildlife should only be killed for a legitimate, non-frivolous purpose. Second, that scientific management is the proper means for wildlife conservation." The authors of the letter also point out that, "If 0.5% of small game hunters reached the daily limit for ten days that exceeds the estimated breeding population in Ontario. Further, there was no indication that reporting by hunters will be required, so how will the numbers of cormorants taken in a fall harvest be assessed?" Perhaps their strongest condemnation of the hunt came in laying out the clear logical fallacy of "addressing concerns about impacts to local ecosystems by cormorants" with a province-wide rather than "targeted, localized management" by allowing the "removal of an unknown number of cormorants from locations where no problems may even exist" (Fraser & et.al., 2020).

Lethal management of the double-crested cormorant in North America has been marked by violence and vitriol not fully explainable by the rationale of resource competition with humans (Dorr et. al., 2020; Wires, 2014; McDonald et.al., 2018; Batavia and Nelson, 2018; Seefelt, 2018; Duffy, 1995). As Hatch (1995) describes it, people have been given over to "mindless animosity" for the double-crested cormorant since the mid-seventeenth century. Time and again economic and cultural problems, particularly the *perception* of the double-crested cormorants' impact on ecosystems, are commonly cited in management rationales. This negative perception can lead to a situation where wildlife management agents find themselves choosing to manage one species' population, i.e., the cormorants, to protect that of another. Cormorants are often managed to protect habitat for other species, who are often listed as endangered or otherwise threatened. Cormorants can also be managed to prevent changes to a preferred, protected, or threatened ecosystem/landscape (Dobbie & Kehoe, 2012; Parks Canada, 2020; Payne, 2012; U.S. Fish and Wildlife Service, 2012; U.S. Fish and Wildlife Service, 1997). But, the definitions of endangered species, biodiversity, and other widely accepted criteria of ecological integrity are always political, even when those definitions are informed by scientific knowledge. A hunting association, wildlife advocacy group, government conservation authority, and local property owner will each have

their own definition of what species belong where. This is a salient example of human cultural and political interests guiding what scientific knowledge is employed, and when, in wildlife management decision-making. Thus, wildlife managers find themselves working towards political goals rather than scientific ones (Decker & Chase, 1997; Mascia, et al., 2003; Raik & Wilson, 2006; Riley, et al., 2002).

If we accept that most management decisions regarding cormorants are in some way tied to the cultural, political, and economic interests of humans, we must ask whether managing cormorants is the best way to resolve perennial conflict between cormorants and humans. For example, while cormorants do eat a lot of fish, they are not alone responsible for declining fish stocks. Human behaviours also have an impact on fish. Let's imagine Lake Ontario. In and around a lake, the following (incomplete) list of human activities impact aquatic habitat and fish stock: shoreline hardening, eutrophication from nutrient loading (e.g., sewer overflows, fertilizer run-off), climate change and ensuing acidification and rapid water level fluctuations, salinification from road salt, illegal dumping, over-fishing, boat traffic, and underwater pipelines (Watkins, 2022). Compared to the impact of fishing by double-crested cormorants, it is self-evident that cormorant control activities for the sake of fish stocks are a misplaced effort. The same observation applies to cormorant management for cultural landscape preferences and habitat. This is where the human-cormorant relationship connects to land-use planning. Gail Fraser, wildlife biologist and my research supervisor, succinctly describes the relationship between cormorant management and land-use planning in an interview on an episode of the television series, The Nature of Things. Standing amidst the chatty cormorants and their chicks on Toronto's Leslie Street Spit, Gail says, "The reason there is conflict over habitat is because we have deforested most of Southern Ontario and we put great value on these remaining green spaces. It's a human-driven problem, it's not a cormorant-driven problem" (Lamer, 2020).
With human interests central to wildlife management policy and human impacts on ecosystems at an all-time high (Ellis, 2018), what business do we have managing cormorant populations and behaviours instead of our own?

This question brings us to land-use planning, which is precisely involved in regulating human behaviour in relation to the land and led me to my research question: what role does land-

use planning play in the management of double-crested cormorants? I began by looking at the literature to find out how planning and wildlife management scholars see the relationship between their practices.

Academia has long called for change in both wildlife management and land-use planning to incorporate the knowledge and expertise of the other. Spatial planners in various practices have been looking for ways to make their work ecologically sound (Beatley, 2014) (Dale, et al., 2014; Glikson & Mumford, 1972; Lemes, 2019; Selman, 2004; Steiner, Young, & Zube, 2014) and the importance of ecological knowledge in land-use planning is well established (Yli-Pelkonen, 2008; Forman, 2008). In tandem, wildlife managers/conservation planners have long acknowledged and explored the need to account for human behaviour, politics and culture in ecosystem planning and conservation (Decker & Chase, 1997; Decker & Purdy, 1988; Kearney, Berkes, Charles, Pinkerton, & Wiber, 2007; Mascia, et al., 2003; Ostrom, 2001; Raik & Wilson, 2006; Riley, et al., 2002; Schusler, Chase, & Decker, 2000). Many scholars have also explored ways in which land-use planning and conservation planning/wildlife management might coordinate their ideas and practices (Beatley, 1995) (Marsh, 2014; Taylor & Cadieux, 2012; Forman, 2008; Selman, 2004; Glikson & Mumford, 1972; Foster, 2010; Mulrennan & Bussières, 2020; Turner, Spalding, & Deur, 2020; Lemes, 2019; Raik & Wilson, 2006).

Change has been called for with good reason: both professions are responsible for managing society's relationship with nature, and are often writing policy that affects the same physical spaces and communities. Working separately is therefore counter-productive, and ensures the continuation of the human-nature binary which is so central to North American ontology (Cronon, 1996). The separation between humans and nature can be disastrous at least for forms of nature like the double-crested cormorant. In a relationship where humans exist outside of and above nature, and where different authorities are responsible for managing each party in that relationship, it is a matter of simple logic to solve a conflict in by forcing a non-human being to change to suit human interests. In other words, until these cultural, political, and bureaucratic paradigms change, it will continue to be more rational to manage a "conflict species" (U.S. Fish and Wildlife Service, 2012) than to manage humans.

Despite decades of academic work calling for change, little change has come. My study shows that collaboration between land-use planners and conservation planners/wildlife managers has yet to be taken up in practice to any significant degree. And, unsurprisingly, conventional double-crested cormorant management continues to expand. My study provides an illustration of the relational problem between humans and nature in the twenty-first century, a problem which many scholars have located in colonial ontologies and epistemologies. (Cronon, 1996; Cushman, 2013; Deur & James, 2020; Kimmerer, 2013; Kovach, 2009; Loo, 2006; Moola & Roth, 2019; Mulrennan & Bussières, 2020; Suchet-Pearson, Wright, Lloyd, Burarrwanga, & Hodge, 2013; Turner, Spalding, & Deur, 2020). In his landmark essay *The Trouble with Wilderness* (1996), William Cronon writes about the ideological separation of humans from nature in the concept of "wilderness". Wilderness is an entity from colonial ontologies, and a structural element of both the land-use and conservation plans in my study. The conservation plans use legal definitions of "wilderness" to justify management decisions for specific species on behalf of entire ecosystems and the land-use plans inscribe the nature-culture dichotomy into the landscape through tools such as the well-known zoning map. Together, Western conservation planning and wildlife management have excluded North American societies from an integrated ideological and physical relationship with their natural environment (Cronon, 1996; Deur & James, 2020; Zelko, 2014). Indigenous research has provided a critique of this Western, colonial ontology which makes it clear that a healthy, functional relationship between humans and nature cannot exist in a culture and governance structure which places the needs of humans opposite and above those of nature (McGregor, Restoule, & Johnston, 2018; Kimmerer, 2013).

In Western colonial planning and environmental management frameworks, human interaction with nature is managed and regulated by technical teams in state administrative departments. The division of labour/knowledge between spatial planning and wildlife management allows professionals to do their work without regard for impacts on any entities that are not included in their purview. Planners draw the boundaries of their plan's concern by including and excluding certain entities. If cormorants are un-written, they do not exist and are not of concern to the document, whatever impacts human behaviours may have on

them. The technocracy of North American governance systems privileges ways of thinking and writing that are determined by exclusive knowledge-sets, which are obtained by administrators through much time and expense, despite attempts at socializing education (Cushman, 2013). The tone of language used to describe a subject demonstrates how the author(s) think about that subject. Because plans are instructive documents, tone of language also tells the reader how to think about the subject. What subjects are included or excluded from a plan, the way those subjects are described, and the instructive purpose of plans are elements of discursive power wielded by land-use and conservation plans.

To track cultural and political influences in land-use planning and double-crested cormorant management, I designed this study to look closely at language. I chose discourse analysis as a qualitative research method for its "rejection of the realist notion that language is simply a neutral means of reflecting or describing the world, and a conviction in the central importance of discourse in constructing social life." (Gill, 2011, p. 2) and because discourses hold a particular kind of creative power (Dryzek, 2013, p. 10), in this case power over the fate of cormorants. The purpose of a discourse analysis is not to prove ideas correct or incorrect, but "to engage in critical comparative judgment, to apply evidence and argument, and to hope that in so doing we can correct some errors, and so move toward better overall understanding of environmental issues and problems." (Dryzek, 2013, p. 13).

Western ideologies of nature are not just threatening double-crested cormorants, but humans too. In this paper I bring attention back onto humans as the appropriate subject for management by any government agency. I highlight land-use planning's potential role in making such a change, and conservation planning's role in making the concerns of nature accessible to all. My research suggests that scientific knowledge of nature might be better used to manage the human side of the human-nature relationship, with the hope that the false dichotomy of humans and nature will dissolve in that process. My comparison of the language used to describe nature in land-use plans and conservation plans at three sites of actively managed double-crested cormorant colonies in the U.S. and Canada provides evidence of the cultural and political factors that contribute to the violence that plagues the human-cormorant relationship. Analyzing language also points to opportunities to create change in the field, even in the face of unfriendly political regimes. Plan and policy writers

may be constrained by legislation, but every plan in this study was written by people governed by one political administration or another and yet each plan manages to communicate a unique culture of nature through its language. I hope my study encourages planners and policy writers to think about power that exists in the language they use to do their work. I hope some can find space in linguistic decisions to resist legislative constraints and redirect attention from managing wildlife to managing people. This approach could, eventually, relieve wildlife managers of their more distasteful duties, freeing up those scientists to apply their incredible knowledge and skills to more noble pursuits. It might bring our settlements closer to the vision of ecological planning and decolonization for which so many scholars have called. This research is my contribution to the society that I wish to live in, one which has reciprocal, nonviolent, integrated relationship with nature.

METHOD

My study is a multi-case discourse analysis in six planning documents. For each of three, actively managed double-crested cormorant colony sites in the Great Lakes region I chose one land-use plan and one conservation plan for analysis. This study design is a combination of two methods: case study research and discourse analysis. A case study, as Creswell and Poth define it in their text *Qualitative Inquiry and Research Design Choosing Among Five Approaches*, can either refer to method or a subject-matter. In this study, it refers to both. A multi-case study uses "multiple case studies to illustrate the issue." (Creswell & Poth, 2018). The double-crested cormorant sites formed my cases as subject-matter and their associated plans formed the source material. Discourse analysis is the process I used to pull linguistic data from the source material. I then engaged in "analysis of themes" and "cross-case analysis" (Creswell & Poth, 2018), where the multi-case study became process instead of subject-matter. In the "cross-case analysis", I focused on what patterns and relationships I observed in the data to interpret meaning and build a theory. This analytical strategy is used in techniques of Grounded Theory (Corbin & Strauss, 2008) and discourse analysis (Gill, 2011).

To choose my case sites and their associated plans—my source material—I underwent a process of elimination based on the following criteria. Through background research on

double-crested cormorant nesting sites across North America, and long discussions with cormorant expert and wildlife biologist Gail Fraser, I narrowed in on the Great Lakes as a region that could provide me with a lot of material (both cormorants and humans are concentrated on the Great Lakes, and conflicts between them are well documented), and control for broad geographic, political, and cultural conditions. One significant criterion was my own location and perspective--I live in the Great Lakes and am therefore embedded in and familiar with the culture, politics, and environment of the region. In the Great Lakes, I was able to choose cases where all cormorant sites were islands, within distinct legal jurisdictions, and all actively managing double-crested cormorants. I used similar thinking to choose the source material for each case. After gathering a variety of planning documents from both land-use and conservation planning for each site, I narrowed down the documents to which I would apply discourse analysis by looking for plans which related to the cormorant colonies in the same way. I found that all three cases had regional land-use plans that included the islands in their maps and conservation plans which recorded the cormorant management at each site.

The data collection process for each of these plans followed descriptions of discourse analysis by Rosalind Gill in her chapter "Discourse Analysis" in the book *Qualitative Researching with Text, Image and Sound* (2011). Broadly, this process is characterized by three steps: 1. Critical reading 2. Coding and 3. Analysis. I collapsed steps one and two by reading each document multiple times to gather data on one code each time. This resulted in five readings of each plan. I collected the data in a spreadsheet for each document which was organized by code. While reading, and after completing coding for each plan, I wrote notes and summaries to keep track of any thoughts and themes that I observed during the work.

I chose my codes based on Paul Dryzek's "Checklist of elements for the analysis of environmental discourses" from *The Politics of the Earth Environmental Discourses.* These elements are: "1. Basic entities recognized or constructed 2. Assumptions about natural relationships 3. Agents and their motives 4. Key metaphors and other rhetorical devices" (Dryzek, 2013, p. 20). I added my own fifth code, value of nature. This gave me five codes,

labelled as follows, for which I gathered data from all six plans: 1. Ontological entities 2. Relational Assumptions 3. Agents 4. Metaphors/rhetorical devices and 5. Value of nature.

I organized my source material and data by case through the data collection process, but to begin analysis, I combined everything into one spreadsheet or matrix so that I could see the data from each case next to each other. I read and moved around the data in this multi-case spread sheet many times, cross-referencing original documents and filtering out irrelevant information. Eventually I added contextual information for each case into the matrix, so I could look for relationships between case conditions and data results. This contextual information on each plan included data such as geographic context, legal context, author/contributors, and intended reader.

My notes and summaries became important touchstones as I formed an impression of each case's particular representations of nature according to the language in its plans. The first product of my analysis was a condensation of these notes/summaries/initial matrix readings, illustrated by Figures 4.1-4.6 Linguistic Impressions.

Gill (2011, p. 9) describes the third step of the discourse analysis process, analysis, as

> "being made up of two related phases. First there is the search for pattern in the data. This will be in the form of both variability (differences within and between accounts) and consistency. Secondly, there is the concern with function, with forming tentative hypotheses about the functions of particular features of the discourse, and checking these against the data (Potter and Wetherell, 1987). Of course, presenting it like this makes it sound easy, and it glosses over hours of frustration and apparent deadends. In practice, identifying the patterning and functions of discourse is often difficult and time-consuming."

The first phase of my analysis included working with and reading my data matrix, and creating Figure 2. When I confronted the second phase, forming hypotheses about the function of particular features of a discourse, I made myself two tools.

These two tools were designed to measure two patterns that I found in the first phase of analysis: particular forms of nature and specific tones of language describing nature.

The first tool, designed to measure the presence and absence of certain forms of nature was a checklist which I applied to the data from each plan (see Figure 2). The list contained the following eight "forms of nature" which I marked if found in the data, or left unmarked if absent from the data. I derived these "forms of nature" from observations I made reading Figure 1. I noticed certain forms of nature were common, and others which I am familiar with from academic research, were absent. The examples accompanying each form are the ideas that I used to interpret the data when deciding how to mark each plan's "forms of nature" checklist. To determine which forms of nature each plan included or excluded, I re-read each plan and its corresponding data, asking myself if I noticed any forms of nature like those listed in the examples below. 1) Economic resource: e.g., agricultural soil, mineral deposits, or blue-ribbon trout streams.

2) Cultural resource: e.g., National Historic Landmarks like Walden Pond or Ontario's official flower white trillium.

3) Spiritual resource: e.g., Oak Flat, a mesa in Arizona where Apache women perform the Sunrise Ceremony or Mount Sinai, where the God of Abrahamic religions passed down commandments.

4) Wild space: e.g., Yosemite, West Sister Island, "places where nature still calls the shots" (United States Department of Agriculture Forest Service, 2023)

5) Threat to be managed: e.g., invasive or hyperabundant species, erosion, odours, decomposing matter. Anything that threatens human health or preferences.

6) Collaborator: e.g., a being that commands respect, an equal, a co-creator of the world.

7) Being with rights: e.g., endangered species, migratory birds, vulnerable ecosystems. Nature enshrined in law.

8) Independent agent: e.g., a non-anthropogenic force with which humans must contend: weather events, climate, hydrological cycle, or ecological succession.

The second tool, which I designed to measure tones of language describing nature which I found in my first phase of analysis, emerged as the following set of three spectrums upon which I could locate the data from each plan (also see Figure 3):

1. Detailed → Sparse
2. Expressive → Dull
3. Accessible →Technical

I chose the modifiers in these spectrums based on my impression of what elements of style stood out in the data codes Metaphor/Rhetorical Device and Value of Nature and, most importantly, my notes/plan summaries. Linguistic Impressions. I asked myself the same questions of the data across all plans to keep the evaluative criteria consistent in my analysis of each plan's data set. These questions were:
1) Detailed → Sparse: Is nature described frequently throughout the plan? Are the descriptions brief or lengthy, specific or vague?
2) Expressive → Dull: Is nature described with a variety of modifiers, both qualitative and quantitative? Do the descriptions communicate emotion? Is there poetic, romantic, or ideological language used to describe nature?
3) Technical → Accessible: Are the words used to describe nature jargon or common tongue?

I find the spectrum to be intuitively useful for communicating qualitative information because a spectrum allows data to be placed on infinite points along a continuum based on an interpretation. I see them as inherently flexible and honest about the subjective nature of information being presented. This kind of "rating system" is a method common in social science to measure "people's attitudes, opinions, or perceptions" (Jamieson, 2022).

The flexibility and intuitive subjectivity of a spectrum is well-suited to describing something like tone of language, but not well-suited to comparing cases. I found myself turning around in circles attempting to relate each plan's placement on one spectrum to the placement of other plans on the same spectrum. For example, I would budge the placement of Charlevoix County land-use plan on the detailed→sparse spectrum this way or that as I attempted to locate every other plan on that spectrum. In my mind it sounded like, "Here I have Toledo very close to the sparse end of this spectrum, and Charlevoix County in the middle, but I know that Charlevoix County and Toledo were the most extreme examples of detailed and sparse tone of language amongst all these plans, so maybe I should move Charlevoix a little further toward the detailed end…" This kind of never-ending-negotiating within my own perception of the language in each plan relative to the other plans occurred every time I attempted to compare the results in my matrix. The spectrums were too flexible for me to see any patterns or themes.

To solve this problem, I divided the spectrums into quadrants. Modifier A is always the opposite of modifier B, for example “detailed” and “sparse”. The quadrant where the plan lands indicates how close the data is from the modifier at either end. The resulting classification uses the modifier closest to the quadrant in use. For example, data in the second quadrant on the spectrum of detailed → sparse would be classified as “moderately detailed”. If the sample was in the third quadrant on the same spectrum, it would be classified as “moderately sparse”. The quadrant system allowed me to clearly compare the data I found on tone of language from plan to plan, allowing me to look for patterns in the relationship between all these plans in the same way that I did with forms of nature.

Once I used both of my tools on all six documents, I entered a third phase of analysis, wherein I brought my discourse analysis back into the multiple case-study process. This comparison started with a recursive writing process wherein I prepared a detailed profile for each case and both professions reporting these findings (see Appendix). The idea to present my findings in this “profile format” came from Creswell and Poth’s description of how to integrate analysis themes and contextual information. They write, “When multiple cases are chosen, a typical format is to provide first a detailed description of each case and themes within the case, called a *within-case analysis*, followed by a thematic analysis across the cases, called a *cross-case analysis*, as well as assertions or an interpretation of the meaning of the case” (Creswell & Poth, 2018, p. 100). To complete the “cross-case analysis”, I placed my form typology tool and tone of language classification tool inside a matrix with each site on the y-axis and each plan-type on the x-axis. Having distilled some data down to a scale which I could compare on this matrix, I saw the relationship between language, planning, and human-cormorant crystallize on the page (See Figure 2 and Figure 3).

Creswell and Poth describe one defining feature of case studies as “conclusions formed by the researcher about the overall meaning delivering from the case(s).” (Creswell & Poth, 2018, p. 98). These conclusions about overall meaning are what I found in the third stage of analysis, and constitute the major ideas which I explore in the next section.

ANALYSES AND DISCUSSION

OVERVIEW

In this section I discuss patterns of representations of nature which I found in the discourse data and analyze how they may connect to other qualities and functions of land-use and conservation plans. The discussion is organized into three major sub-sections which explore these results: *Forms of nature*, *Tone of language describing nature* and *Double-crested cormorants: how it is and how it could be.*

In *Forms of nature*, I compare the variance of form between land-use plans and conservation plans and relate this to each plan-type's authorship and geographic scale. I also explore what the use of different forms of nature indicates about a plan's value-system, or ontology. In *Tone of language describing nature*, I explore the challenges in making meaning from clear linguistic patterns and relations to content. I discuss the place of language within land-use and conservation planning and question the central assumption of this paper, that language can generate cultural change through its constructive functions. In *Double-crested cormorants: how it is and how it could be* I revisit data from both previous sections in relation to double-crested cormorants and explore where such a species, and its perennial conflicts with humans, might fit into land-use plans. I also discuss the recursive effect of language on human-cormorant relations.

A NOTE ON REFERENCES

I refer to the appendix, figures, and tables throughout the discussion to orient the reader toward more detailed information on the observation at hand. Appendix I contains the results of my discourse analysis and cross-case comparison. It is organized into five sections, modelled after what Creswell and Poth describe as "case profiles" (2018). The sections are titled and numbered as follows: 1. Beaver Archipelago, 2. Middle Island, 3. West Sister Island, 4. Land-use plans, and 5. Conservation plans. Each of these sections is divided into subsections which expands on data which is represented in Figures 2, 3, and 5. Tables 2.1-2.5 and 3.1-3.5 providing examples of data on forms of nature and tone of language directly from the original sources in this study. This allows the reader to compare the same qualitative information that I did in my analysis, to see whether they agree with my

evaluation. Discourse analysis is often done by teams of people so that they may cross-reference individual interpretations of qualitative data to generate a pluralistic analysis that speaks to multiple points-of-view. My study is limited to analysis by only one mind, my own, and therefore relies on the reader's critical opinion to create meaning.

Finally, a note on colour. I assigned each entity in *Figure 1. Six plans: comparative matrix overview* the following colours: green for the Beaver Archipelago, blue for Middle Island, orange for West Sister Island, yellow for land-use plans and purple for conservation plans. The same colours are used in all other figures and tables so that the reader can easily see where any information fits with the larger comparative structure. Thus, Figure 1 is as a key for the other tables and figures.

FORMS OF NATURE

SYNOPSIS

The forms of nature represented in each plan in my study illustrate a perception of nature unique to each site and plan-type. This section of the discussion explores where each plan's particular composition of forms of nature lands within the comparative matrix of three sites and two plan types.

SUMMARY OF REFERENCES

Forms of nature focuses on results represented in Figure 2, Tables 2.1-2.5, and Appendix I. Figure 2 illustrates forms of nature in the overall comparative matrix and includes abbreviations of the comparison results, some of which I expand upon in the discussion below. Tables 2.1-2.5 provide examples of forms of nature in every plan. There are five tables, one for each of three sites and two plan-types. Appendix sections 1.5-5.5are expanded versions of the Figure 2 matrix results, situated within a profile that includes other data associated with the three sites and two cases. I will reference these figures, tables, and appendix sections throughout the discussion.

BREADTH OF FORMS OF NATURE, AUTHORSHIP AND GEOGRAPHIC SCALE

The forms of nature in each land-use plan vary widely from site to site, while the forms of nature in each conservation plan are consistent from site to site. These findings run parallel

with two other differences between land-use and conservation plans: authorship and geographic scale. Even when comparing sites from the U.S. and Canada, the same differences exist between land-use and conservation plans in these three areas (variance of forms of nature, authorship and geographic scale).

BREADTH OF FORMS OF NATURE

Figure 2 provides a quick, visual reference of the differences in breadth of forms of nature, but I will take some time here to pull out multiple ways of looking at this matrix. One way to describe the data in the matrix is: the number of forms of nature that conservation plans include varies by only one across three sites, while the number of forms of nature in land-use plans varies by four forms across three sites. Another way of describing this would be to say that conservation plans are more likely than land-use plans to include the same breadth of forms of nature from site to site. I conclude that land-use plans are site-sensitive with respect to the forms of nature which they include, while conservation plans are uniform in the forms of nature which they include. Note that I also found the same difference in site-sensitivity between land-use and conservation plans again in tone of language data (Figure 3, Appendix sections 1.6-5.6 provide more detail).

AUTHORSHIP

Interesting, and perhaps related, are the differences between each plan-type's authorship. Conservation plans in this study are authored by agents of high levels of government: the U.S. Fish and Wildlife Service/National Wildlife Refuge System or Parks Canada. The land-use plans in this study are authored by county planning commissions, which are made up of a variety of local land-use planning interests and municipal government agents.

A closer look at the Beaver Archipelago provides a clear description of the differences between the authorship typical to both types of plans. The Charlevoix County planning commission is required to be "representative of…important segments of the county such as the economic, governmental, educational, and social development of the county in accordance with the major interests as they exist in the county, such as agricultural, natural resources, recreation, education, public health, government, transportation, industry and commerce. Finally, every reasonable effort shall be made to ensure that membership on the county planning commission includes a member of a public school board…within the

county's boundaries" (Charlevoix County Planning Commission, 2018). In contrast, the planning team for the Michigan Islands conservation plan is composed by the Regional Chief of the National Wildlife Refuge System of "a planning team leader, the refuge manager and key staff members, and appropriate support staff or specialists from both regional and field offices…We will provide representatives from appropriate State and tribal conservation agencies, and any public agency that may have a direct land management relationship with the refuge, the opportunity to serve on planning teams" (U.S. Fish and Wildlife Service, 2000). The land-use planning commission is required to have a diverse group of interests from local government and community while the conservation planning team is required to have an expertise-oriented group of professionals from federal agencies.

GEOGRAPHIC SCALE

Differences in geographic scale might also be related to the site-sensitivity of forms of nature in land-use plans and uniformity of forms of nature in conservation plans. Conservation plans manage ecosystems which extend beyond the borders of their subject sites. For example, conservation plans must consider migratory flyways, regional watersheds, and reproductive cycles of specific species. If conservation plans defined nature from many, localized perspectives there would be greater variation in their treatment of wildlife across the amount of space that makes up an ecologically significant scale. Such variation would render many management goals impossible to achieve. For wildlife management to operate at an ecologically significant scale, it must have a unified definition of nature that can coordinate management decisions across areas as large as continents. With this in mind, it is no surprise that the forms of nature included in the conservation plans in this study are more consistent from site to site than those of land-use plans--if the forms of nature represented in a conservation plan varied as widely from site to site as the land-use plans do, they would be unable to achieve their goals.

Unlike conservation plans, land-use plans are concerned with managing people, and do so at the scales of human settlement and, unlike nature, people's activities will (more-or-less), comply with cultural and political boundaries. This functionality supports the authorization structure in the U.S. and Canada. Both countries use a hierarchy of laws and regulations to coordinate land-use planning at different scales, from neighbourhood to region. In these

hierarchies, the smallest scale of government (generally) has decision making power over land-use that has a high impact on people at the local level, like zoning by-laws. Wide variation in definitions of nature from county-to-county therefore do not render land-use plan goals ineffective—the hierarchical system intended to accommodate variation in local preferences. For example, as Figure 2 illustrates, Charlevoix County includes many forms of nature in its land-use plan while Toledo includes very few. Their purposes (see appendix section 1.4) are also quite different. Charlevoix County and Toledo are close enough to one another that if one were attempting to manage a population of migratory species, it would be impossible to work with such variance between the definition of nature and purpose in either place. These plans are attempting to manage humans not as a part of an ecosystem, but as a part of an anthropogenically defined area. Thus in this study I found land-use plans which have much in common geographically, culturally, and economically but with a site-sensitive representation of forms of nature and conservation plans that share the same common conditions, and yet represent forms of nature more consistently from site to site.

FORMS AND VALUE

The forms of nature that are included/excluded from a plan can be taken to indicate how a plan values nature. In each plan, I interpreted missing forms of nature as holes in the human-nature relationship which that plan embodies and creates. Because managing the human-nature relationship is a basic function of both land-use and conservation plans, forms of nature that are missing from a plan might be a limit on its functionality.

NATURE AS A THREAT AND RESOURCE BUT NEVER AS A COLLABORATOR

One form of nature that I found absent from every plan in my study was nature as collaborator. Nature as a collaborator is a non-human form treated as an equal, with respect and consideration. It is easier to describe what nature as collaborator is not, than what it is. It is not an invasive species, a natural resource, or a scenic view. It is not an inert physical phenomena. It is as much a form of relationship as it is a physical being or phenomena. It is a form of nature with which humans are engaged in a relationship characterized by respect and reciprocity.

The absence of nature as collaborator in these plans indicates that nature is not valued as an equal entity in these plans. Nature as collaborator would be, to use the terms of the typology I am working with, an independent agent that is not also a threat to be managed. Such an occurrence in the plans of this study was rare, indeed, as you can see in Figure 2. The conservation plans in my study demonstrate such consistent overlap between nature in the form of independent agent and threat to be managed that it began difficult to tell the two types apart during analysis. Land-use plans were less consistent in the conflation of these two forms, but only as there was lack of representation of nature as independent agent in the first place. Nature as threat to be managed was therefore a dominant form of nature among all six plans, and its presence could be taken as analogous to the absence of nature as collaborator. Also illustrated by Figure 2 is nature's consistent representation in the form of economic or cultural resource in land-use plans. Nature as economic or cultural resource is a form which describes a relationship between humans and nature where humans receive benefits from nature but do not give to nature in return---decidedly non-collaborative forms of nature. Whether the relationship is extractive or controlling, it is never reciprocal or honest. Again, the presence of particular forms of nature seem to preclude the presence of nature as collaborator. Extractive, domineering relationships are self-destructive. As humans employ crude tools to manage nuanced problems, and take without giving in return, the source of their sustenance is degraded. Nature as collaborator is everything that nature as resources and threats are not, and its absence indicates a dysfunctional hole in all the plans in this study.

NATURE AS WILD SPACE

Another pattern in the forms of nature that I compared between the six plans in this study came in the form of nature as wild space. Wild space, defined in my analysis as land that is excluded from human interference, is integral to all the conservation plans but absent from most land-use plans. The difference between land-use and conservation plans in their representation of this wild form of nature underscores an essential difference between the values of land-use plans and conservation plans. Where land-use planning is focused on human behaviour, conservation planning is focused on wildlife behaviour. In reality, both humans and wildlife exist on the same land. For the authority managing human land-use to disregard wild space is a salient example of the dysfunctional divide between the approach

of these two planning agencies. This ignorance to a neighbouring administration's objectives and actions is not mirrored in conservation plans. The impacts of human land-use on wildlife land-use (habitat loss, habitat fragmentation, water quality degradation, climate change) are consistently reported and documented in conservation plans. The Point Pelee National Park conservation plan directly states its intention to integrate park management with regional land-use planning. Conservation plans are specifically aware of human land-use, but land-use plans are only vaguely aware of wildlife land-use. Such an imbalanced separation between co-managers of one landscape will inevitably create opportunities for conflict between the subjects of each plan type, humans and wildlife.

NATURE AS SPIRITUAL RESOURCE

Nature in the form of spiritual resource is also absent from all the plans in this study, save one. The plan which does include nature as a spiritual resource does so in abstract, vague terms (see Figure 2 and Table 2.1). The absence of nature as spiritual resource illustrates for me another missing piece in the human-nature relationship that these plans construct. Nature has had spiritual significance in human cultures across the Earth for millennia, so its absence in these plans attracts my attention and questions. Furthermore, if plans do not represent the spiritual relationship between humans and nature, they are effectively writing it out of any future relationship. If land-use plans and conservation plans included nature as a spiritual resource, they would illuminate the ethical questions that inevitably come with treating a spiritual resource with the violence that has become the normal course of action for double-crested cormorants and other disliked species.

WITHOUT COLLABORATION OR SPIRIT

I believe these plans, which commonly represent nature as resources and threats but never collaborator and rarely spiritual resource, shape a world where humans undermine the foundation of their own existence. There is no number acres or species that can be protected to make up for such a relationship deficit. For example, I do not think it matters that the mission of the National Wildlife Refuge system is to prioritize wildlife needs when the same system is engaged in ecological triage because the ever-increasing landscape of humans is not planned and built to serve other beings (the central problem on which urban ecology works. See Forman, 2014, p. 28). As wildlife lose habitat to anthropogenic

landscape changes, they become more reliant on the space humans have carved out for their (conditional) use (Cumming, 2016). The pressure on these sanctuary spaces to accommodate wildlife-refugees and be humanity's biodiversity-banks is ever-increasing. If the plans that are meant to manage wildlife can only do so by boundaries and exclusion, our relationship with nature is indeed so impoverished that broader conservation and land-use goals like the United Nation's Sustainable Development Goals become a delusion. The forms of nature that I tracked in the data on each of these plans demonstrates a small slice of the possible perceptions of nature and its true function in human existence.

TONE OF LANGUAGE DESCRIBING NATURE

SYNOPSIS

Like form of nature, the tone of language describing nature in each plan in my study illustrates a perception of nature unique to each site and plan-type. This subsection of the discussion explores where each plan's tone of language regarding nature lands on three spectrums, detailed→sparse, expressive→dull, and accessible→technical, within the same comparative matrix used to evaluate forms of nature.

SUMMARY OF REFERENCES

This section focuses on the data represented in Figure 3, Tables 3.1-3.5 and Appendix I. Figure 3 illustrates three tone of language spectrums in a matrix comparing three sites and two plan-types. The matrix includes abbreviations of the results of comparison, some of which I expand upon in the discussion below. Tables 3.1-3.5 provide examples of tone of language describing nature in every plan. There are five tables, one for each of three sites and two plan-types. Appendix sections 1.6-5.6 are expanded versions of the Figure 3 matrix results, situated within a profile for every entity in the overall comparative matrix. The profile includes other data associated with the three sites and two plan-types that make up this comparative matrix, which inform the following discussion.

SIMILARLY DULL BUT DIFFERENTLY DETAILED AND ACCESSIBLE

The tone of language used to describe nature in the land use plans of this study is usually sparse, dull and accessible while in the conservation plans it is usually detailed, dull, and technical (see Figure 3, and appendix sections 4.6 and 5.6). The common use of dull language to describe nature in both land-use and conservation reminded me of a passage

from Robin Wall Kimmerer's book *Braiding Sweetgrass* where she describes an observation of her ecology students' perception of nature, "…they could not even imagine what beneficial relations between their species and others might look like" (Kimmerer, 2013, p. 23). The consistency of dull language describing nature shines a spotlight on findings in the previous section that collaborative and spiritual forms of nature were rarely, if ever, to be found in any plan (see Figure 2). If land-use and conservation plans don't include nature as a collaborator and spiritual resource, and tend to use dull tone of language to describe the forms of nature which they do include, we can imagine what kind of world these plans will build, and the many things that will be left out of the future of the human-nature relationship.

The plans at Beaver Archipelago stand in the way of any claims that landing on any particular side of these tone-of-language spectrums would have the power to move the human-nature relationship away from violence, or even simply away from an emotionally stunted relationship with nature. Both Beaver Archipelago plans use highly expressive and highly detailed tone of language to describe nature (see Figure 3 and Table 3.1). Yet, they each exhibit hallmarks of an extractive, hierarchical relationship between humans and nature throughout (see Tables 2.1 and 3.1). Also, lethal management of double-crested cormorants in the Beaver Archipelago is intense and pervasive (see appendix section 1.3). The relatively expressive, detailed language and inclusive definition of nature that the Beaver Archipelago plans present is a challenge for the philosophical basis of this study, which takes language to create the world as much as it reflects it (Creswell & Poth, 2018; Dryzek, 2013; Gill, 2011). I am not the first to wonder about the linguistic/values chasm that seems to exist between land-use plans and conservation plans, however. In a policy perspective piece for the Environmental Law Institute, Bruce Stein (Ph.D. at Natureserve) writes:

> "Despite the convergence in ecological interests over the past few decades between the land use planning community and the conservation science community, a considerable gulf still exists between the two groups…At the heart of this disconnect are different cultural norms that characterize the two communities, exacerbated by differing communications styles. Land use planning involves the identification and balancing of multiple values…The scientific method places a premium on objective facts and…Ideas and analyses are expected to stand or fall on their merits, and compromise is not a part of the scientific tradition. As a result, many natural

> scientists engaged in environmental management or planning processes are surprised (and often offended) when their fact-based 'solution' is modified or ignored all together" (Stein, 2007).

The idea Stein expresses turn the meaning of tone of language from creative potential for social and environmental change to communicative potential for social and environmental change. Tone of language data in my study illustrates the gulf Stein describes between these two professions. Perhaps each profession might learn from the language of the other and thus communicate better, share knowledge, and in this way make improvements to the way that humans relate to nature. It is not that plans should describe nature in a detailed or sparse, dull or expressive, accessible or technical tone, it is that conservation plans and land-use plans need to be more similar in whatever tone they use in order for practitioners to work together.

ACCESSIBLE/TECHNICAL TONE OF LANGUAGE AND CONSULTATION PROCESSES

While tone of language may not have the power to protect cormorants from guns, it does provide some insight into the people who contributed to the plan. The difference in accessibility between the plan-types (see Figure 3) often points toward their respective consultation processes. The two U.S. conservation plans (Michigan Islands and Ottawa NWR) focus on experts and officials rather than the general public or local community, and exhibited technical tone of language. Contrastingly, the two U.S. land-use plans (Charlevoix County and Toledo), described consultation processes that were heavily focused on residents and local community leaders and exhibited accessible tone of language describing nature. The Canadian land-use plan (Essex County) reported no consultation process and exhibited a highly technical tone of language describing nature. The only plan which did not follow this trend was the Canadian conservation plan (Point Pelee) which was deeply focused on expansive and continued consultation with local Caldwell and Walpole Island First Nations, yet exhibited a technical tone of language describing nature. An interesting, though perhaps tangent, observation here is the difference in focus between U.S. conservation plan consultation processes (on technical experts), and Canadian conservation plan consultation process (on local, Indigenous nations). Conservation plans in both

countries are written and enacted by federal authorities, the U.S. Fish and Wildlife Service or Parks Canada.

DIFFERENCES IN CONSULTATION PROCESSES

Charlevoix and Toledo land-use plans both dedicate a section to explain their consultation process and reports the results, and both plans attribute the value of the plan to the contributions of the public through this process. For example, Toledo land-use plan was guided and written by a steering committee of 24 community members and reports over fifty neighborhood meetings and additional meetings with businesses and public officials. The very first sentence in the Toledo land-use plan is, "The Toledo 20/20 plan… is the result of two years of public meetings and consultant study" (2020, pp. 1-1). Toledo's vision statement directly references this consultation process. Similarly, the Charlevoix County land-use plan cites a robust public consultation process as providing the guiding principles for its vision, goals, objectives and actions (2018, p. 2). Charlevoix county held visioning sessions, ran opinion surveys, an electronic questionnaire, and kept the public apprised of drafts through a public website.

Contrastingly, the Essex County land-use plan provides no report on any consultation process. It states that "County *Council* and local municipal Councils shall actively encourage meaningful public participation by seeking the opinions and the advice of First Nations, Metis, individuals, and community and stakeholder groups in the on-going task of implementing, monitoring, and reviewing this Plan…County Council and the local municipal Councils shall ensure that the public is adequately notified and consulted" (2014), but doesn't report undertaking these consultations, let alone reference their results in the overall value of the plan.

Like Essex County, all three conservation plans have less robust consultation processes and use a technical tone of language to describe nature. Point Pelee National Park management plan highlights consultation as a cornerstone of park management and dedicates one of its four key strategies to consultation with two, local First Nations but there is no report on a consultation process for the plan itself. Michigan Islands NWR and Ottawa NWR plans do report public consultation in their planning processes, but these consultations are less

substantial than those reported in the Charlevoix County and Toledo land-use plans. The Ottawa NWR plan explains, “In addition to the [two] open house events, the Refuge sought input from technical experts, including a group of regional migratory bird biologists and others” (1997, p. 9). There were also two focus-group events. The results of this process are not elaborated upon, though a report from the two focus-group meetings is included in the appendix. Focus group participants included a bird observatory, county visitor’s bureau, a hunting club, local schools/universities, a naturalist association, a county soil and water conservation association, the press, the Ohio wildlife division, and a private landowner. What stands out is the specificity of interest that each of these groups brings to a consultation—there is little representation of the general public or local citizens. The Michigan Islands NWR plan is similarly vague about the incorporation of public consultation feedback in the plan. The Michigan Islands NWR plan hosted more open houses than the Ottawa plan (eight, rather than two), but nothing as wide-reaching as the variety of methods and frequency of events that described by the Charlevoix County and Toledo land-use plans. Consultation efforts in the NWR plans were focused on “internal agency scoping” and expert opinion.

CONSULTATION AND WILDLIFE, CONSULTATION AND HUMANS

With conservation professionals dismayed at the social and political, rather than scientific, justification of management decisions (Artelle, et al., 2018; Fraser & et.al., 2020; Wires & Weseloh, 2018), it is difficult to imagine a place to include public consultation results in a conservation plan which doesn’t jeopardize the integrity of evidence-based decision-making. It seems that to satisfy legal consultation requirements, conservation plans attempt to protect their areas from public opinion by emphasizing “internal agency scoping” and expert opinion (U.S. Fish and Wildlife Service, 2012; U.S. Fish and Wildlife Service, 1997). Public opinion is assumed to (and often does, see appendix section 5.3) put human interests above the needs of wildlife, or question carefully considered ecological management plans. This goes directly against the mandate of the U.S. Fish and Wildlife Service, “working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people” (U.S. Fish and Wildlife Service, 2012), and the mandate and vision of Parks Canada, “Canada’s treasured natural and historic places will be a living legacy, connecting hearts and minds to a stronger, deeper understanding of the very essence of Canada” (Parks Canada, 2020). The Ottawa NWR conservation plan displays

this dynamic perfectly. It reports a conversation in a focus group about concerns over double-crested cormorant protections being too strict because the birds are reducing fish stock, but then writes a strategy for managing the double-crested population as little as possible to maintain the island's "wilderness integrity" (U.S. Fish and Wildlife Service, 1997).

Land-use plans are in a different situation. Where wildlife interests seem to be vulnerable to public opinion and championed by expert opinion in the conservation plans in this study, land-use planning theory has championed public opinion (through consultation) as a balance to expert opinion--that of the planner (Arnstein, 1969; Fischer, 2012). This ideological difference in either planning process seems to be related to where each plan falls on the accessible→technical scale of tone of language describing nature (see Figure 3 and Tables 3.4 and 3.5). The theme is convincing—it is rational that a plan whose purpose is to manage nature (see appendix section 5.4) would consult with experts on that purpose, and produce a document which describes nature in a technical way (Figure 3). Likewise, a plan whose purpose is to manage people (see appendix section 4.4)) would consult with the people to be managed and produce a document which describes nature in an accessible way (Figure 3). Unfortunately for the scientists who dedicate their lives to protecting wildlife from human beings through these agencies, scientific knowledge is always mediated by politics. In these conservation plans, scientific knowledge is given authority through its service to regulation (Tait, 2016). A land-use plan written in plain language draws power from, and exerts influence over, the people who speak that language. The interests, concerns, and priorities of the residents of Charlevoix County are the central voice of their land-use plan and when that voice describes nature, it does so in terms that the people understand. These terms are as anthropocentric as those of the conservation plan's technocrats, but locate the power of a land-use plan's contributors in civil society—in culture—rather than in the state. Either way, the problem for cormorants starts in the way humans value nature and their hierarchical, extractive relationship with it.

If only it were that symmetrical a relationship. The trouble is, expert opinion—the technocracy—presents problems as much for wildlife as it does for people (Cushman, 2013), and public opinion presents problems for people as much as it has for wildlife (Harvey, 2008; Tait, 2016).

The reason for such pervasive trouble with relating a plan's purpose, intent, and efficacy is exactly to do with language and politics. The way a plan defines its contributors, its subjects, and its users are all decisions which create, and re-create, the power dynamics of political structures. It is therefore very, very difficult to make any meaning from the apparent relationship between accessible/technical tone of language describing nature and planning consultation processes in the plans of this study. The accessibility or technicality of language describing nature in a plan does not need to corroborate the plan's consultation or public opinion in order to be meaningful, however. It is meaningful enough to know that where power flows from technocratic sources, technical language is used and where power flows from more diverse sources, accessible language is used. As flows of power rarely run in only one direction, but have reciprocal relationships, it is rational to ask what effect these tones of language have on the power-relations between those who use the plans and their subjects. For example, I wonder if a planner following a plan written in a technical tone is more likely to conceive of, and behave toward, nature from within the technocratic value system. Alternatively, is a planner following an accessible plan more likely to conceive of, and behave toward, nature from within a pluralistic value system?

DOUBLE-CRESETED CORMORANTS: HOW IT IS, HOW IT COULD BE

FORMS OF NATURE AND DOUBLE-CRESTED CORMORANTS

As described in the discussion on forms of nature, instances of nature as independent agent and threat to be managed usually overlap in both plan types, and there is no representation of nature as a collaborator. Double-crested cormorants fit precisely in the holes created by this pattern. Cormorants are absent from all land-use plans (See appendix section 4.3). Even those land-use plans that discuss problem-species, as the Charlevoix land-use plan does in its section titled "Green Infrastructure" (Charlevoix County Planning Commission, 2018, p. 10), make no mention of double-crested cormorants. In conservation plans, on the other hand, double-crested cormorants have a strong presence, often with entire sections dedicated to their management and history of conflict, and are present in all conservation plans in the study (appendix section 5.3). The dominant representation of cormorants in these plans is in the form of threat to be managed (appendix section 5.3). Cormorants are discussed in terms of their power to transform the landscape, i.e. their agency is

acknowledged, but they are invariably treated as a threat. Whether they are defoliating a protected ecosystem or habitat for a vulnerable species, like the Carolinian forest of Middle Island or the Black-crowned Night-Herons of the Beaver Archipelago, they are labelled as a "conflict species" or "overabundant" (Parks Canada, 2020; U.S. Fish and Wildlife Service, 2012; U.S. Fish and Wildlife Service, 1997). Population targets are established based on these perspectives, and the colonies are then subject to culls to meet these targets.

Such is the fate of any other form of nature that interferes with human goals in land-use plans as well. Traditional landscapes are threatened by invasive species on Charlevoix County's "rolling hillsides" (see Table 2.1), so municipalities are encouraged to remove the plants (Charlevoix County Planning Commission, 2018). While there are often legitimate concerns for ecological integrity that drive humans to triage wildlife, and entire scientific practices devoted to the care and maintenance of healthy ecosystems, these scientific imperatives are never the sole motivation to engage in population management (Artelle, et al., 2018; Decker & Chase, 1997; Mascia, et al., 2003; Seefelt, 2018; Wires & Weseloh, 2018).

WHERE WOULD CORMORANTS FIT?

If cormorants are such powerful forces on the landscape, why aren't they making it into land-use plans? What place would they have if they were written into a land-use plan? Based on the land-use plans' prevailing attitude toward nature (See appendix sections 4.2, 4.4, 4.5, and 4.6), it is easy to imagine cormorants being included as a threat to be managed in regard to recreational landscapes and property value. Such visibility would likely stoke more conflict between humans and cormorants, and could incite vigilante violence against them. Cormorants seem to be safest from human predation when hidden by layers of statutes and miles of land and water (Wires, The Double-crested Cormorant Plight of a Feathered Pariah, 2014).

And yet, I wonder if there could be a good way of including double-crested cormorants in a land-use plan. Indeed, their position in conservation plans cannot be envied. It seems, in fact, that their invisibility in land-use plans is preferrable than the form they take in conservation plans, as a threat to be managed, where they are culled under various rationales. Double-crested cormorants are stuck in a linguistic gap which Stein (2007)

describes as a source of communication failure. Though land-use plans and conservation plans can seem to be worlds apart, their authors are both working from government administration and deal with overlapping physical, social, and political realities (Stein, 2007). Land-use planners could reference conservation plans to learn how to represent nature in greater, more accurate detail and conservation planners could learn how to use more expressive, accessible language from land-use plans. Learning from each other in this way may improve the ecological results from both practices, whose current perspectives on nature are so different despite everything they share. Whether such linguistic and philosophical change would result in a less violent relationship with this shared natural world is an open question. Linguistic holes and lethal management are each a symptom of an ideology. It is this ideology which allows for violence and frames double-crested cormorants as a problem to begin with.

LIMITS OF LANGUAGE, SAFETY IN STATUTES, AND THE POSSIBILITIES OF INTER-DEPARTMENTAL COLLABORATION

Beaver Archipelago plans demonstrate how even a place which has conservation plans that are expressive about nature and land-use plans that are detailed in their representation of nature will still house prejudice against double-crested cormorants and accommodate lethal management of their populations. The ideology of nature represented by the Beaver Archipelago plans is relatively comprehensive and biocentric (see Figures 4.1 and 4.2). Yet, lethal management of double-crested cormorants in the Beaver Archipelago robust. The Michigan Islands NWR conservation plan dedicates an entire section to “Conflict Species”, which are just double-crested cormorants. The plan self-identifies its state as “an important state for DCCO management”, accounting for " about 40 percent of the birds killed and 50 percent of the eggs oiled in the U.S. under the PRDO.” (U.S. Fish and Wildlife Service, 2012). While the Charlevoix County land-use plan does not bring up double-crested cormorants, it is so focused on the economic and cultural value of scenic beauty that it is hard to imagine residents protecting a bird which is known for destroying the very same views.

It seems to be that influence over the relationship between humans and cormorants is located in the laws that lie over the bird’s colony sites. All of the sites in this study actively manage double-crested cormorant populations, but the Ottawa NWR conservation plan is

the most restrained in its management program, constraining it to the maintenance of West Sister Island's "wilderness integrity" (U.S. Fish and Wildlife Service, 1997). This site's land-use plan (Toledo), included the least forms of nature and was the least detailed of all the plans in the study. Cormorants seem to be safer nesting in a designated federal wilderness area where humans in nearby cities are not paying much attention to nature at all than they are nesting in a place where humans are expressive about their value for nature and very involved in the landscape. This demonstrates that whatever the qualities of the environmental discourse, attention is more lethal to these birds than neglect, and laws controlling human behaviour are their only shield against violence.

Scientists at government agencies have been trying to tell the public for decades that it is not scientific knowledge or technical expertise that drives law and policy, but politics. There is collective dismay at the un-scientific management of nature and entire academic discourses dedicated to understanding the human element of wildlife management (Artelle, et al., 2018; Raik & Wilson, 2006; Seefelt, 2018). As much as scientists wish and fight for biocentric management regimes, anthropogenic forces are constantly muddying the waters (Stein, 2007). Wildlife management professionals are people with specialized knowledge about what wildlife need and how humans often get in their way. What if that knowledge was common sense? Land-use planners can also be described as human-nature mediators. Why shouldn't they be knowledgeable about nature as they are about humans?

What else but a particular culture of nature impelled the Progressive Conservative government in Ontario to take double-crested cormorants off protected species lists and open them up to a hunting season in 2020? What made that same government strip local conservation authorities of any power to enforce the Endangered Species Act, or even talk about wildlife in development reviews, in the name of housing? It could not have been scientific or professional expertise. Every wildlife biologist, ecologist, planner, sociologist, social justice advocate, environmentalist, and housing specialist I know spoke out strongly against the bills that invoked these changes. It was the PC government's culture, the way it values nature, and the way it believes humans should relate to nature which led it to take down protection for this bird. The PC government is not an oligarchy. It was elected and re-elected by the people of Ontario. Many people do wish for cormorants to vacate their nesting

sites. Many people do wish cormorants simply didn't exist. And those values are clear in the results of the election, and the actions of their elected official.

I believe plans both reflect and construct culture and politics. Plans have creative power in the way they imagine the future. But until planners write in a way that takes their creative power seriously, plans will only be reflect what the law prescribes for the human-nature relationship. As government administrators and public servants, planners cannot undermine the law. But, if this study demonstrates anything, it is that there is linguistic latitude available to planners. This is a small but powerful space for planners to influence the relationship between humans and nature.

Double-crested cormorants, and other species that contradict human priorities, are vulnerable to public opinion. Conservation planning's very rational answer to this is to de-emphasize public opinion, and emphasize expert opinion, in its management plans. The hang-up comes when public opinion changes the political opinion which changes the laws from which conservation authorities work, suddenly dethroning the technocracy and condemning one or another species. Never mind all the work that has been done to determine how to balance all the components in an ecosystem. Never mind the years of hours spent counting species, tracking populations, calculating how many of what should live where and when. Never mind the ever-growing challenges of climate change, urbanification, habitat fragmentation, and water-quality degradation that these professionals must now account for in all these calculations. The work of science is as vulnerable to the law as the birds. The law is vulnerable to politics, and politics to public opinion. True protection for the double-crested cormorant, and every other species, lies in a culture of nature based on respect and reciprocity. Sustainable protection for nature lies in our ability to collaborate with nature and consider it in everything that we do.

CONCLUSION

THE ROLE OF PLANS IN CONSTRUCTING THE HUMAN-NATURE RELATIONSHIP

The hypothesis of this study was that if there are differences in the ideologies of nature in land-use plans, they will correspond to differences in the environmental ideologies of conservation plans. The question was whether these differences might offer insight into better ways to manage double-crested cormorants.

What I found was a rather enormous pile of variables that could explain differences between the ideologies of nature in land-use plans and conservation plans. Unsurprisingly, human-nature relations are extremely complex.

Even when controlling for many factors, including lethal cormorant management, the language describing nature in land-use plans varies more from site to site than language describing nature in conservation plans. I speculated that differences in each plan-type's geographic scale, regulatory authority, and authorship might explain these differences. This revealed some interesting relationships between content, authorship, planning process and language, and the creative latitude that exists for planners even within a regulatory framework. None of the relationships consistently pointed in a direction which would explain violence against double-crested cormorants, however. Since an important control in the site selection for this study was the active management of double-crested cormorants, the findings actually demonstrate that a range of environmental ideologies allows for lethal management, not one ideology in particular.

The next question to ask of my data became, why do so many different environmental ideologies treat this bird in the same way? What do these different places and plans all have in common? The answer, in this set of data, is in what the plans leave out. No plan represents nature in the form of collaborator. Only one barely represents nature in the form of spiritual resource. These holes took on enormous importance. What does it say about the people who write these plans that they can talk about nature in so many different ways, but cannot talk about it as an equal or a source of spiritual value? An environmental ideology where humans and nature co-create the world does not allow for behaviour like lethal management, ecological triage, or the eradication of any species. An environmental ideology where human interests are the priority does allow for all of these things.

At the highest level, this multi-case discourse analysis shows that though conservation plans implement wildlife management, land-use plans play a role in determining management methods through their influence over the relationship between humans and nature. The ideologies of nature expressed by the language of a land-use plans both reflects and constructs the ideologies of the people over whom the plan presides. It is therefore one place where the paradigm of violence against double-crested cormorants, and nature at large, can be changed.

LIMITATIONS OF REPRESENTATION: DRAWING AND PLANNING

Representing the world is tricky business. Understanding a representation is equally tricky. The subjectivity of a creator and receiver influences each of the innumerable decisions that must be made, by both parties, to successfully communicate. Reflexive subjectivity is a hallmark of postmodern thought, or as Dryzek puts it, “Postmodernists believe that there is no escape from specific viewpoints” (2013, p. 12). The heavy borders drawn around nature in the land-use plans and conservation plans in this study left little room to display the point of view of the authors. A postmodern border would be fuzzy and gray, without a clear beginning or end. It would be open, and it would be self-aware of its particularity and positionality. These plans defined nature with hard lines, empirical values, quantifiable in economic or cultural systems with their own hierarchies. In a land-use plan, an example of a common definition of nature would be acres of mineral deposits or miles of recreational shoreline. In a conservation plan, an example would be population numbers of special-concern species whose value is determined by their presence on a list enshrined in law. These descriptions of nature are rendered as representations of reality without making their particular point-of-view on that reality salient to the reader. It is implicit, of course, but I believe that for a representation to be truthful it must be explicit about its subjectivity. This is especially important with representations of nature that are created to exert power over sentient beings, human or otherwise, like plans. The positivist, realist traps that characterize the plans in this study characterize another form of communication that I have studied, image-making.

I recently had a conversation about this communication conundrum with Lane Myer, a professor whom I met during my undergraduate degree at Rhode Island School of Design. We discussed some common decisions that creators make about representation in drawing. We wandered from media, to content, to function, to style, to context, to positionality. Within each of these decision areas lies a galaxy of more decisions to make when making an image. So many decisions turn image-making into a way to ask questions and record the inquiry in the form of image.

I believe that the communication issue of reflexive subjectivities can be either devastating or miraculous. If the creator intends to exert power over the audience, to assert the primacy of their world-view, subjectivity is devastating and it must be suppressed. If they intend to collaborate with the audience to create meaning, subjectivity is miraculous and it must be made plain.

Lane teaches many courses in multiple departments at the Rhode Island School of Design, but his favourite is drawing. He enjoys guiding sophomore students in the Department of Furniture Design through their first encounters with orthographic drawing. The basic principle of orthographic drawing is to only document the height and width, or length and depth, of the view of an object, “flattening” the subject onto a two-dimensional plane which shares its attributes. It represents each side as one view at a time. For example, if I were to draw a conical-pyramid from an orthographic side-view, I would draw a triangle. The same pyramid from an orthographic top-view would be a circle with a dot in the middle. Perspective drawing, in contrast, is a geometric system that attempts to represent three dimensions inside of two. In a perspective drawing, I would draw multiple sides of the conical pyramid in one image. Orthographic projection is a system of representation that has been used since antiquity by people across the globe to solve the problem of representing a three-dimensional world on a two- dimensional surface. Lane writes, “ They are accurate and sincere in their proportions, scales and dimensioning and can be folded to construct accurate three dimensional models, which is not possible with perspective drawings” (Myer, 2023, personal communication). Today, it is often used as a technical lexicon in various trades to communicate instructions for making things, such as chairs and buildings. Thus, its importance to the Furniture Design sophomores. Despite it being taught at school for

technical applications today, orthographic drawings are an intuitive representational language that have been used as communication tools for millennia. In our ramblings, Lane shared with me his experience working with children and how instinctively they employ orthographic abstractions in their drawings. The illusion of depth must be taught, but spatial ideas like up, down, sideways are intuitive.

For Lane, orthographic drawings are honest and transparent about their essential limitation: a two-dimensional representation of a three-dimensional world. Through abstraction (a distillation of an experience, not Abstract art), the orthographic framework makes the creator's point of view plain, whereas a perspectival drawing obscures the creator's point of view in realism. There is no mirage of reality or truth in an orthographic drawing the way there is in a perspectival drawing. The image does not purport to reflect reality—it interprets reality. Because an orthographic drawing is an abstraction of reality, it leaves room for the viewer to bring their subjectivity into whatever meaning they read in the drawing. There is open-endedness in abstraction that rejoices in the reflexive subjectivity of representation and communication.

I found the plans in this study to read more like a perspectival drawing than an orthographic one. Despite the obvious, individual perspectives displayed by the plan's authors, content, and regulatory authority, they did not acknowledge themselves. The plans presented their worlds as complete realities with authors behind a curtain pulling strings. Despite sharing the same physical world, conservation plans and land-use plans at these three sites were like bubbles bumping up against each other, influencing each other's trajectory without acknowledging themselves, the other, or the space that they share.

What would a plan which embraces reflexive subjectivity be like? How would such a plan define nature? How would it acknowledge itself? How would it leave room for communication with the reader, as abstraction does in a drawing?

I think we might see colloquial language. We might read multiple dialects in the same document. In addition to maps and figures, we might see drawings of place made by people from that place. In addition to species inventories that track quantitative data like

population numbers, we might see tables that track qualitative data too, like the relationship between a cormorants and humans. We might read robust sections that report multiple perspectives on such species. There might be sections dedicated to open questions about how to manage such a fraught relationship. There might be land-use plans that have maps covered in different scales and textures of nature, rather than chunks of green that end where roads and houses begin. We might read descriptions of ways habitat can be integrated into the landscape outside refuge borders. Variety and specificity might gesture toward the complexity and diversity of nature, freeing reader's imaginations rather than confining them.

The two frameworks I developed to analyze these plans, eight forms of nature and three spectrums of tone of language, are themselves limited representations of nature. What forms and tones lie outside those that I included in my analysis? What essential factors did I exclude for lack of time or brain-power? How many interpretations of the textual data were missed due to only one pair of eyes reading?

I invite you to think about what I overlooked and excluded. This analysis, my lens, and your mind, your lens, will create the specific understanding that leaves the world open. What I saw in these plans was a flattened representation of the complex, multi-dimensional nature that I know. These flattened realities left no room for solutions to the conflict between humans and double-crested cormorants. Unfortunately, it is utterly rational that these plans would support a violent relationship with nature. I hope you find room for your knowledge of nature in this paper, and perhaps make room for the nature of others—including others who are more than human—in your own representations.

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Figure 2. A matrix of six plans arranged by two plan types, land-use and conservation, and three sites of double-crested cormorant colonies in the Great Lakes.

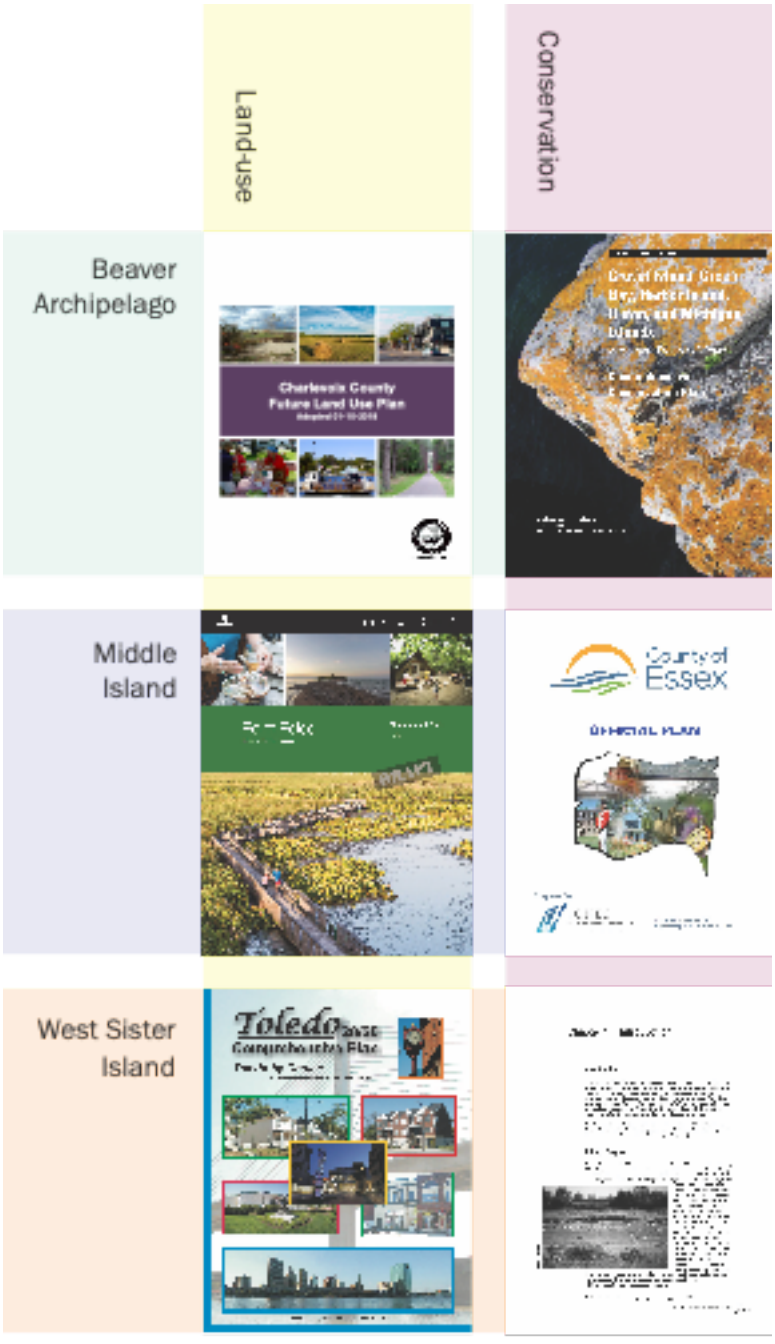


Figure 2. Matrix of forms of nature found through discourse analysis of six plans, one land use and one conservation plan at three sites of double-crested cormorant colonies in the Great Lakes.

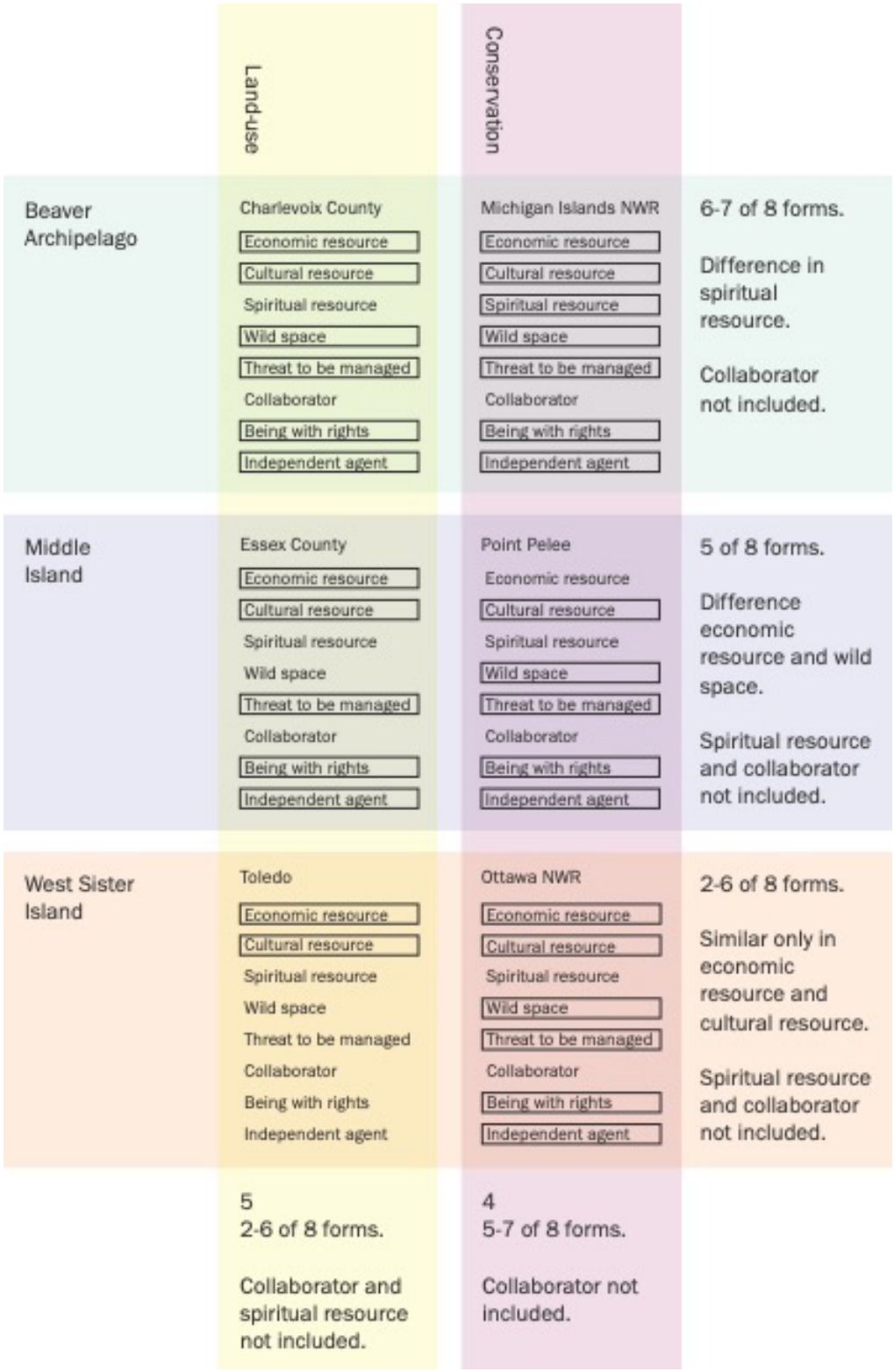


Table 2.3 Examples of forms of nature from the discourse analysis of plans at the Beaver Archipelago.

Beaver Archipelago	
Charlevoix County land-use plan	Michigan Is. NWR conservation plan
Economic resource	
"The rural landscape does more than simply provide scenery. Farming and forestry activities continue as viable components of the area economy." (p. 34)	"Sport and commercial harvest fisheries are important industries in the Great Lakes Region." (p. 28)
Cultural resource	
Preserve "scenic, environmental and other features that contribute to Charlevoix County's unique sense of place" including native landscaping, tree preservation, multi-use community greens and open space, scenic road corridors, waterfront, scenic views, agriculture, and dark sky. (p. 39)	"For many, the thought of islands can evoke a sense of mystery, isolation, history, and wildness, or they can provide dreams of an exotic, private hideaway from a fast-paced world." (p. 1)
Spiritual resource	
None	"For many, the thought of islands can evoke a sense of mystery, isolation, history, and wildness, or they can provide dreams of an exotic, private hideaway from a fast-paced world." (p. 1)
Wild space	
"These lands have been protected by the Little Traverse Conservancy with the primary goals of preservation and protection. The land is open to the public for recreational, educational and scientific activities that align with these primary goals." (p. 36)	"…'Federal Wilderness Areas' including Hog, Spider, and Gravel Islands…protect space for colonial waterbirds to nest…Limiting human presence, as in the past, will continue to preserve the wilderness character" (p. 69).
Threat to be managed	
"Invasive species pose a significant threat to the County's lakes, wetlands, and forests. These non-native, introduced species outcompete native species; impact food chains and fish and wildlife habitat; reduce property values; impact water-based recreation and navigation; and among the many other environmental and economic problems, invasive species are costly to control and manage." (p. 9-10)	"Populations [of double-crested cormorants] have increased significantly in the last 25 years, and growing concern about their impacts on natural resources, especially fish and vegetation, caused the Service to establish a Public Resource Depredation Order (PRDO) in 2003." (p. 40)
Collaborator	
None	None
Being with rights	
"There are 48 threatened, endangered or special concern species in the County, seven of which are federally listed. Many of these species occur in Great Lakes shoreline areas and in the Beaver Island Archipelago." (p. 9)	"Refuges also play a crucial role in preserving endangered and threatened species…Conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts." (p. 3- 4)
Independent agent	

“The unique Lake Michigan-influenced climate offers opportunities for expansion of fruit and vegetable crops.” (p. 16) “Due to soil limitations, hamlets within the County generally cannot expand without the provision of sewer and/or water service.” (p. 17)	“Many ecological disturbances maintain the character of islands in the Upper Great Lakes, including fire, wind, insects and disease, hydrology, and the effects to vegetation by large flocks of nesting colonial waterbirds or the population cycling of herbivorous mammals such as snowshoe hares…” (p. 16-17)

Table 2.4 Examples of forms of nature from the discourse analysis of plans at the Middle Island.

Middle Island	
Essex County land-use plan	Point Pelee National Park conservation plan
Economic resource	
"Essex County offers one of the most complex and technologically advanced agricultural areas in Ontario, and it is the intent of this Plan to protect this important resource for the long-term…Because this County is rich in natural resources, it is also acknowledged that there is a need to permit other types of land use in the "Agricultural" designation such as the extraction of gas and oil and the extraction of mineral aggregate." (p. 52)	X
Cultural resource	
"It is the policy of this Plan to support the natural heritage, human heritage and recreational initiatives…for the Detroit River as a designated Canadian Heritage River." (p. 26) "This Plan acknowledges the importance of *natural heritage features* and considers them as integral parts of a healthy and vibrant community." (p. 66) "To increase the size of core natural areas and to create and protect linkages and corridors as part of a linked natural heritage system connecting wildlife habitat areas to each other, human settlements to human settlements and people to nature." (p. 67)	"The national park attracts tens of thousands of birding enthusiasts each year and is a popular day- use area for visitors to enjoy the sandy beaches of Lake Erie." (p.1) "… maintain the high levels of visitor enjoyment and learning and to enable visitors to connect with the unique natural and cultural heritage of Point Pelee National Park." (p. 3) "Canada's treasured natural and historic places will be a living legacy, connecting hearts and minds to a stronger, deeper understanding of the very essence of Canada." (p.4)
Spiritual resource	
X	X
Wild space	
X	'Zone I lands require special preservation because they contain or support unique, threatened or endangered natural or cultural features, or are among the best examples of the features that represent the natural region the national park represents. Preservation is paramount. Motorized access is not permitted." (p. 17) "Ecologically and culturally sensitive sites are designated on the zoning maps where an area is either too small to be designated as a discrete Zone I or because a site may be variable from one year to the next, such as with bird nesting locations." (p. 18)
Threat to be managed	

Flooding and erosion: “It is the policy of this Plan that local Official Plans direct *development* to areas outside of areas susceptible to flood or other hazards…It is a policy of this Plan to identify the Lake St. Clair, Detroit River and Lake Erie floodprone areas as being susceptible to *flooding* and *erosion hazards*.” (p. 17) Invasive species: “appropriately manage ecologically *sensitive* lands…discourage the introduction and spread of invasive species…” (p. 67)	“The next century of park management rests heavily on the ability of Point Pelee to adapt and respond to the significant impacts of climate change, erosion and invasive species.” (p. 11) “The control of hyperabundant (e.g., deer) and invasive species (e.g., phragmites) is resource intensive, yet is key to restoring and maintaining park ecosystem health and species at risk.” (p. 5) “Populations of species at risk, such as Eastern Prickly Pear Cactus and Five-lined Skink, have increased in areas of active management and habitat restoration, whereas hyper-abundant species have been managed in collaboration with partners to reduce stress on park ecosystems.” (p.9) “The ecological integrity of Middle Island continues to show an improving trend from the 2018 condition in the State of the Park Assessment, as a result of the conservation actions including active management of double-crested cormorant nests.” (p. 13)
Collaborator	
X	X
Being with rights	
“The County and *local municipalities* shall protect, improve or restore the *quality and quantity of water*…Within Essex County two Source Protection Plans have been prepared in compliance with the Clean Water Act, 2006.” (p. 20-21) From “Table 3: Natural Environment Types” “*Significant wetlands* and *significant coastal wetlands”, “Significant* habitat of *endangered species* and *threatened species*”, “*Fish habitat”* (p. 60-61) “Species at Risk are identified as extirpated, endangered, threatened or species of special concern on the Species at Risk in Ontario List. The Ministry of Natural Resources (MNR) administers the Endangered Species Act, 2007 (ESA) to protect and conserve species at risk and their habitats.” (p. 69)	“Point Pelee National Park was established in 1918 to protect nationally and internationally significant natural resources and processes representative of the Carolinian ecozone of the St. Lawrence Lowlands natural region.” (p. 1 and p. 4) “Point Pelee National Park supports incredible natural diversity, including over 60 species at risk and critical habitat for many of them.” (p. 1 and 5) “Point Pelee…[has] international designation as an Important Bird Area…[and]a Wetland of International Significance by the Ramsar1 Convention of UNESCO2…[Middle Island is] a Carolinian Canada Signature Site…[and] Area of Natural and Scientific Interest due to its unique and rare assemblage of plants and animals.” (p. 5)
Independent agent	
“The County’s southern location provides the longest growing season for the entire Province. In addition to this, the mitigating effect of the Lake Erie and Lake St. Clair shorelines provide an overall climatic advantage for the growing of specialty crops…These climatic conditions, coupled with the high quality soils found here, means that the County has a high potential for a diverse variety of specialty crops…” (p. 53)	“The northeastern shoreline of the entire Point Pelee landform, including Point Pelee National Park and lands north, is a hotspot of erosion.” (p. 10) “Point Pelee is located at the crossroads of two major North American migratory flyways” (p. 5) “…climate change, erosion and invasive species.” (p. 11)

Flooding and erosion: “It is a policy of this Plan to identify the Lake St. Clair, Detroit River and Lake Erie floodprone areas as being susceptible to *flooding* and *erosion hazards*.” (p. 17) Invasive species: “…appropriately manage ecologically *sensitive* lands…discourage the introduction and spread of invasive species…” (p. 67)	

Table 2.5 Examples of forms of nature from the discourse analysis of plans at West Sister Island.

West Sister Island	
Toledo land-use plan	Ottawa NWR conservation plan
Economic resource	
"The Maumee River will be the area's number one recreational attraction. Greenways will line the river and strollers and bikers will be seen along the riverfront greenway. New housing developments will be built along the city's waterways. Grassy Island will be a tourist destination as a nature preserve and recreation site." (p. 2-4) "Much of the east side of the Maumee River north of Main Street has been well used for port and industrial purposes…The land on each side of the Maumee River south of downtown is also identified as an industrial district…" (p. 3-4) "Toledo is a river city and its major topographical feature is both a commercial thoroughfare and a scenic point of pride." (p. 3-11)	"Tourism has become an increasingly important component of the area's economy with the renewal of water quality in Lake Erie and the corresponding resurgence of the lake as a premiere regional and national fishery…In the 1920s and '30s, the Lake Erie Marshes gained fame for their tremendous waterfowl hunting opportunities. This tradition is still strong today…Several waterfowl hunting clubs still operate large wetland complexes along the Lake Erie coastline while State and Federal wildlife areas draw thousands of waterfowl hunters yearly" (p. 24) "Table 1: Resource Conservation Priority Matrix" lists specific species with "recreational/economic" value, for example Canada geese and Wood ducks. "The economic benefit for local communities from birding ecotourism was estimated at $5.6 million in 1993-1994 (Kerlinger 1994)." (p. 33)
Cultural resource	
"Environmental Quality refers to the quality of the air we breathe, water we drink, food we eat, earth we live on, and species that inhabit our city with us." (p. 3-16) "The Ottawa River is, in places, a major scenic feature…Toledo is a river city and its major topographical feature is both a commercial thoroughfare and a scenic point of pride." (p. 3-11) "The feature that sets Toledo apart from its peers is the active and passive recreation provided by its waterfront: Lake Erie, Maumee Bay, and the Maumee River. The extended "waterfront" includes the tributaries of Swan Creek and the Ottawa River. This resource must become more of a signature feature of Toledo…Twenty years from now, hopefully sooner, the name "Toledo" will spark an image of a wide river, a signature bridge, and a picturesque bay that draws anyone who reads or listens to what is happening in the world." (p. 3-11)	"In the 1920s and '30s, the Lake Erie Marshes gained fame for their tremendous waterfowl hunting opportunities. This tradition is still strong today…Several waterfowl hunting clubs still operate large wetland complexes along the Lake Erie coastline while State and Federal wildlife areas draw thousands of waterfowl hunters yearly." (p. 24) "A large portion of the new Refuge had been owned and operated as a duck hunting club for decades…In fact, the current Refuge headquarters was the former club's hunting lodge." (p. 6)
Spiritual resource	
X	X
Wild space	

X	"West Sister Island National Wildlife Refuge is the oldest member of the Ottawa Complex and the most isolated. The 80-acre island became a national wildlife refuge in 1937, and in 1975 it was designated as a Federal wilderness area under the Wilderness Act of 1964." (p. 7) "Wildlife Goal 1: Preserve and Protect the largest wading bird colony within the Great Lakes ecosystem in accordance with the national wilderness designation." (p. 53) "Habitat Goal 1: Provide habitat conditions favorable to colonial nesting wading birds without compromising the wilderness integrity." (p. 53) "People Goal 3: Protect the wilderness character of West Sister Island." (p. 56)
Threat to be managed	
X	"A few resident mammal species, including muskrats, woodchucks and white-tailed deer, have periodically become overabundant on the Refuge…Resident populations of these species are being controlled, with varying success, through Refuge hunting and trapping programs." (p. 19) "Management of these areas will primarily consist of the control of invasive and noxious weeds…" (p. 28) "waves and rapid water level changes reduced wetland vegetation…" (p. 30) "Invasive species…are prioritized based on the immediate threat each poses to natural diversity of habitats on the Refuge. An integrated pest management system is in place on Ottawa and consists of mechanical, biological and chemical treatments of species." (p. 29)
Collaborator	
X	
Being with rights	
X	"Ottawa National Wildlife Refuge was established in 1961 under the authority of the Migratory Bird Conservation Act "….for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. 715d." (p. 1) "A recent survey of biological diversity in the Great Lakes Basin identified 130 globally rare or endangered plant and animal species and ecological communities. The bald eagle, peregrine falcon, piping plover, Kirtland's warbler, Mitchell's satyr and Karner blue butterflies, Indiana bat, gray wolf, lake sturgeon, deepwater sculpin, and pugnose shiner are a few of the many threatened, endangered, and species of special concern that inhabit the Great Lakes Basin ecosystem." (p. 6)
Independent agent	

X	"…hydric, or wetland, soils." (p. 13) "…seasonal and life requirements of several key wildlife and fish species…" (p. 38) "As a major migration corridor…" (p. 1) "Shifting wind patterns typically dry out the western basin of Lake Erie…" (p. 18) "… rapid water level changes and wave action associated with Lake Erie…can uproot wetland vegetation and scour soils…" (p. 29)

Table 2.6 Examples of forms of nature from the discourse analysis of all three land-use plans.

Land-use plans		
Charlevoix County	Essex County	Toledo
Economic resource		
"The rural landscape does more than simply provide scenery. Farming and forestry activities continue as viable components of the area economy." (p. 34)	"Essex County offers one of the most complex and technologically advanced agricultural areas in Ontario, and it is the intent of this Plan to protect this important resource for the long-term…Because this County is rich in natural resources, it is also acknowledged that there is a need to permit other types of land use in the "Agricultural" designation such as the extraction of gas and oil and the extraction of mineral aggregate." (p. 52)	"Toledo is a river city and its major topographical feature is both a commercial thoroughfare and a scenic point of pride." (p. 3-11)
Cultural resource		
"Maintain and enhance the unique sense of place that attracts people to Charlevoix County and makes it a special place to reside." To reach this goal, the plan aims to preserve "scenic, environmental and other features that contribute to Charlevoix County's unique sense of place" including native landscaping, tree preservation, multi-use community greens and open space, scenic road corridors, waterfront, scenic views, agriculture, and dark sky. (County of Charlevoix, p. 39)	"This Plan acknowledges the importance of *natural heritage features* and considers them as integral parts of a healthy and vibrant community." (Essex County, p. 66)	"The feature that sets Toledo apart from its peers is the active and passive recreation provided by its waterfront: Lake Erie, Maumee Bay, and the Maumee River. The extended "waterfront" includes the tributaries of Swan Creek and the Ottawa River. This resource must become more of a signature feature of Toledo…Twenty years from now, hopefully sooner, the name "Toledo" will spark an image of a wide river, a signature bridge, and a picturesque bay that draws anyone who reads or listens to what is happening in the world." (City of Toledo, p. 3-11)
Spiritual resource		
X	X	X
Wild space		
"These lands have been protected by the Little Traverse Conservancy with the primary goals of preservation and protection. The land is open to the public for recreational, educational and scientific activities that align with these primary goals." (p. 36)	X	X
Threat to be managed		

"Invasive species pose a significant threat to the County's lakes, wetlands, and forests. These non-native, introduced species outcompete native species; impact food chains and fish and wildlife habitat; reduce property values; impact water-based recreation and navigation; and among the many other environmental and economic problems, invasive species are costly to control and manage." (p. 9-10)	"It is a policy of this Plan to identify the Lake St. Clair, Detroit River and Lake Erie floodprone areas as being susceptible to *flooding* and *erosion hazards*." (p. 17)	X
Collaborator		
X	X	X
Being with rights		
"There are 48 threatened, endangered or special concern species in the County, seven of which are federally listed. Many of these species occur in Great Lakes shoreline areas and in the Beaver Island Archipelago." (p. 9)	From "Table 3: Natural Environment Types" "*Significant wetlands* and *significant coastal wetlands", "Significant* habitat of *endangered species* and *threatened species*", "*Fish habitat"* (p. 60-61)	X
Independent agent		
"The unique Lake Michigan-influenced climate offers opportunities for expansion of fruit and vegetable crops." (p. 16) "Due to soil limitations, hamlets within the County generally cannot expand without the provision of sewer and/or water service." (p. 17)	"The County's southern location provides the longest growing season for the entire Province. In addition to this, the mitigating effect of the Lake Erie and Lake St. Clair shorelines provide an overall climatic advantage for the growing of specialty crops…These climatic conditions, coupled with the high quality soils found here, means that the County has a high potential for a diverse variety of specialty crops…" (p. 53)	X

Table 2.7 Examples of forms of nature from the discourse analysis of all three conservation plans.

Conservation plans		
Michigan Islands NWR	Point Pelee National Park	Ottawa NWR
Economic resource		
"Sport and commercial harvest fisheries are important industries in the Great Lakes Region." (p. 28)	X	"Tourism has become an increasingly important component of the area's economy with the renewal of water quality in Lake Erie and the corresponding resurgence of the lake as a premiere regional and national fishery…In the 1920s and '30s, the Lake Erie Marshes gained fame for their tremendous waterfowl hunting opportunities." (p. 24) "Table 1: Resource Conservation Priority Matrix" lists specific species with "recreational/economic" value "The economic benefit for local communities from birding ecotourism was estimated at $5.6 million in 1993-1994 (Kerlinger 1994)." (p. 33)
Cultural resource		
"For many, the thought of islands can evoke a sense of mystery, isolation, history, and wildness, or they can provide dreams of an exotic, private hideaway from a fast-paced world." (p. 1)	"The national park attracts tens of thousands of birding enthusiasts each year and is a popular day- use area for visitors to enjoy the sandy beaches of Lake Erie." (p.1) "… maintain the high levels of visitor enjoyment and learning and to enable visitors to connect with the unique natural and cultural heritage of Point Pelee National Park." (p. 3) "Canada's treasured natural and historic places will be a living legacy, connecting hearts and minds to a stronger, deeper understanding of the very essence of Canada." (p.4)	"Several waterfowl hunting clubs still operate large wetland complexes along the Lake Erie coastline while State and Federal wildlife areas draw thousands of waterfowl hunters yearly." (p. 24) "A large portion of the new Refuge had been owned and operated as a duck hunting club for decades…In fact, the current Refuge headquarters was the former club's hunting lodge." (p. 6)
Spiritual resource		
"For many, the thought of islands can evoke a sense of mystery, isolation, history, and wildness, or they can provide dreams of an exotic, private hideaway from a fast-paced world." (p. 1)	X	X
Wild space		

"…'Federal Wilderness Areas' including Hog, Spider, and Gravel Islands…protect space for colonial waterbirds to nest…Limiting human presence, as in the past, will continue to preserve the wilderness character" (p. 69).	'Zone I lands require special preservation because they contain or support unique, threatened or endangered natural or cultural features, or are among the best examples of the features that represent the natural region the national park represents. Preservation is paramount. Motorized access is not permitted." (p. 17) "Ecologically and culturally sensitive sites are designated on the zoning maps where an area is either too small to be designated as a discrete Zone I or because a site may be variable from one year to the next, such as with bird nesting locations." (p. 18)	"West Sister Island National Wildlife Refuge is the oldest member of the Ottawa Complex and the most isolated. The 80-acre island became a national wildlife refuge in 1937, and in 1975 it was designated as a Federal wilderness area under the Wilderness Act of 1964." (p. 7) "Wildlife Goal 1: Preserve and Protect the largest wading bird colony within the Great Lakes ecosystem in accordance with the national wilderness designation." (p. 53) "Habitat Goal 1: Provide habitat conditions favorable to colonial nesting wading birds without compromising the wilderness integrity." (p. 53) "People Goal 3: Protect the wilderness character of West Sister Island." (p. 56)

Threat to be managed

"Populations [of double-crested cormorants] have increased significantly in the last 25 years, and growing concern about their impacts on natural resources, especially fish and vegetation, caused the Service to establish a Public Resource Depredation Order (PRDO) in 2003." (p. 40)	"The next century of park management rests heavily on the ability of Point Pelee to adapt and respond to the significant impacts of climate change, erosion and invasive species." (p. 11) "The control of hyperabundant (e.g., deer) and invasive species (e.g., phragmites) is resource intensive, yet is key to restoring and maintaining park ecosystem health and species at risk." (p. 5) "Populations of species at risk, such as Eastern Prickly Pear Cactus and Five-lined Skink, have increased in areas of active management and habitat restoration, whereas hyper-abundant species have been managed in collaboration with partners to reduce stress on park ecosystems." (p.9) "The ecological integrity of Middle Island continues to show an improving trend from the 2018 condition in the State of the Park	"A few resident mammal species, including muskrats, woodchucks and white-tailed deer, have periodically become overabundant on the Refuge…Resident populations of these species are being controlled, with varying success, through Refuge hunting and trapping programs." (p. 19) "Management of these areas will primarily consist of the control of invasive and noxious weeds…" (p. 28) "waves and rapid water level changes reduced wetland vegetation…" (p. 30) "Invasive species…are prioritized based on the immediate threat each poses to natural diversity of habitats on the Refuge. An integrated pest management system is in place on Ottawa and consists of mechanical, biological and chemical treatments of species." (p. 29)

	Assessment, as a result of the conservation actions including active management of double-crested cormorant nests." (p. 13)	
Collaborator		
X	X	X
Being with rights		
"Refuges also play a crucial role in preserving endangered and threatened species…Conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts." (p. 3- 4)	"Point Pelee National Park was established in 1918 to protect nationally and internationally significant natural resources and processes representative of the Carolinian ecozone of the St. Lawrence Lowlands natural region." (p. 1 and p. 4) "Point Pelee National Park supports incredible natural diversity, including over 60 species at risk and critical habitat for many of them." (p. 1 and 5) "Point Pelee…[has] international designation as an Important Bird Area…[and]a Wetland of International Significance by the Ramsar1 Convention of UNESCO2…[Middle Island is] a Carolinian Canada Signature Site…[and] Area of Natural and Scientific Interest due to its unique and rare assemblage of plants and animals." (p. 5)	"Ottawa National Wildlife Refuge was established in 1961 under the authority of the Migratory Bird Conservation Act "….for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. 715d." (p. 1) "A recent survey of biological diversity in the Great Lakes Basin identified 130 globally rare or endangered plant and animal species and ecological communities. The bald eagle, peregrine falcon, piping plover, Kirtland's warbler, Mitchell's satyr and Karner blue butterflies, Indiana bat, gray wolf, lake sturgeon, deepwater sculpin, and pugnose shiner are a few of the many threatened, endangered, and species of special concern that inhabit the Great Lakes Basin ecosystem." (p. 6)
Independent agent		
"Many ecological disturbances maintain the character of islands in the Upper Great Lakes, including fire, wind, insects and disease, hydrology, and the effects to vegetation by large flocks of nesting colonial waterbirds or the population cycling of herbivorous mammals such as snowshoe hares…" (p. 16-17)	"The northeastern shoreline of the entire Point Pelee landform, including Point Pelee National Park and lands north, is a hotspot of erosion." (p. 10) "Point Pelee is located at the crossroads of two major North American migratory flyways" (p. 5) "…climate change, erosion and invasive species." (p. 11)	"…hydric, or wetland, soils." (p. 13) "…seasonal and life requirements of several key wildlife and fish species…" (p. 38) "As a major migration corridor…" (p. 1) "Shifting wind patterns typically dry out the western basin of Lake Erie…" (p. 18) "… rapid water level changes and wave action associated with Lake

		Erie…can uproot wetland vegetation and scour soils…" (p. 29)

Figure 3. Tone of language describing nature in three spectrums in a matrix of two plan-types and three sites of double-crested cormorant colonies in the Great Lakes.

Table 3.1 Examples of tone of language describing nature from the discourse analysis of plans at the Beaver Archipelago.

Beaver Archipelago	
Charlevoix County land-use plan	Michigan Is. NWR conservation plan
Highly Detailed	Highly Detailed
"Beaver Archipelago: 77 square miles of land area and well over 100 miles of Great Lakes shoreline. It is also home to many threatened and special concern plant and animal species." (p. 10). "Jordan River: one of Michigan's designated Natural Rivers. Highly valued for its fishery, beautiful river valley and recreation." (p. 10).	"The glacial history of island chains differs across the Upper Great Lakes. Glacial till overlying limestone bedrock forms the bulk of the Beaver Island group in northern Lake Michigan, although Pismire Island (part of Michigan Islands NWR) is an example of a sand and gravel bar island." (p. 16)
Highly Expressive	Highly Expressive
"blessed with abundant natural resources" "scenic areas", "ample wooded and agricultural open space", "scenic views", "many lakes and rolling hillsides", "rural landscape", "visual character", "greenways", "scenic vistas", and "night sky" (p. 32-33). "beautiful river valley" (p. 10), "stately trees" (p. 34), "close to nature" (p. 34), and "clean, inviting environment" (p. 39)	"rich mosaic of island habitats" (p. 9) "private hideaway" and "living laboratories of natural selection" (p. 1), "pristine habitat" (p. 59) and "scenic and wild nature" (p. 139).
Highly Accessible	Highly Technical
"Property owners have coordinated natural area connections to create ecological corridors, enhance recreation and provide a more continuous natural scenic view." (p. 34) "Invasive species pose a significant threat to the County's lakes, wetlands, and forests. These non-native, introduced species outcompete native species…" (p. 9).	"anadromous and interjurisdictional fish" (p. 3), "pioneering species" or "indicator species" or "conflict species" (p. 32 and p. 29 and p. 40), "anthropogenic habitats" (p. 57), and "control measures" (p. 37).

Table 3.2 Examples of tone of language describing nature from the discourse analysis of plans at Middle Island.

Middle Island	
Essex County land-use plan	Point Pelee Ntnl Park conservation plan
Moderately Sparse	Moderately Detailed
"The components of the *natural heritage system* are listed in Table 3, and where appropriate, mapped on the Schedules to this Plan…"(p. 59) "With its mild climate, Carolinian woodlands, prairie habitat and lush wetlands, this area is one of the most biologically diverse regions in Canada. This region has over 200 Kilometres of shoreline on Lake St. Clair, Lake Erie and the Detroit River." (p. 9-10)	"Point Pelee National Park consists of approximately 420 hectares of dry land and 1,070 hectares of freshwater marsh that sits within a ten kilometre long sandspit and marsh complex extending into Lake Erie… Point Pelee is located at the crossroads of two major North American migratory flyways, providing habitat for more than 390 species of migrating birds…" (p. 4-5) Zone I: Special Preservation describes one area, the "*Ridge and Trough Swamp Forest* – This habitat is representative of shoreline swamp forest of the western basin of Lake Erie, most of which has now been lost. It contains many plant species representative of southern forest elements such as Spicebush, Sycamore and Hackberry. The trees of the Point Pelee's swamp forest are nesting sites for Tree Swallows, wrens, Wood Ducks, woodpeckers, Great Horned Owls and even the endangered Prothonotary Warbler." (p. 17)
Highly Dull	Moderately Dull
Descriptive terms for nature: "significant" "endangered", "threatened", "unevaluated", and "prioritized" (p. 60-65). "With its mild climate, Carolinian woodlands, prairie habitat and lush wetlands, this area is one of the most biologically diverse regions in Canada. This region has over 200 Kilometres of shoreline on Lake St. Clair, Lake Erie and the Detroit River." (p. 9-10)	"Canada's treasured natural and historic places will be a living legacy, connecting hearts and minds to a stronger, deeper understanding of the very essence of Canada." (p. 4) "More than 4.5 million people live within a one-hour drive of Point Pelee National Park, where people can enjoy the sights and sounds of the Carolinian ecosystem and be introduced to Canada's national park system." (p. 5)
Highly Technical	Moderately Technical
"*significant* natural features", "species at risk", "endangered", "threatened", "special concern species", "natural inland watercourses and municipal drains", "limited habitat", "few natural linkages", "natural features", and "impaired water quality." (p. 9-10), "*flooding* and *erosion hazard*" (p. 17), and "Type A Intake Protection Zone 1" (p.22)	"species at risk", "critical habitat", "hyperabundant species", "invasive species", "ecological diversity", and "ecosystem health" "Forest and coastal ecosystem health are maintained as part of the national park's diverse, resilient habitat mosaic." (p. 13).

Table 3.3 Examples of tone of language describing nature from the discourse analysis of plans at West Sister Island.

West Sister Island	
Toledo land-use plan	Ottawa NWR conservation plan
Highly Sparse	Highly Detailed
There is one section with subject-matter focused on nature and it is ninety-three words long: "Environmental quality relates to the quality of the air we breath, water we drink, food we eat, earth we live on, and species that inhabit our city with us. A vision for Toledo 20/20 includes our waterways to be fishable, healthy to swim in and our toxic waste legacy of the past cleaned up. Environmental concerns must be a high priority when implementing the recommendations of this Plan." (p. 3-16)	The description of the regional ecological context alone is an impressive arrangement of detail: "The Great Lakes Basin Ecosystem, which includes the Ottawa Refuge Complex, is the largest body of fresh water in the world. It holds 18 percent of the world's supply of fresh water; covers 95,000 square miles with 9,000 miles of shoreline; includes 5,000 tributaries; and has a drainage area of 288,000 square miles…" the description goes on to include lists of fish, bird, and mammal species. A sample from two entire chapters full of detailed, lengthy representations of nature reads: "The Refuge and surrounding land are part of what was traditionally known as the Great Black Swamp, which once included 300,000 acres of wetlands along Lake Erie and extended inland. This vast area comprised coastal wetlands, riverine marshes, wet prairies, hardwood swamps and oak savanna…" (p. 13)
Moderately Dull	Moderately Dull
"The Maumee River will be the area's number one recreational attraction…Greenways will line the river and strollers and bikers will be seen along the riverfront greenway…New housing developments will be built along the city's waterways…Grassy Island will be a tourist attraction as a nature preserve and recreation site." (p. 2-4)	"About 30 species of mammals are found on the Ottawa Refuge Complex." (p. 19) "largest wading bird colony within the Great Lakes ecosystem" (p. 53) "unique slice of marshland" (p.1)
Highly Accessible	Highly Technical
"…the air we breath, water we drink, food we eat, earth we live on, and species that inhabit our city with us" (p. 3-16)	"Federal wilderness" (p. 7), "wilderness integrity" (p.53) and "*Threatened* and *endangered species*" (p. 1), "hydric soil" (p. 13), "hemi-marshes", "gastro-pods" (p. 14)

Table 3.4 Examples of tone of language describing nature from the discourse analysis of three land-use plans.

Land-use plans		
Charlevoix County	Essex County	Toledo
Highly detailed	Moderately sparse	Highly sparse
"Beaver Archipelago: 77 square miles of land area and well over 100 miles of Great Lakes shoreline. It is also home to many threatened and special concern plant and animal species [and] Jordan River: one of Michigan's designated Natural Rivers. Highly valued for its fishery, beautiful river valley and recreation." (p. 10).	"The components of the *natural heritage system* are listed in Table 3, and where appropriate, mapped on the Schedules to this Plan…"(p. 59)	"Toledo is a river city and its major topographical feature is both a commercial thoroughfare and a scenic point of pride." (City of Toledo, p. 3-11)
Highly expressive	Highly dull	Moderately dull
"blessed with abundant natural resources" "scenic areas", "ample wooded and agricultural open space", "scenic views", "many lakes and rolling hillsides", "rural landscape", "visual character", "greenways", "scenic vistas", and "night sky" (p. 32-33). "beautiful river valley" (p. 10), "stately trees" (p. 34), "close to nature" (p. 34), and "clean, inviting environment" (p. 39)	"There are a significant number of plant and animal species considered to be species at risk which includes endangered, threatened and special concern species that are known to occur in Essex County." (Essex County, p. 9)	"The Maumee River will be the area's number one recreational attraction…Greenways will line the river and strollers and bikers will be seen along the riverfront greenway…New housing developments will be built along the city's waterways…Grassy Island will be a tourist attraction as a nature preserve and recreation site." (p. 2-4).
Highly accessible	Highly technical	Highly accessible
"Invasive species pose a significant threat to the County's lakes, wetlands, and forests. These non-native, introduced species outcompete native species…" (Charlevoix County, p. 9).	"significant natural features", "species at risk", "endangered", "threatened", "special concern species", "natural inland watercourses and municipal drains", "limited habitat", "few natural linkages", "natural features", and "impaired water quality." (p. 9-10), "flooding and erosion hazard" (p. 17), and "Type A Intake Protection Zone 1" (p.22)	"Environmental Quality relates to the quality of the air we breath, water we drink, food we eat, earth we live on, and species that inhabit our city with us." (City of Toledo, p. 3-16)

Table 3.5 Examples of tone of language describing nature from the discourse analysis of three conservation plans.

Conservation plans		
Michigan Islands NWR	Point Pelee National Park	Ottawa NWR
Highly detailed	Moderately detailed	Highly detailed
Michigan Islands NWR: "The glacial history of island chains differs across the Upper Great Lakes. Glacial till overlying limestone bedrock forms the bulk of the Beaver Island group in northern Lake Michigan, although Pismire Island (part of Michigan Islands NWR) is an example of a sand and gravel bar island." (p. 16)	"Point Pelee National Park consists of approximately 420 hectares of dry land and 1,070 hectares of freshwater marsh that sits within a ten kilometre long sandspit and marsh complex extending into Lake Erie… Point Pelee is located at the crossroads of two major North American migratory flyways, providing habitat for more than 390 species of migrating birds…" (p. 4-5)	The Ottawa National Wildlife Refuge Complex and the surrounding area lies in the western basin of lake Erie…The area is generally flat with predominantly hydric, or wetland, soils…The Refuge and surrounding land are part of what was traditionally known as the Great Black Swamp, which once included 300,000 acres of wetlands along Lake Erie and extended inland…The climate of northwest Ohio is continental in nature, with moderate extremes of heat, cold, wetness and dryness…" (U.S.F.W.S., Ottawa NWR, p. 13-14)
Highly expressive	Moderately dull	Moderately dull
"blessed with abundant natural resources" "scenic areas", "ample wooded and agricultural open space", "scenic views", "many lakes and rolling hillsides", "rural landscape", "visual character", "greenways", "scenic vistas", and "night sky" (p. 32-33). "beautiful river valley" (p. 10), "stately trees" (p. 34), "close to nature" (p. 34), and "clean, inviting environment" (p. 39)	"Point Pelee National Park consists of approximately 420 hectares of dry land and 1,070 hectares of freshwater marsh that sits within a ten kilometre long sandspit and marsh complex extending into Lake Erie. " (Point Pelee, p. 4)	The Lake Erie marshes are at the crossroads of the Mississippi and Atlantic flyways, and they annually attract hundreds of thousands of migrating waterfowl. During a normal migration, waterfowl use of the Ottawa Refuge Complex averages 3 million duck-use days and 800,000 goose-use days. (U.S.F.W.S. Ottawa NWR, p. 17)
Highly technical	Moderately technical	Highly technical
"Develop and maintain a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges." (USFWS Michigan Islands NWR, p. 3)	"The coastal indicator is in 'fair' condition with a stable trend in the next State of the Park Assessment, through the continued maintenance of savannah habitats including the use of prescribed fire. The forest indicator is maintained in 'good' condition in the next State of the Park Assessment through continued management of the hyperabundant white-tailed deer population." (Parks Canada, p. 13).	"Carp have become a serious problem in many wetlands due to their sheer numbers, aquatic plant diet, and markedly increasing water turbidity during bottom feeding. Increases in turbidity decrease sunlight penetration in the water, which in turn reduces the plant and zooplankton production necessary to many wetland food chains." (U.S.F.W.S. Ottawa NWR, p. 20)

Figure 4.1 A selection of data from the discourse analysis of the Charlevoix County Future Land Use Plan (2018).

Figure 4.2 A selection of data from the discourse analysis of the Gravel Island, Green Bay, Harbor Island, Huron, and Michigan Islands National Wildlife Refuges Comprehensive Conservation Plan (2012).

Figure 4.3 A selection of data from the discourse analysis of the Essex County Official Plan (2014).

Figure 4.4 A selection of data from the discourse analysis of the Point Pelee Management Plan (2020).

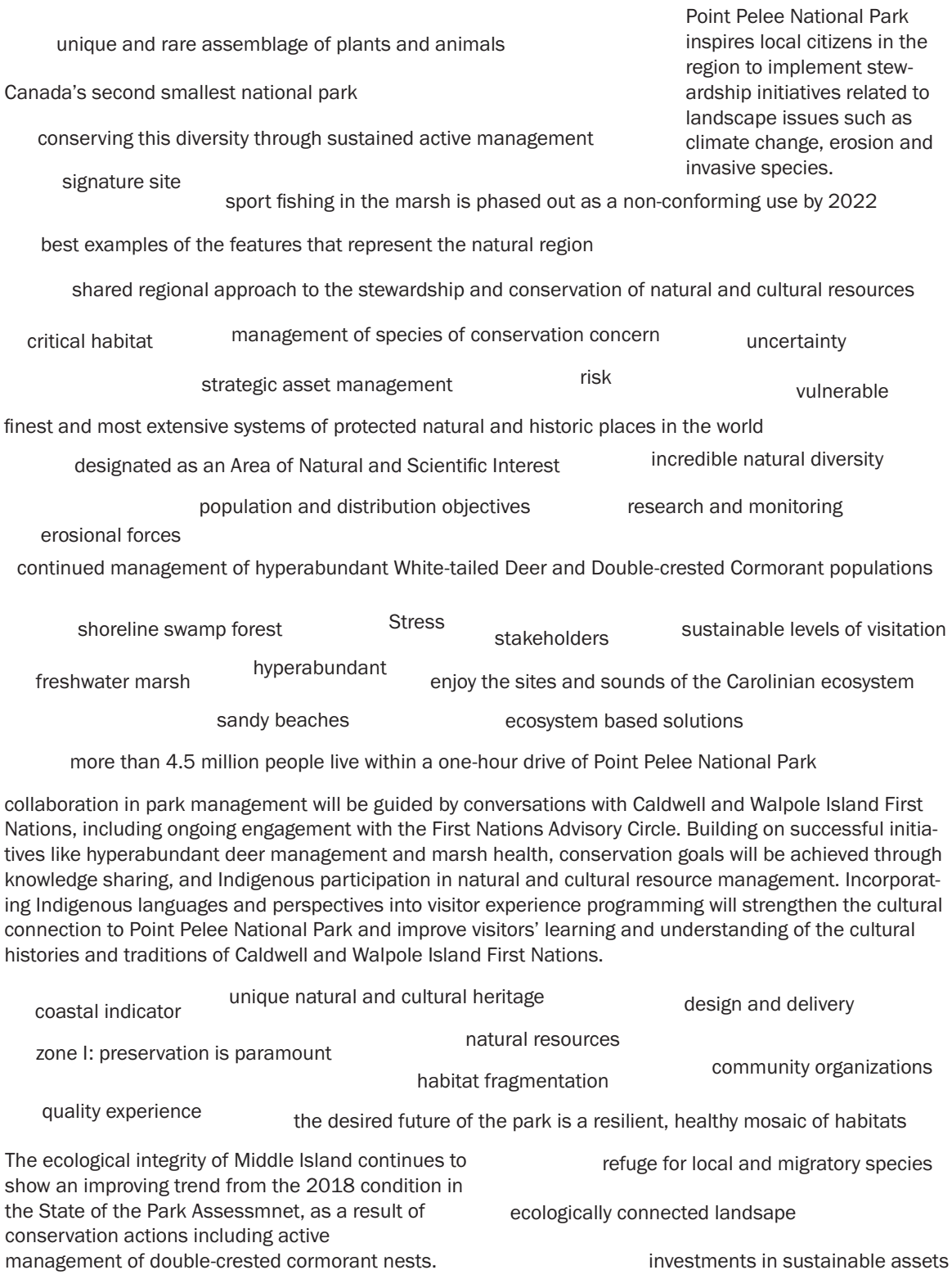


Figure 4.5 A selection of data from the discourse analysis of the Toledo Comprehensive Plan (2020).

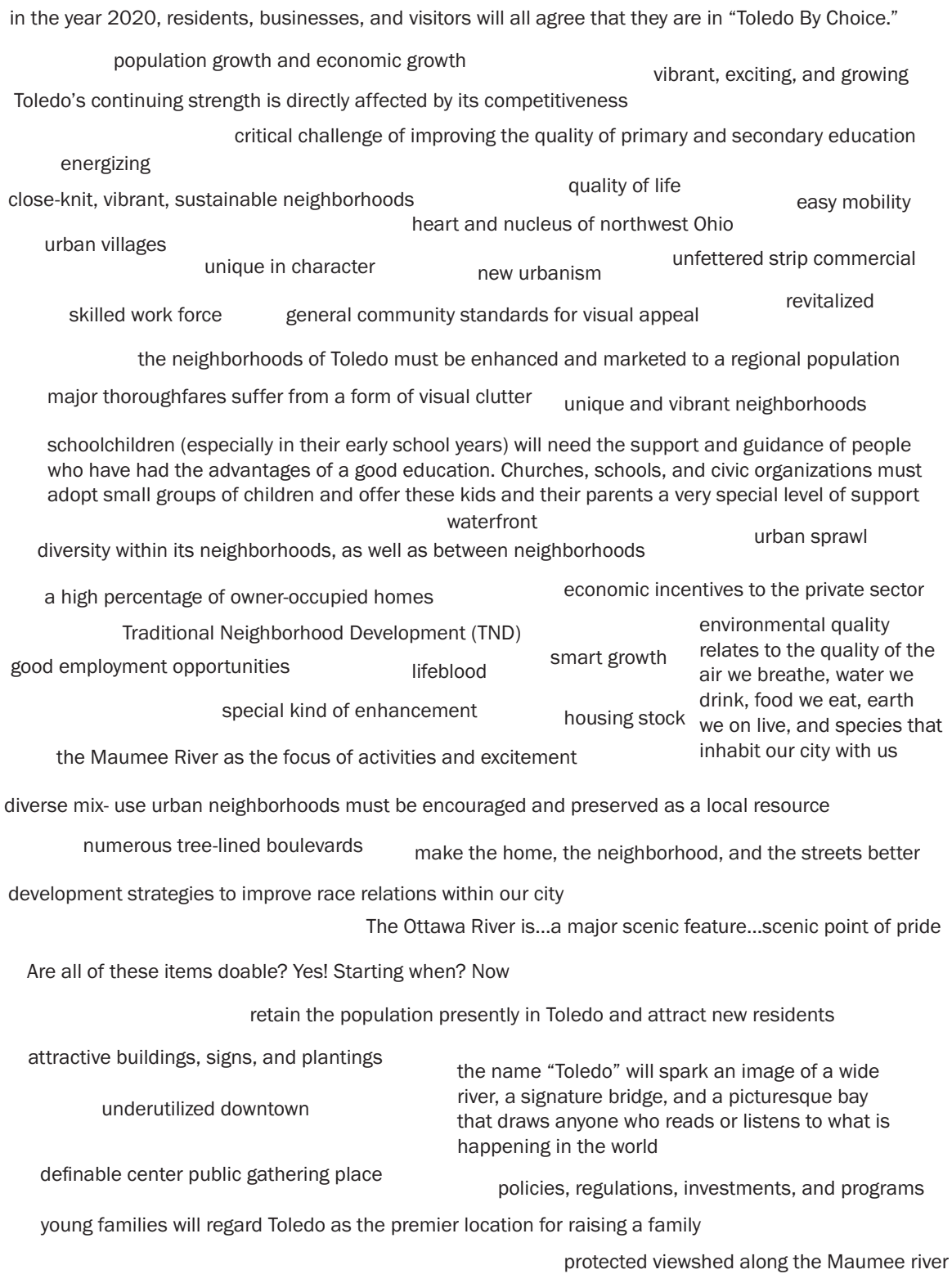
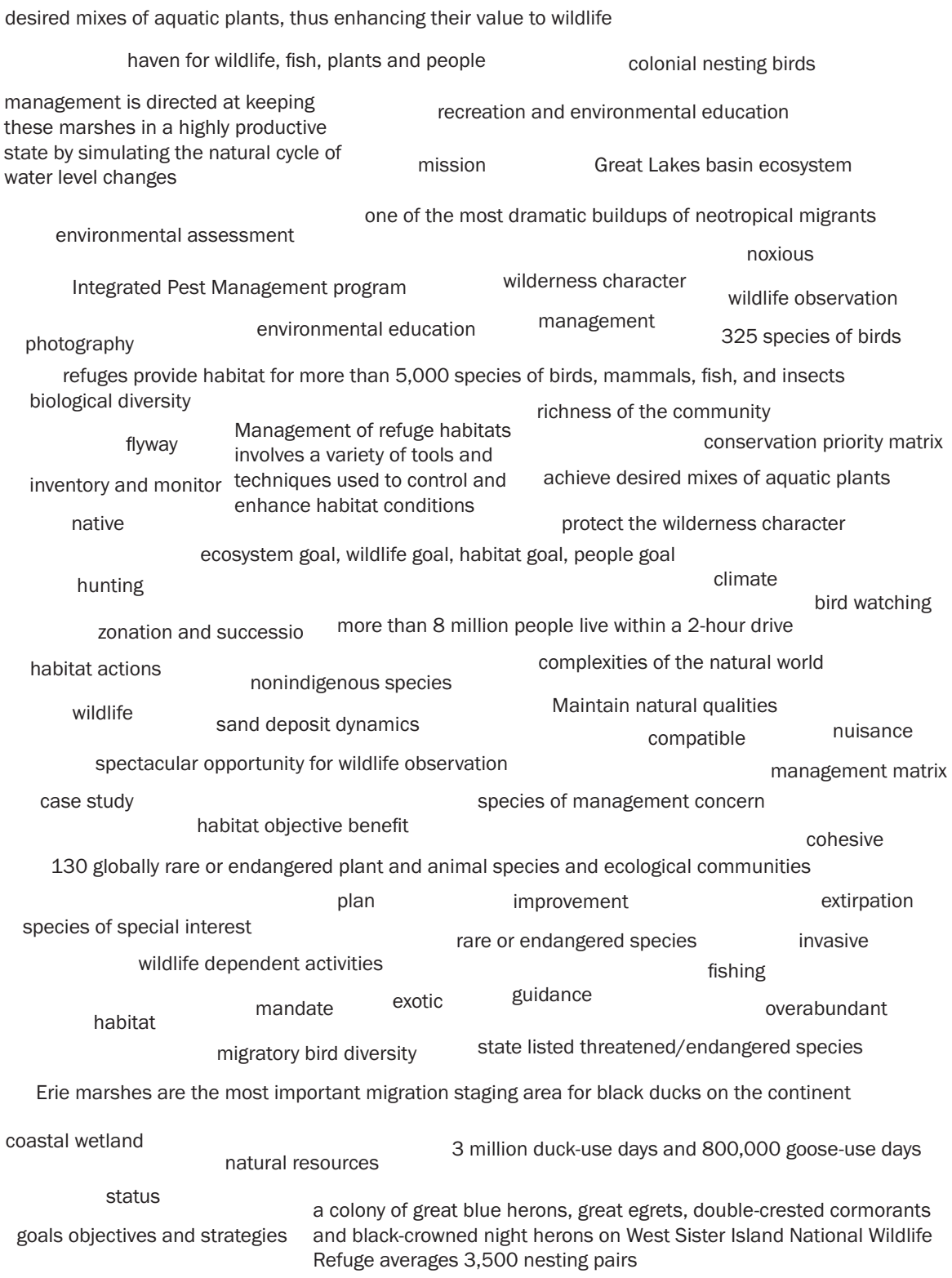


Figure 4.6 A selection of data from the discourse analysis of the Ottawa National Wildlife Refuge Comprehensive Conservation Plan (1997).



APPENDIX I: SELECTED DISCOURSE ANALYSIS RESULTS IN FIVE SECTIONS

Appendix I structure:

1. Site or Plan-type
    1.1. Plan titles
    1.2. All About
    1.3. Cormorant management
    1.4. Purpose
    1.5. Forms of nature
    1.6. Tone of language describing nature

1. Beaver Archipelago

1.1. Plan titles

Charlevoix County Future Land Use Plan (2018)

Gravel Island, Green Bay, Harbor Island, Huron, and Michigan Islands National Wildlife Refuges Comprehensive Conservation Plan (2012)

1.2. All about

Land-use plan: Unique sense of place

Conservation plan: Wilderness character

1.3. Cormorant management

Land-use plan: Double-crested cormorants are not included. Invasive species management is mentioned, but there is no mention of overabundant species or nuisance species.

Conservation plan: Double-crested cormorants were included under a section titled "Conflict Species". The birds are lethally managed on Gull Island, Pismire Island, and Hat Island by USFWS/NWR staff under the Public Resource Depredation Order. The PRDO allows certain agents to kill double-crested cormorants when they "significantly impact fish, vegetation, or other birds." (p. 40). According to the Michigan Islands NWR conservation plan, control measures in Michigan are "mostly to reduce documented or perceived impacts on fish populations." (p. 41), but based on the plan's discussions and descriptions of Gull, Pismire, and Hat islands, these cormorant colonies are likely to be managed for vegetation and other birds (habitat).

1.4. Purpose

Land-use plan: Improve economic growth and quality of life; coordinate municipal and regional planning; balance land uses between development, conservation, recreation, and transportation; preserve Charlevoix County's "unique sense of place".

Conservation plan: Manage the land with wildlife as the first priority; keep ecosystems healthy; maintain biodiversity; educate the public on the value of the refuge; inspire

people to become “natural resource stewards”; preserve an important part of America’s natural heritage.

The purposes of each plan are largely different from each other, but both are concerned with conservation and the role that the landscape plays in cultural identity.

1.5. Forms of nature

Both plans include six to seven of eight forms of nature, covering the greatest range of representations of forms of nature in their respective groups. Between these two plans the only difference is in representation of nature as spiritual resource—the land-use plan does not include this form, while the conservation plan does. This conservation plan, Michigan Islands NWR, is the only plan of all six in the study which represents nature as a spiritual resource. It is a brief and indirect reference, but it is there. Neither plan represents nature as collaborator.

1.6. Tone of language describing nature

The tone of language describing nature in both plans is highly detailed and highly expressive. However, where the land-use plan uses highly accessible language the conservation plan uses highly technical language. Compared to plans at the other two sites, both of these plans use more detailed and expressive language to describe nature.

2. Middle Island

2.1. Plan titles

Essex County Official Plan (2014)

Point Pelee National Park Management Plan Draft (2020)

2.2. All about

Land-use plan: Resource management

Conservation plan: Rare Carolinian ecosystem

2.3. Cormorant management

Land-use plan: Double-crested cormorants are not mentioned. Wildlife management is only alluded to in a section discouraging the introduction of invasive species.
Conservation plan: Double-crested cormorants are lethally managed on Middle Island through the authorization of the Fish and Wildlife Conservation Act (Dobbie, 2012). In 2020 the Fish and Wildlife Conservation Act, 1997 was amended to include a hunting season for double-crested cormorants in Ontario. The impacts of this legislative change on the cormorants of Middle Island are as yet unclear. Currently, Middle Island is closed to the public and there is no indication that it will be opened to the public for cormorant hunting. The rationale for lethal management of double-crested cormorants on Middle Island is focused on preserving vegetation (Carolinian forest ecosystem). The Point Pelee Management plan describes cormorant population control as a way to help the Essex Region Conservation Authority reach its natural cover targets (p. 12) and protect the "ecological integrity" (p. 13) of Middle Island's Carolinian forest. The value of this island's particular forest ecosystem is recognized at the national level as a Carolinian Canada Signature Site (p. 5).

2.4. Purpose

Land-use plan: Manage economic resources for long-term prosperity and support agricultural industry with diverse permitted uses; keep land development away from agricultural land, mineral resources, and hazards; encourage mixed-use land development in existing "settlement areas"; protect water quality and status as recreational beacons; restore natural areas and increase habitat connectivity in the region.
Conservation plan: Preserve land for many generations of people to enjoy; preserve a piece of Canadian natural heritage; promote resiliency in the park's ecosystems; coordinate with regional land use planning to improve habitat connectivity; include local Indigenous nations in park management; maintain marsh biodiversity and ecosystem health; mitigate erosional forces; offer programming that reaches many audiences and includes Indigenous history of the land.

2.5. Forms of nature

Both plans cover five of eight forms of nature, but not all the same ones. They both include nature as cultural resource, threat to be managed, being with rights and independent agent. Where the Essex County land-use plan includes nature as an economic resource, the Point Pelee National Park conservation plan includes nature as wild space. The difference in representation of forms of nature between the Essex County land-use plan and Point Pelee conservation plan tracks parallel to their respective purposes and what they are focused on. Essex County land-use plan is focused on natural resources, and it includes many representations of nature as an economic resource. Point Pelee conservation plan is focused on rare Carolinian ecosystem, and it includes many representations of nature as wild space.

2.6. Tone of language describing nature

The Essex County land-use plan and Point Pelee National Park conservation plan land use similar tones of language to describe nature. Both land on the dull and technical side of the expressive→dull and accessible→technical spectrums. On the detailed→sparse spectrum the plans differ only slightly, with the Essex County land-use plan being more sparse than the Point Pelee National Park conservation plan. The Middle Island plans use more moderate language on all spectrums than the Beaver Archipelago and West Sister Island plans. The Middle Island plans are generally less detailed, expressive, and accessible than the Beaver Archipelago plans but more detailed and accessible than the West Sister Island Plans. The Middle Island plans are fairly equal to the West Sister Island plans on the expressive→dull spectrum, landing on the dull side.

3. West Sister Island

3.1. Plan titles

Toledo 20/20 Comprehensive Plan Toledo by Choice (2020)

Ottawa National Wildlife Refuge Comprehensive Conservation Plan (1997)

3.2. All about

Land-use plan: Growth

Conservation plan: Inviolate sanctuary

3.3. Cormorant management

Land-use plan: Double-crested cormorants are not mentioned. Wildlife is only present in the section “Environmental Quality”, which mentions “species that inhabit our city with us.” (p. 3-16)

Conservation plan: Double-crested cormorants are actively managed on West Sister Island under the PRDO to protect vegetative habitat for other birds, and management activities are reported in a wilderness monitoring report separate from the Ottawa NWR conservation plan(Payne, 2012). In the Ottawa NWR conservation plan, double-crested cormorants first appear in a description of the refuge’s wildlife resources as one species among a large colony (average 3,500 nesting pairs) of water birds on West Sister Island. They then appear in “Habitat Objective 1: Maintain nesting habitat for approximately 1,000 great blue herons, 800 great egrets, 500 black-crowned night herons and 1,500 double crested cormorants (1998 population levels).” (Ottawa, p. 53). This “habitat objective” is a method for achieving “Habitat Goal 1: Provide habitat conditions favorable to colonial nesting wading birds without compromising the wilderness integrity.” (Ottawa, p. 53). There is no description of active control measures or lethal management, but the population objective for the colony is much lower than the size of the colony described in the wildlife resources section, which implies that refuge managers will be actively managing birds on West Sister Island. Finally, double-crested cormorants come up during public consultation, where one focus-group participant “questioned the level of protection of cormorants and great blue herons. His feeling was that the birds were reducing the fish populations too much. As part of the discussion, the need for more research and education about this issue was pointed out.” (p. G-7).

3.4. Purpose

Land-use plan: Improve economy, quality of life, job market, and transportation system; become a regional economic and cultural centre; balance residential and employment land-use; attract more residents and businesses to the city; improve the city’s built form and aesthetic appeal.

Conservation plan: Manage ecosystems to support vulnerable species; protect and support migratory and waterbird nesting habitat; support recreation that does not interfere with wildlife priorities; preserve a piece of America's natural heritage; protect the wilderness character of designated areas.

3.5. Forms of nature

The Toledo land-use plan includes two of eight forms of nature while the Ottawa NWR conservation plan includes six. Both plans include nature as economic and cultural resource. Where the Ottawa NWR conservation plan includes nature as wild space, threat to be managed, being with rights, and independent agent, the Toledo land-use plan has nothing. The difference in representation of diverse forms of nature between the West Sister Island plans is far greater than between the Middle Island and Beaver Archipelago plans. At these sites, diversity of representation varies, at most, by one form of nature. In comparison, the West Sister Island plans vary in diversity by six forms of nature. This points to the possibility that there is a greater difference between perceptions of nature in land-use planning and conservation planning at this site than at the other two sites in the study.

3.6. Tone of language describing nature

The tone of language used to describe nature in the West Sister Island plans also demonstrates a greater difference in the perception of nature between land-use planning and conservation planning at this site than at the other two sites in this study. Both Beaver Archipelago plans land in the same exact place on two of three spectrums. Both Middle Island plans land on the same side of all three spectrums. Contrastingly, the West Sister Island plans land on opposite ends of two of three spectrums.

4. Land-use plans

4.1. Plan titles

Charlevoix County Future Land Use Plan (2018)

Essex County Official Plan (2014)

Toledo 20/20 Comprehensive Plan Toledo by Choice (2020)

4.2. All about

Charlevoix County: Unique sense of place

Essex County: Resource management

Toledo: Growth

4.3. Cormorant management

Neither double-crested cormorants nor any other “nuisance”, “conflict” or “overabundant” species, are mentioned in the land-use plans.

4.4. Purpose

Goals common to all three land use plans

Improve the area economy and quality of life; balance land-use; preserve or improve the landscape/environment.

4.5. Forms of nature

The land-use plans vary widely from site to site in the number of forms of nature that they include. Toledo only includes two forms while Charlevoix County includes six. This variance suggests a site-specific point of view on nature than conservation plans, which are more consistent in the number of forms of nature that they include from site to site, suggesting a centralized point of view on nature. None of the land-use plans include nature as a spiritual resource or collaborator, and only one includes nature as wild space.

4.6. Tone of language describing nature

Two of the three land-use plans are on the sparse, dull, and accessible end of the three spectrums. Charlevoix County is one exception, being detailed and expressive where the others are sparse and dull. Essex County is the other exception, being technical while the others are accessible. The land-use plans in this study are sparse and accessible where conservation plans are detailed and technical. Four of the total six plans used dull tone of language to describe nature, with both Beaver Archipelago plans being the exception to this by being highly expressive in their descriptions of nature.

5. Conservation Plans

5.1. Plan Titles

Gravel Island, Green Bay, Harbor Island, Huron, and Michigan Islands National Wildlife Refuges Comprehensive Conservation Plan (2012)

Point Pelee National Park Management Plan Draft (2020)

Ottawa National Wildlife Refuge Comprehensive Conservation Plan (1997)

5.2. All about

Michigan Islands NWR: Wilderness character

Point Pelee National Park: Rare Carolinian ecosystem

Ottawa NWR: Inviolate sanctuary

5.3. Cormorant management

All three conservation plans identify double-crested cormorants as an issue and report population management. The Ottawa NWR plan is not clear about its active control program, while the Michigan Islands NWR and Point Pelee National Park plan are explicit.

Michigan Islands NWR: Double-crested cormorants are documented throughout the Michigan Islands NWR. The birds are classified as a conflict species and have their own section dedicated to explaining population management in both Michigan and Wisconsin. Cormorants also come up in the plan's report on public consultation, where there were "Strong feelings among some for increased control measures in Green Bay and Beaver Island chain." (p. 14). Cormorants are also listed as resident nesting birds on many islands in the refuge complex, and in inventory lists. On many of these islands, double-crested cormorant populations are actively managed, often to prevent changes in vegetation.

Point Pelee National Park: Double-crested cormorants appear in the Point Pelee National Park plan twice. First the birds are described as a management target in maintaining and improving the "ecological integrity of Middle Island" (p. 13). Second, cormorants are described as a "hyperabundant" species that threatens the health of Point Pelee's forest ecosystems in the plan's Summary of Strategic Environmental Assessment (p. 20).

Ottawa NWR: Double-crested cormorants first appear in a description of the refuge's wildlife resources as one species among a large colony (average 3,500 nesting pairs) of water birds on West Sister Island. They then appear in "Habitat Objective 1: Maintain nesting habitat for approximately 1,000 great blue herons, 800 great egrets, 500 black-crowned night herons and 1,500 double crested cormorants (1998 population levels)." (Ottawa, p. 53). This "habitat objective" is a method for achieving "Habitat Goal 1: Provide habitat conditions favorable to colonial nesting wading birds without compromising the wilderness integrity." (Ottawa, p. 53). There is no description of active control measures or lethal management, but the population objectives for the colony is much lower than the size of the colony described in the wildlife resources section, which implies that refuge managers will be actively managing the population on West Sister Island. Finally, double-crested cormorants come up during public consultation, where one focus-group participant "questioned the level of protection of cormorants and great blue herons. His feeling was that the birds were reducing the fish populations too much. As part of the discussion, the need for more research and education about this issue was pointed out." (p. G-7).

5.4. Purpose

Goals common to all three conservation plans

Protect threatened and endangered species, habitats, and ecosystems; preserve national, natural heritage; connect people to nature through recreation.

5.5. Forms of nature

In contrast to the land-use plans, the conservation plans vary little from site to site in the number of forms of nature that they include. The conservation plans only vary by two forms while the land-use plans vary by four, making the conservation plans more consistent and diverse in forms of nature. Similar to land-use plans, no conservation plans include nature as a collaborator—this form of nature is absent from every plan in the study. Only one conservation plan, at Beaver Archipelago, represents nature as a spiritual resource (and in a vague, indirect way). This makes the form spiritual resource close to as absent as the form collaborator. Conservation plans include a greater number of forms of nature, and more consistently so, than land-use plans. If we take the

number of forms of nature included in a plan as an indication of the breadth of a conservation plan's view of nature, then this demonstrates that a conservation plan is more likely than a land-use plan to have a broad view of nature.

5.6. Tone of language describing nature

All three conservation plans are detailed and technical, and two of three are on the dull end of the spectrum. Like forms of nature in conservation plans, the tone of language varies less across conservation plans than it does across land-use plans. Land-use plans demonstrate high variability between sites in both forms of nature and tone of language describing nature, while conservation plans demonstrate consistency between sites in forms of nature and tone of language describing nature. This is a consistent difference between the two plan types, pointing toward a few other factors which differ consistently between land-use plans and conservation plans: who writes the plan, and for whom is it written?