Collaborations in UNESCO Biosphere Regions/Reserves: Interagency collaboration in the Beaver Hills Biosphere versus inter-biosphere collaborations across Canada

by

Julie Ostrem

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Faculty of Kinesiology, Sport and Recreation

University of Alberta

Abstract

Collaboration, as both the practice of working together and building organizational resilience, is paramount to addressing the complex problems of current conservation efforts. In an attempt to balance the social and ecological worlds, UNESCO Biosphere Regions/Reserves (BRs) outline collaboration at all scales as a top priority. UNESCO BRs help encourage a harmonious relationship between people and the land through the coexistence of biodiversity conservation and sustainable development practices. As a result, the perspective of multiple stakeholders must be considered. Interagency collaboration within BRs is prioritized throughout strategic planning documents of individual BRs and the mission and vision of participating agencies. Collaboration is further encouraged between BRs themselves as UNESCO and national backbone support organizations outline inter-BR collaboration as a key objective. This research explores collaboration across local and national scales in UNESCO BRs.

The goal of this study is to understand and enhance the potential collaborations within UNESCO BRs. This research is composed of two studies. One study explores the dynamics of interagency collaborations for environmental education and heritage interpretation within the Beaver Hills Biosphere (BHB). Managers and educators across the BHB (n=23) participated in semi-structured interviews to understand the unique drivers and barriers of collaboration within their field. These interviews covered existing mechanisms of collaboration, the potential benefits and drawbacks of collaboration, the enablers and barriers to collaboration, and recommendations for future collaboration. The other study explores the dynamics of collaboration across Canadian BRs. Practitioners of Canadian BRs (n=14) and representatives of national support organizations (n=2) were interviewed to understand the nuance of interagency collaboration within their own BR, as well as the potential for inter-BR collaborations.

The findings from this research are discussed both theoretically as they apply to Collective Impact Theory (CIT) and Trust Theory, as well as practically through an analysis of current mechanisms of and future recommendations for collaborative processes. In both local and national collaborations, CIT has useful elements to discuss the intricacies of collaboration but is only partially applicable because of dynamic capacities. Trust theory provided an interesting lens to explore findings as local collaborations relied more on interpersonal forms of trust, like dispositional and affinitive trust, whereas national collaborations relied more heavily on procedural trust. The research findings suggest that adequate capacity, a backbone support agency, the development of subgroups, and inclusivity are observed as important enablers to collaboration across geographic scales. The research findings from this study have the potential to shed light on opportunities for progressive development through collaboration. This research also could benefit other natural resource management sectors and land-use governance, as the key outcomes are transferable to any collaborative effort involving diverse stakeholder communication.

Preface

This thesis contains the original research work of Julie A. Ostrem. This research was approved by the University of Alberta Research Ethics Board; Project Name: "The Potential for Collaboration in Canadian Biosphere Reserves: Environmental Education and Heritage Interpretation in the Beaver Hills Biosphere"; REES Protocol Pro00099415 (06/30/2020). All research within this thesis was designed by Julie Ostrem and Glen Hvenegaard. Research was conducted, analyzed, and interpreted by Julie Ostrem.

Chapter 2 of this thesis is adapted from the previously published: "Ostrem, J., & Hvenegaard, G. (2020). Reaching common ground: The potential for interagency collaboration in UNESCO biosphere reserves. *International Journal of UNESCO Biosphere Reserves, 4*(1). https://doi.org/10.25316/IR-15211".

Chapter 3 of this thesis is an extension from a report created for the Beaver Hills Biosphere that will eventually be accessible on their website (https://www.beaverhills.ca/)

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The University of Alberta is located on Treaty 6 Territory, and acknowledges the histories, languages, and cultures of First Nations, Métis, Inuit, and all First Peoples of Canada, whose presence continues to enrich our vibrant community. I am incredibly grateful to have grown up on Treaty 6 territory and to have the opportunity to research, learn, live, and love on this land.

Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Table of Contents

Abstract ii

Preface iv

Acknowledgements v

Treaty Acknowledgement vi

Author's Declaration vii

Table of Contents viii

List of Tables xii

List of Figures xiii

List of Abbreviations xiv

Chapter 1: Introduction 1

Research Purpose and Goals 3

Outcomes 4

Timeline 5

References 7

Chapter 2: Reaching common ground: The potential for interagency collaboration in UNESCO BRs 8

Introduction 9

The Beaver Hills Biosphere 11

Interagency Collaboration 13

Barriers to Collaboration 14

Benefits from Collaboration 15

Drawbacks of Collaboration 16

Collaboration in BRs 17

Theoretical Frameworks for Collaboration 27

Environmental Education and Interpretation 32

Conclusions 35

References 38

Chapter 3: Interagency Collaboration in the Beaver Hills Biosphere for Environmental Education and Heritage Interpretation 44

Abstract 44

Introduction 44
Methods 49
Study Area: The Beaver Hills Biosphere (BHB) 49
Research Design 54
Data Analysis 57
Findings 59
Quantitative Results 60
Qualitative Analysis Findings 63
Theme: Existing Mechanisms of Collaboration in the BHB 64
Networks 65
Continuity 67
Theme: Benefits and Drawbacks of Collaboration 69
Efficiency 71
Community 72
Theme: Enablers and Barriers to Collaboration 75
Access to Knowledge 76
Capacity 77
Backbone Support Agency 79
Communication 81
External Factors 83
Goals 85
Trust 86
Theme: Recommendations 88
Inclusivity 89
Collaborative Inventory 93
Support 96
Discussion 98
Limitations and Future Research 106
Conclusion 108
References 110

Chapter 4: Creating, sustaining, and improving collaboration across Canadian Biosphere Reserves/Regions 117
Abstract 117
Introduction 118
Methods 126
Study Context 126
Canadian Biosphere Reserve Association (CBRA) 126
Participants 126
Data Collection and Research Design 128
Pilot Test 129
Data Analysis 130
Findings: Canadian Biosphere Region Interviews 131
Theme: Capacity 132
Theme: Enablers & Barriers 138
Trust and Perceived Threat 138
Alignment 142
Awareness and accessibility 144
Theme: Canadian Biosphere Network 146
Theme: Collaborative Mechanisms 152
Theme: Inclusivity and Indigenous Engagement 157
Discussion 167
Limitations and Future Research 174
References 176
Chapter 5: Conclusions 182
Study Comparison 182
Research Limitations 190
Conclusions 194
References 197
Thesis Bibliography 199
Appendix 3.A - Interview Guide 212
Appendix 3.B - Consent Form 215

Appendix 4.A - Interview Guide 218
Appendix 4.B - Consent Form 220

List of Tables

Table 1.1 Project milestones and timeline.

Table 2.1 Objectives and action items for collaboration recommended by UNESCO Biosphere regions' international strategic action plans: Seville Strategy (1995), Madrid Action Plan (2002) and Lima Action Plan (2016), MAB Strategy (2015-2025)

Table 2.2 Objectives and action items for collaboration recommended by the Canadian Biosphere Reserves Association (2019) (2021) and the Canadian Commission for UNESCO (2014).

Table 2.3 Objectives and action items for collaboration recommended by the Beaver Hills Biosphere Strategic Plan (2016-2019)

Table 3.1 Inventory of interviewed agencies

Table 3.2 Descriptive statistics of potential barriers to collaboration

Table 3.3 Description of inductive coding themes and percent of interview covering that theme

Table 3.4 Four types of trust and their definitions (Table adapted from Stern and Coleman, 2015; p.122)

Table 4.1 List of participating BRs

Table 4.2 Description of inductive coding themes and percent of interviews covering that theme

Table 4.3 CBRA's role in facilitating collaboration (participant responses)

Table 4.4 Recommendations for CBRA

Table 5.1 Similarities and differences of local vs. national collaboration from research findings. Numbers represent the contents of each row for ease of reference during discussion

List of Figures

Figure 2.1. Map of the Beaver Hills Biosphere (BHB, 2022)

Figure 3.1. Map of Canadian UNESCO BRs

Figure 3.2. Common themes found in interviews: Existing Mechanisms of Collaboration

Figure 3.3. Common themes found in interviews: Benefits and drawbacks of collaboration

Figure 3.4. Common themes found in interviews: Enablers and barriers of collaboration

Figure 3.5. Common themes found in interviews: Recommendations

List of Abbreviations

BHB: Beaver Hills Biosphere

BHBRA: Beaver Hills Biosphere Reserve Association

BHI: Beaver Hills Initiative

BR: Biosphere Region/Reserve

CBRA: Canadian Biosphere Reserve Association

CCUNESCO: Canadian Commission for UNESCO

CIT: Collective Impact Theory

MAB: Man and the Biosphere

PI: Primary Investigator

UNESCO: United Nations Educational, Scientific and Cultural Organization

Chapter 1: Introduction

This thesis is composed of 5 chapters: a general introduction to this research (Ch.1), three chapters that could be transformed into academic papers (Ch.2, 3, 4) and a concluding comparative essay (Ch.5).

This thesis addresses the intricacies of collaboration across geographic scales within UNESCO Biosphere Regions/Reserves (BRs). Firstly, I explore literature on collaborative theory and collaboration within UNESCO BRs (Ch.2). Collective Impact Theory (CIT) and Trust Theory are investigated as they apply to collaborations within and between Canadian BRs. Chapter 3 explores local collaboration among environmental education and heritage interpretation agencies within the Beaver Hills Biosphere (BHB). In 2019, the BHB pursued a grant to promote greater interagency collaboration through a focused communications effort. After many unexpected changes in light of the COVID-19 pandemic, this research attempted to evaluate current communications strategies in order to understand and enhance interagency collaboration in the environmental education and heritage interpretation sector of the BHB. Through interviews with agency managers, educators, and interpreters in the BHB, I examined the current mechanisms, benefits and drawbacks, and enablers and barriers of interagency collaboration, along with recommendations for future collaborations.

Next, I investigated national collaboration across the Canadian BR network (Ch.4). Engaging in an open platform for collaborative dialogue *between* BRs is a highly desirable and sought out goal encouraged by the Canadian Biosphere Reserve Association (CBRA) (CBRA, 2019). With a common vision and mission instilled through the Man and the Biosphere (MAB) Programme, BRs actively seek to accomplish common goals (UNESCO, 2019). This chapter

identifies synergies and overlapping opportunities among Canadian BRs, and the enablers and barriers to inter-BR collaboration.

The similarities and differences of local versus national collaboration of BRs are discussed in the final chapter (Ch.5). Through an exploration of interagency and inter-BR collaboration in UNESCO BRs, this thesis will contribute to current research on collaborative theory, the UNESCO BR concept, as well as collaboration in the field of environmental education and heritage interpretation. This thesis concludes with an overview of research contributions, followed by directions for future research and an analysis of the limitations of the research.

An additional consideration for this thesis is the use of the word *Biosphere Region* versus *Biosphere Reserve*. This terminology is currently under debate across the globe as the word "reserve" has a negative connotation for some and appears to convey that humans are excluded from the area, or in the Canadian context, that they are somehow associated with treaties and Indigenous reserve land (Pool-Stanvliet, 2014; Stoll-Kleemann & O'Riordan, 2018). Canadian biospheres are currently shifting this term into biosphere *regions*. Several countries across the globe have already adopted this terminology or have shifted to simply calling them UNESCO biospheres (Stoll-Kleemann & O'Riordan, 2018). However, UNESCO has yet to make this change. Because of the uncertainty of future terms, this thesis uses the acronym "BR" to encompass both terms.

An additional consideration of this research is that the primary investigator and the supervisor of this research are not neutral observers as they have pre-existing relationships with several research participants and have worked directly in the field of environmental education and heritage interpretation in the BHB.

Research Purpose and Goals

The goal of this study is to understand and enhance current mechanisms for interagency collaboration within BRs, as well as to explore the potential for inter-BR collaboration. More specifically, this thesis investigates this goal by examining interagency collaboration in the context of environmental education and heritage interpretation as it applies to the BHB, and by examining inter-BR collaboration among members of the Canadian BR Network. This thesis frames the discussion of research findings using Collective Impact Theory (CIT) and Trust Theory. Although there is considerable research on CIT and Trust Theory as they apply to environmental management (Kania and Kramer, 2011; Stern & Coleman, 2015; Stern, 2018; Walker & Daniels, 2019; Weaver, 2014) and other fields, research on their applicability in UNESCO BRs is limited.

Through an analysis of Canadian BRs and a case study on the BHB, I will explore what factors influence interagency and inter-BR collaboration through the following research questions and objectives:

1) What is the status and potential for interagency collaboration on environmental education and heritage interpretation within the BHB?

a) Document existing mechanisms of interagency collaboration within the BHB
b) Examine the benefits, drawbacks, barriers, and enablers of interagency collaboration in the field of environmental education and interpretation
c) Promote linkages and mechanisms for enhanced collaboration

2) What factors influence collaboration among Canadian BRs?

a) Evaluate perceptions of current collaboration efforts between Canadian BRs by key representatives of those BRs
b) Identify the benefits, barriers, and enablers of collaboration between Canadian BRs, as perceived by key representatives of those BRs

3) How does local interagency collaboration differ from national inter-BR collaboration in the context of Canadian BRs?

a) Compare and contrast the enablers and barriers of collaboration across the different geographic scales.
b) Evaluate the role of backbone support organizations; the Canadian Biosphere Reserve Association and the Beaver Hills Biosphere Reserve Association.

Outcomes

The key outcomes and deliverables for this project were:

- A guest lecture on collaboration and the Beaver Hills Biosphere for the capstone environmental science course at the University of Alberta, Augustana Campus
- A publication on the potential for interagency collaboration for environmental education and heritage interpretation in UNESCO BR (Published in the International Journal of UNESCO Biosphere Reserves: https://viurrspace.ca/handle/10613/23306)
- A final report highlighting a series of interviews with environmental education and heritage interpretation agencies in the Beaver Hills Biosphere

- A final presentation summarizing important findings from this research to the Beaver Hills Biosphere Reserve Association
- Conference presentations on research findings at the Alberta Recreation and Parks Association Conference (2020), National Association for Interpretation National Conference (2021), Canadian Parks Collective for Innovation and Leadership Virtual Research Summit (2022), and the International Conference on Science and Research in, for and with UNESCO Biosphere Reserves (2022).
- A webinar on capacity building through collaboration to the Canadian Biosphere Reserve Association (2022)

Timeline

A timeline of the key outcomes and deliverables for this project are outlined in Table 1.1.

Table 1.1 Project milestones and timeline

	Jan-Apr 2020	May-Aug 2020	Sep-Dec 2020	May-Jun 2021	Jan-Mar 2021	Apr-May 2021	May-Jun 2021	Jun-Dec 2021	Jan-Apr 2022
Ethics Application									
Presentation at ARPA Conference									
Augustana Guest Lecture									
Literature Review									

Research Proposal									
International Journal of UNESCO Biosphere Reserves Publication									
Interview development									
Complete BHB Interviews									
Complete CBRA Interviews									
Data Analysis									
Final Reports									
Final Presentations									
Finalize Thesis									
Conference Presentations and Webinars									

References

Canadian Biosphere Reserves Association [CBRA]. (2019). *Working together to inspire a positive future: Best practices from Canada's UNESCO biosphere reserves.* https://static1.squarespace.com/static/5735fdc137013b8eeb217d63/

Kania J., & Kramer, M. (2011a). Collective impact. *Stanford Social Innovation Review*, 36-41.

Pool-Stanvliet, R. (2014). *The UNESCO MAB Programme in South Africa: Current challenges and future options relating to the implementation of biosphere reserves.* [Doctoral dissertation, Ernst-Moritz-Arndt-University Greifswald].

Stern, M. J., & Coleman, K. J. (2015). The multidimensionality of trust: Applications in collaborative natural resource management. *Society & Natural Resources*, *28*(2), 117-132. https://doi.org/10.1080/08941920.2014.945062

Stern, M. J. (2018). *Social science theory for environmental sustainability: A practical guide.* Oxford University Press.

Stoll-Kleemann, S., & O'Riordan, T. (2018). Biosphere reserves in the anthropocene. In Dominick A. DellaSala, and Micheal I. Goldstein (eds.) *The Encyclopedia of the Anthropocene* (Vol. 3, p.347-353). Elsevier.

Walker, G. B., & Daniels, S. E. (2019). Collaboration in environmental conflict management and decision-making: Comparing best practices with insights from collaborative learning work. *Frontiers in Communication, 4*, 2.

Weaver, L. (2014). The promise and peril of collective impact. *The Philanthropist*, *26*(1), 11-19.

Chapter 2: Reaching common ground: The potential for interagency collaboration in UNESCO BRs

Abstract: In an increasingly urbanized and degraded world, protected areas provide opportunities for people to connect with nature, as well as opportunities to protect nature. UNESCO Biosphere Regions/Reserves (BR) strive to facilitate coexistence between the conservation of biodiversity and sustainable development practices through people and agencies living and working in harmony with nature at a regional scale. This chapter explores the potential for collaboration among stakeholders in BRs. Countless innovative collaborative theories have emerged in the past decade, yet very few have been applied specifically to the concept of UNESCO BRs. The diverse range of social actors involved in BRs provides a fertile environment for implementing collective impact theory and trust theory. These theoretical frameworks allow for a deeper understanding of how stakeholders connect through a more holistic and cohesive decision-making process. Envisioned to facilitate social innovation, these theories have emerged in a variety of settings across the globe to understand collaboration. However, little is known about the implementation and success of these theories in BRs. This chapter evaluates the feasibility of the practical implementation of these theories through the lens of environmental education and heritage interpretation in the Beaver Hills Biosphere in central Alberta, Canada.

Introduction

The scale and complexity of environmental issues our world faces today is overwhelming, and many agencies are addressing these challenges with comprehensive solutions. The United Nations Educational Scientific and Cultural Organization (UNESCO), formed in 1945, created Biosphere Regions/Reserves (BRs) in the 1970s through the Man and the Biosphere (MAB) Programme. BRs are designed to revitalize the dysfunctional relationship between humans and nature. The Programme manifests in the form of a global network of 727 BRs worldwide as of November 2021 (IUCN, 2021). Although established in over 67% of the world's countries and accredited with a UNESCO designation, BRs are a commonly misunderstood concept across the globe (UNESCO, 2017).

Appointed no legal authority, BRs implement recommendations to achieve UNESCO goals throughout various strategic action plans. Previous to 1995, BRs were created without a Statutory Framework. These 'first generation' BRs focused on conservation and scientific research of the natural world, with minimal to no emphasis on cultural, sociological, or economic aspects of such designations (Reed & Price, 2020). More recently, BRs are gradually shifting this focus towards sustainable community development (Stoll-Kleemann & Welp, 2008). BRs explore the potential for local solutions to global challenges to yield a more sustainable future (UNESCO, 2015). With the growing complexity of current environmental crises, strategies from multiple disciplines are called upon to involve the public in finding sustainable solutions (Monroe et al., 2008).

Decision-making processes that incorporate a range of social actors have long been challenging to organizations (Glasbergen, 1998). BRs are no exception. Their broad yet inclusive, nature encourages taking a multi-stakeholder approach in problem-solving endeavours.

Cuong et al. (2017) claim stakeholder participation, collaboration, and communication are among the most influential factors determining the success or failure of BRs. Collaborating on controversial issues can help address stakeholder concerns and perspectives from multiple disciplines (de Bruin & Morgan, 2019). However, a key question in collaborative processes is why some attempts fail, while others succeed; also, what defines success and what defines failure (Saarikoski et al., 2013). Admittedly, there is no precise answer to this question as many aspects of collaboration are context specific. Various researchers have attempted to define collaborative success and how it can be measured (Parung & Bititci, 2008; Prange et al., 2016; Nabukenya et al., 2011). Nabukenya et al. (2011) identified eleven core success indicators and discussed ways in which they can be measured. Yet even these concise indicators have been critiqued for their applicability to all collaborative situations (Prange et al., 2016). However, steps towards achieving 'successful' collaboration can be explored through appropriate theoretical frameworks. Collective Impact Theory (CIT) and Trust Theory actively seek to understand and enhance collaboration through structured approaches. This chapter explores both theories' strengths and weaknesses as they are applied to interagency collaboration in BRs.

This chapter explores multiple case studies of collaboration in BRs with a special focus on the Beaver Hills Biosphere (BHB) in Alberta, Canada. The BHB provides a suitable environment to study collaboration and opportunities for synergies between various stakeholders and their pursuit for sustainable development. In addition, this chapter analyzes the opportunities and constraints of collaboration in BRs through various local and international examples. However, collaboration can be explored amidst any of the various sectors of operations in BRs. The focus will be on the potential for collaboration in environmental education and heritage interpretation. Environmental education and heritage interpretation are relevant operations in the

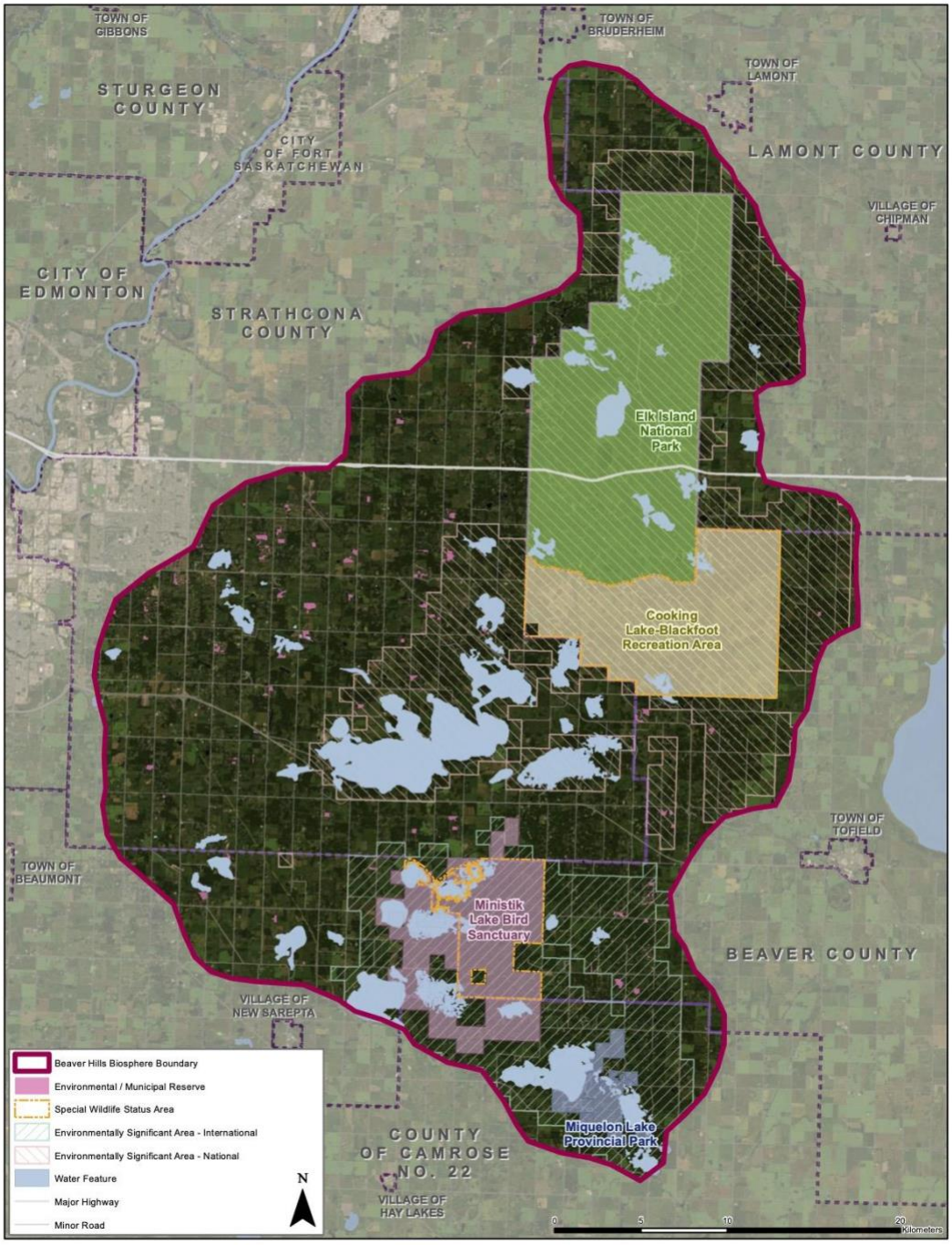
BHB (and BRs throughout the world) as several partnering agencies specialize in this field, providing a variety of unique creation and delivery methods. As an overarching theme, this chapter investigates the following question: *What is the potential for interagency collaboration in UNESCO BRs through the lens of environmental education and heritage interpretation?*

The Beaver Hills Biosphere

Decision-makers in the Beaver Hills area of central Alberta collaborated in 2002 to create the Beaver Hills Initiative (BHI) (Beaver Hills Initiative [BHI], 2016). The BHI attempted to unite the local community, all levels of government, industry, non-government organizations, and academia through the shared goal of a more sustainable future. After over a decade of shared initiatives and coordinated action on sustainable development, the BHB was designated a UNESCO BR in 2016. Located in central Alberta, the BHB encompasses parts of five rural municipalities (Strathcona, Leduc, Beaver, Lamont, and Camrose Counties), along with Elk Island National Park, Miquelon Lake Provincial Park, and several other parks and protected areas (BHI, 2016) (Figure 2.1). Undeterred by the impending threats of urbanization, the BHB provides an ideal setting for coexistence between the conservation of biodiversity and sustainable development in Alberta. The BHB is home to unique terrestrial and aquatic ecosystems and hosts a diverse abundance of flora and fauna. Likewise, the BHB hosts over 12,000 permanent inhabitants (Indigenous communities, rural farmers, acreage owners, and village residents) who live, work, and interact with nature on a daily basis (BHI, 2015). As agriculture provides a livelihood to many of these inhabitants, the quality of life and economic potential of the BHB is closely tied to nature.

Figure 2.1

Map of the Beaver Hills Biosphere and unified counties (BHB, 2022)



Every day the local communities in the BHB strive to achieve this delicate balance of living and working in nature while supporting sustainable development. Due to the increasing pressures of urbanization and development, the BHB is compelled to develop partnerships with academic institutions, and to integrate partners at the regional level by working cooperatively with other levels of government agencies, and private individuals (Swinnerton & Otway, 2003). Amidst the inhabitants of the BHB, we can recognize unique partnerships with all orders of government (municipal, provincial, and federal), as well as academic, industrial, and non-government organizations. However, the BHB reaches far beyond established partners and will require inclusivity and collaboration with all members of the local community, Indigenous peoples, and civil society organizations. In order to mitigate conflict, it is essential that these diverse perspectives are acknowledged during decision-making processes. This raises the question: *How can BRs facilitate interagency collaboration?*

Interagency Collaboration

As collaborative efforts become increasingly valued endeavors in BRs, the challenges and opportunities that arise can generate valuable lessons. Even though connection is easier than ever before in today's world, meaningful collaboration is anything but widespread. Although collaboration has been extensively discussed throughout literature, there is no consensus on a common definition (O'Leary & Vij, 2012). The Oxford dictionary (2020) defines collaboration as "the action of working with someone to produce or create something". This shared goal to "create something" is of critical importance to successful collaboration. Rather than simply approaching partners asking for cooperation in a preconceived goal by one party, there are increasing benefits to including partners in the goal creation efforts. Admittedly, finding

common ground in goal creation can be a long and tiresome process and, like all collaborative efforts, is subject to limitations.

Barriers to Collaboration

From a broad perspective, there are systematic constraints within the BR concept itself. The sheer complexity, frequency, and uncertainty of challenges faced by BRs present themselves as barriers to collaboration (Walker & Daniels, 2019). Capacity is among one of the top constraints for any collaborative effort. Lack of available funding, resources, staff, and time needed to tackle a problem through a collaborative approach has the potential to be a BR's greatest downfall (Cuong et al., 2017). Contingencies to the organizational sustainability of BRs may also pose barriers through staff turnover, operational changes, and dynamic governments. Additionally, one of the greatest obstacles organizations encounter in the face of collaboration is unrealistic predetermined solutions (Kania & Kramer, 2013). Due to the unpredictable nature of challenges faced by BRs, going into decision-making processes with an empathetic understanding and an open mind towards a broad range of solutions is far more likely to yield success.

Moreover, one major constraint to collaboration is the adequacy of representation. Inappropriate coordination mechanisms for moderating stakeholder interests can threaten the ability of parties to express their perspective on the topic at hand (Ishwaran et al., 2008). Parties' willingness to compromise goes hand in hand with their ability to empathize with opposing points of view. Stakeholders who feel as if their identities are being threatened by potential decisions are far more likely to react with hostility (Hurst et al., 2019). It is imperative not to devalue the perspective of stakeholders while pursuing any collaborative effort. Doing so can

lead to feelings of marginalization which will foster distrust and inhibit conflict resolution (Davenport et al., 2007). Along the same lines, communication challenges persist across disciplines as decision-makers struggle to articulate their ideas in layperson's terms for other stakeholders. Duinker et al. (2010) explore the dangers of communicating in a language that is incomprehensible by the various stakeholders. Misinterpretation by parties on the receiving end can lead to defensive responses and unproductive relationships (Hurst et al., 2019). Providing inclusive definitions to facilitate dialogue can be a valuable preventative measure before attempting any collaborative effort (Duinker et al., 2010).

Benefits from Collaboration

Despite the barriers to collaboration, there are numerous benefits that often outweigh the drawbacks. The advantages of integrating multiple perspectives in BR decisions stem far beyond merely adhering to UNESCO recommendations. Diversifying knowledge and leveraging the unique talents of each stakeholder can lead to more cohesive and comprehensive outcomes. Collaborative deliberation has also been praised for its ability to increase efficiency by averting deficiencies associated with project design and individual conflict (Stern, 2018; Stern & Predmore, 2012; Wondolleck & Yaffee, 2000).

Within BRs, tackling complex and controversial issues is unavoidable. An ideal narrative of interagency collaboration diversifies knowledge in decision-making processes to assuage conflict, enhance innovation, distribute power, and build consensus (Hurst et al., 2019). In the context of BRs, inclusive decision-making is an integral process to produce mutually beneficial outcomes. In addition, these efforts at inclusion will catalyze a broader acceptance for management decisions and can decrease public push-back (Renn et al., 1995). Engaging a diverse set of stakeholders can lead to increased innovation, as well as to reduced duplication of

efforts. Collaboration can aid administrators in understanding the breadth of issues faced by individual stakeholders and addressing them appropriately. In turn, these collaborative efforts initiated by the BR can yield mutual understanding from the public. BRs can share their current initiatives with the public and provide tangible ways for local stakeholders to get involved. As expressed through analyzing collaborative constraints, there is increasing importance in the facilitation mechanism for these efforts. Creating a safe environment where positive interpersonal connections can be generated promotes trust and easy sharing of information, ultimately benefiting productivity (de Bruin & Morgan, 2019).

More specifically, Husby and Fast (2004) outline various benefits of collaboration for environmental education and heritage interpretation, specifically within the BHB. Examples of these benefits include: sharing funding and facilities, supplying complementary skills and abilities for staff, increasing an agency's profile due to mention in partners' publications and websites, exposure to new perspectives and education methods which can increase capacity and reduce isolation, and providing "field sites for collaborators' program" (Husby & Fast, 2004; p.8).

Drawbacks of Collaboration

However, alongside these benefits, there are threats and risks associated with collaboration. Recognizing these drawbacks can help organizations evaluate collaborative opportunities and whether they will participate. Collaborative approaches have been critiqued for their extensive and sustained commitment, requirement of negotiation and compromise, and potential inefficiencies (Stern, 2018). In the context of BRs, capacity is already a limiting factor. With multiple opportunities to collaborate, BRs must be strategic in choosing which ones in which to participate. Understanding the potential drawbacks associated with the collaborative

opportunity and evaluating the risk of failure is an important step in the decision-making process (Bodin et al., 2020). Likewise, BRs have incredibly unique and complex contexts that must be accounted for when considering collaborating with others. Cultural, social, and environmental differences can threaten the integrity of collaborative opportunities (Vodosek, 2010).

In the context of interagency collaboration between education organizations within a BR, many similar drawbacks can be observed. From individual conflict in working styles to systematic differences in operations, the drawbacks of collaboration can materialize in financial and time inefficiencies, strains on individual and organizational relationships, a loss of autonomy, feelings of ambiguity and exclusion, a loss of direction, and perceived risks of competition (Beckett, 2005; Cygler et al., 2018; Harris et al., 2012; Taggart-Hodge & Schoon, 2016). In some cases, the amount of effort required to overcome the barriers to collaboration can be a significant drawback and can situationally outweigh the benefits of collaboration (Daniel et al., 2013).

Collaboration in BRs

At the international level, UNESCO BRs have clearly outlined collaborative efforts as a priority through objectives identified in the *Seville Strategy* (1995), the *Madrid Action Plan* (2002), and the *Lima Action Plan* (2016). These strategic action plans each contain a comprehensive set of objectives and action items to ensure the effective implementation of MAB strategies (UNESCO, 2021). These documents help condense and establish priorities for existing BRs, as well as ones considering application. The *Seville Strategy* outlines collaboration as a priority through multiple goals and recommendations on the international, national, and individual levels (Table 2.1). The *Madrid Action Plan* promoted collaboration in three objectives and multiple action items (Table 2.1). Most recently, the *Lima Action Plan* (2016) highlights this

strategic direction toward collaboration through a variety of outcomes (Table 2.1). All three of these international plans highlight collaboration as an essential outcome for BRs. Likewise, UNESCO's Man and the Biosphere (MAB) Programme identifies collaboration as a high priority strategic action area in their 2015-2025 MAB Strategy document (Table 2.1) (MAB, 2015).

Table 2.1

Objectives and action items for collaboration recommended by UNESCO BR's international strategic action plans: Seville Strategy (1995), Madrid Action Plan (2002) and Lima Action Plan (2016), MAB Strategy (2015-2025).

International Strategic Plans	**Objectives**	**Action Items**
The Seville Strategy - 1995 (UNESCO, 1996)	**Objective II.1:** Secure the support and involvement of local people	1. Prepare guidelines for key aspects of biosphere region management, including the resolution of conflicts, provision of local benefits, and involvement of stakeholders in decision-making and in responsibility for management.
		5. Survey the interests of the various stakeholders and fully involve them in planning and decision-making regarding the management and use of the region.
	Objective III.1: Improve knowledge of the interactions between humans and the biosphere	6. Encourage interactions between the World Network of Biosphere regions and other research and education networks, and facilitate the use of biosphere regions for collaborative research projects of consortia of universities and other institutions of higher learning and research, in the private as well as public sector, and at non-governmental as well as governmental levels
	Objective III.3: Improve education, public awareness and involvement	1. Facilitate exchange of experience and information between biosphere regions, with a view to strengthening the involvement of volunteers and local people in biosphere region activities.
		2. Promote the development of communication systems for diffusing information on biosphere regions and on experiences at the field level.

		4. Encourage participation of biosphere regions in international networks and programmes, to promote cross-cutting linkages in education and public awareness.
	Objective IV.1: Integrate the functions of biosphere regions	3. Organize forums and other information exchange mechanisms for biosphere region managers
		4. Prepare and disseminate information on how to develop management plans or policies for biosphere regions
		5. Prepare guidance on management issues at biosphere region sites, including *inter alia,* methods to ensure local participation, case studies of various management options, and techniques of conflict resolution.
		9. Organize forums and other information exchange mechanisms for biosphere region managers
	Objective IV.2: Strengthen the World Network of Biosphere regions	All 23 recommendations (see the Seville Strategy, UNESCO, 1996)
Madrid Action Plan (2002)	**E.1**-Cooperation, Management and Communication	Increased cooperation and coordination of biosphere regions with existing international programmes and initiatives
		Integrated information & communication strategy
		Participatory regional networks that are managed in a manner assuring adequate representation of biosphere region managers/coordinators
		Enhanced cooperation between experts and practitioners in relevant key issues
		Communication strategies for each biosphere region, integrated with national and higher levels
		Functional MAB National Committees in each country managed in a manner assuring adequate

		representation of biosphere region coordinators and other key stakeholders
		Open and participatory procedures and processes in the designation, planning and implementation of biosphere regions
	E.3-Science and Capacity Enhancement	Biosphere regions to have research programmes on analyses of ecosystem services and their management through stakeholder participation
		Exchange of educational resources for widespread adaptation and application
	E.4-Partnerships	Improved financial mechanisms for biosphere regions and regional networks
		Increased involvement, support and buy-in of private sector
		Exchanges between biosphere regions
		Promote partnerships
		Transboundary biosphere regions
Lima Action Plan (2016)	**A4**.-Research, practical learning and training opportunities that support the management of BRs and sustainable development in BRs	Establish partnerships with universities, research institutions, educational and training institutions, UNESCO Chairs, and encourage managers, local communities and other BR stakeholders to collaborate in designing and implementing projects that inform the management and sustainable development of their BR.
	B1.-Effective BR managers/ coordinators and engaged stakeholders of BRs	Organize global and regional education, capacity building and training programmes.
	B2.-Inclusive regional and thematic networks	Ensure the participation of all relevant stakeholders in regional and thematic networks.

	B4.-Effective regional and thematic level collaboration	Create opportunities for collaborative research, implementation, and monitoring.
	B6.-Transnational and transboundary cooperation between BRs	Create and implement twinning arrangements between BRs in different countries.
	C8.-Enhanced synergies between BRs	Encourage joint promotion and marketing of BR products and services among BRs and beyond.
MAB Strategy 2015-2025	**Strategic Action Area B.** Inclusive, dynamic, and results-oriented collaboration and networking within the MAB Programme and the World Network of Biosphere Reserves	Global and regional capacity-building and training programmes, directed at managers and coordinators of biosphere reserves and other stakeholders, facilitate delivery of the Strategic Objectives.
		Networks are strengthened through the enhanced participation of Member States – including UNESCO National Commissions, MAB National Committees and relevant ministries – and other public stakeholders, as well as universities, civil society organizations, the private sector and stronger cooperation with relevant stakeholders.
		Networks foster collaboration in research, implementation, and monitoring, including through exchanges between biosphere reserves
		Networks communicate and disseminate their aims and activities effectively, both internally and externally.
		An increased number of twinning arrangements between biosphere reserves foster transboundary and transnational cooperation.
	Strategic Action Area C. Effective partnerships and sufficient and sustainable funding for the MAB Programme	The MAB Secretariat and National Committees strengthen collaboration and partnerships both within UNESCO and with key international organizations.
		Private sector partnerships generated around the MAB Programme at local, national, and international levels.

	and the World Network of Biosphere Reserves	An increased number of projects and activities support biosphere reserves and networks funded through national and regional funding mechanisms, especially those that emphasize the need for multinational partnerships.
		Joint promotion of biosphere reserve products/services between biosphere reserves is enhanced.

Likewise, on a national level, the Canadian Biosphere Reserves Association (CBRA) encourages collaboration through a set of best practices (2019) as well as their strategic action plan for 2020-2025 (CBRA, 2019; 2021) (Table 2.2).

Table 2.2

Objectives and action items for collaboration recommended by the Canadian Biosphere Reserves Association (2019) (2021) and the Canadian Commission for UNESCO (2014).

National Strategic Plan	**Objectives**	**Actions**
CBRA Best Practices Document (2019)	Partnership	Work in partnership with all orders of government, Indigenous peoples, the private sector, civil society organizations, academic institutions, youth, and residents.
	Communication	Facilitate dialogue, showcase models of co-governance, and coordinate projects that bridge environmental, economic, social, and cultural divides.
	Reconciliation	Foster reconciliation between Indigenous and non-Indigenous peoples through land-based programs and stewardship.
CBRA Strategic Plan (2020-2025)	**1**. Enhance our Collective Capacity to Deliver on the BR program	1.1 Develop training, enhance knowledge transfer, disseminate pertinent information, and create mentorship opportunities between Canadian, Indigenous and international networks.

		1.2 Enhance inter-biosphere communication as well as create virtual and in-person networking opportunities.
		1.3 Leverage the learnings from core mandate successful projects and programs by individual BRs and scale these regionally or nationally.
CCUNESCO Strategic Plan 2014-2021	**3.** Strengthen engagement strategies with members and partners	Strengthen opportunities for sharing knowledge and collaboration across disciplines, sectors and generations, through in-person exchanges among members as well as through new communication and information technologies.
		Review and update the membership (including partnerships) to meet overarching priorities and strategic objectives.
	4. Enhance its expert role in providing advice to government	Collaborate with governmental partners to improve processes for generating and presenting advice to the Department of Foreign Affairs, Trade and Development.
	5. Reinforce its role in the development of existing and future UNESCO programs and proposals	Contribute to strengthened collaboration within the global network of UNESCO National Commissions.
	6. Enhance organizational capacity and performance	Enhance collaboration between the Commission and the Canada Council for the Arts.
		Strengthen internal and external communications.

Finally, and more specifically, the BHI planted seeds of collaborative outcomes throughout their biosphere region nomination document (BHI, 2015). One of their key objectives is to enhance internal partnerships and clearly illustrate the benefits of collaboration. Case studies developed from past BHI surveys give insight into the synergies generated by combining resources of diverse partners (BHI, 2015). The BHB encourages collaboration through their

strategic planning documents as well. The *Heritage Appreciation Development Plan for the Beaver Hills* (Husby & Fast, 2004), for example, encourages agencies to collaborate more extensively in order to broaden the audience, widen the scope of services, and reduce duplication. This document explicitly outlines collaboration as a priority in *Chapter 7: Analysis of Potential Collaborators*. This chapter discusses the continuum of collaborative opportunities in the BHB, as well as rationale for collaboration, criteria for selecting partners, along with a list of desirable partners to collaborate with on environmental education and heritage interpretation initiatives (Husby & Fast, 2004). More recently, the BHB's strategic plan (2016-2019) pursues collaborative efforts under two of its main objectives (Table 2.3) (BHI, 2016).

Table 2.3

Objectives and action items for collaboration recommended by the Beaver Hills Biosphere Strategic Plan (2016-2019)

Objectives	**Actions**
[1E] - Collaboration: Collaboration provides the basis for knowledge and information sharing for conservation and stewardship	Data sharing, develop inventory of land uses, develop matrix of conservation methods, engage municipal and provincial economic development and tourism departments, evaluate and determine BHB members.
[4B] - Partnerships: Partnerships to support understanding of climate change impacts are established.	Identify potential sources of expertise to develop and implement climate change strategy and support Beaver Hills Tourism partners with tools to adapt to climate change.

Not only do these objectives serve as tangible imperatives to foster collaboration, but they serve as tools to initiate action across BRs. Complex issues require engagement at a local

level to facilitate a reciprocal relationship where the BR and the local community are mutually benefiting (Chiara, 2015). BRs offer a "new paradigm for protected areas" as they commit to meaningful involvement of local people through sustainable development initiatives (Swinnerton & Otway, 2008, p.1). Sustainable development requires an interdisciplinary approach to create broad, long-lasting synergies. As planning and management issues are constantly evolving, stakeholders are inundated with demands from collaborative partners. BRs pursue a cooperative environment where stakeholders feel their perspectives are being accurately represented during the decision-making process.

Research has shown that collaboration is critical for effective functioning of BRs. For example, in examining key factors for the success or failure of BRs, stakeholder participation and collaboration were regarded as the most important functions (Cuong et al., 2017). Across the globe, the concept of collaboration in BRs has long been explored. This collaborative potential was first explored locally in 1979, when Alberta designated its first BR at Waterton. Since its designation, one of their most successful collaborative efforts has been the "Carnivores and Communities" program (Quinn & Alexander, 2011). Through laborious efforts with the municipality, local ranchers, landowners, and Indigenous communities, BR administrators continue to successfully collaborate to minimize human-wildlife conflict. This success is driven through compromise, environmental awareness programming, and a shared goal of coexisting with large carnivores (Quinn & Alexander, 2011). In the same way, a case that earned international recognition in its collaborative efforts was the "War in the Woods" in Clayoquot Sound BR, British Columbia. The conflict stemmed from controversial natural resource management practices as environmentalists protested logging practices that devastated the integrity of one of the world's last remaining temperate rainforests (Zietsma et al., 2002).

Gradually, stakeholders began forming alliances with the notion of endorsing ecosystem-based management and an integrated approach to including local people and First Nations in governance. The result of this collaborative effort fostered sustainable resource management, as well as increased education and tourism opportunities surrounding the forest, ultimately leading to the creation of a BR in the region (Saarikoski et al., 2013).

Aside from collaborative efforts in Canadian BRs, we can see successful collaboration across the globe. Allariz BR in Spain undertook a collaborative effort through their organic waste composting program. The Ministry of Environment introduced this sustainability initiative in response to the public demand to improve urban waste management. Aside from BR managers, the collaborative effort included local citizens, food companies, and internal and external experts working together to achieve a common goal (Reed & Price, 2020). Other examples of collaboration at a larger scale are the "UNESCO Ecoparks" of Japan. Following a period of dormancy as Japanese BRs, five parties (Forestry Agency - national government, Miyazaki Prefecture - provincial government, Aya Town - municipal government, a nation-wide environmental NGO, and a local NGO) undertook a collaborative effort that facilitated a bottom-up approach to enhance conservation and education efforts within the BR (Reed & Price, 2020; Tanaka & Wakamatsu, 2018). Still recognized as BRs through UNESCO, Japan changed their recognizable name to "ecoparks". Japan completely revitalized their BR concept through the establishment of a platform that promotes the empowerment of local actors, as well as encourages collaborative efforts, cooperation, and multi-stakeholder awareness (Reed & Price, 2020).

Theoretical Frameworks for Collaboration

Examples of collaborative efforts in BRs are endless; however, not all of them have been successful. Despite the outcome, the lessons learned from simply trying collaborative efforts are invaluable. Collaboration challenges agencies to think creatively and holistically, likely generating benefits that outweigh the risks. As collaborative efforts become more widespread in BRs, calls for evaluating the success of these initiatives are becoming increasingly common (Conley & Moote, 2003). This interest is fueled by BR administrators, public participants, funders, and academics, as they seek to identify potential opportunities and constraints. However, evaluating a concept with intangible measures of success like collaboration can be a daunting task. BRs often lack the capacity for such evaluation and become reliant on informally evaluating collaborative efforts. This creates a gap between theory and practice as BRs expedite collaborative efforts in hopes of achieving their UNESCO-designated goals, while failing to measure their effectiveness (Cuong et al., 2017). Incorporating researchers into this process itself can be an example of mutually beneficial collaboration. Researchers can identify the challenges, evaluate the risks, and strengthen the benefits associated with current collaborative efforts by employing appropriate theoretical frameworks. In particular, the Collective Impact Theory (CIT) and Trust Theory provide helpful insights about the inclusion of multiple stakeholders in actively achieving consensus in the decision-making process.

The sheer number of challenges BRs face can be daunting, and undoubtedly, the solutions lie within a range of expertise from diverse organizations. CIT was first articulated by American social scientists John Kania and Mark Kramer in 2011 with the intent of offering a model for cross-sector collaboration. CIT strives to initiate long-term commitment of important stakeholders to a common agenda for solving a specific problem (Kania & Kramer, 2011a). The

versatile approach of CIT tackles prominent issues in the community, encouraging a multi-stakeholder approach (Sagrestano et al., 2018). CIT is a structured process composed of five conditions: backbone support organization, a common agenda, shared measurement, continuous communication, and mutually reinforcing activities among all participants (Kania & Kramer, 2011a). The backbone support organization is arguably the most important condition as it facilitates successful employment of the other conditions (Anderson, 2015). The framework also clearly outlines three necessary pre-conditions: adequate financial resources, influential champion(s), and a sense of urgency for change (Hanleybrown et al., 2012). Together, these three pre-conditions and five conditions can facilitate long-lasting, holistic outcomes to any challenge undertaken collaboratively. Employing all five conditions effectively while simultaneously driving change is an arduous yet rewarding experience (Weaver, 2014).

CIT efforts have gained momentum across the globe, from various initiatives in the social, economic, and environmental sectors. Some specific attempts included an effort to reduce childhood obesity through a program called "Shape Up Somerville", the Global Alliance for Improved Nutrition in Switzerland, and Centers for Disease Control and the Social Innovations Fund initiated by the USA (Kania et al., 2014). A successful collaboration story was the implementation of CIT in the Elizabeth River Project (1993) of southeastern Virginia, USA. After decades of industrial waste disposal into the Elizabeth River, over 100 stakeholders came together with the mission to restore the ecological integrity of the river (Kania & Kramer, 2011b). Dozens of local government authorities, local businesses, schools, community groups, environmental organizations, and universities collaborated to create a structured plan using CIT framework. Each organization played a different role, based on their expertise, to actively facilitate the work of another organization. For instance, one organization coordinated scientific

research, another communicated findings to the public, and another created grassroots support and engaged local citizens. Over fifteen years later, the river saw many tangible results, including improved water quality, pollution reductions by more than 215 million pounds, a sixfold cut in the concentration of carcinogen levels, as well as the conservation of over 1000 acres of watershed (Kania & Kramer, 2011b).

Despite multiple successful examples of CIT initiatives, there have also been several failed attempts and critiques of the theory. One overarching critique of CIT is its simplicity and disregard for community involvement (Wolff, 2016; Stachowiak & Gase, 2018). For instance, this concern about a disregard for social justice has been expressed by communities of colour with critiques on CIT's ability to prioritize equity and inclusion (Vu, 2015). Additionally, CIT has been critiqued on its generalizability, difficulty to attain its five characteristics, and complexity of evaluation (Parkhurst & Preskill, 2014). Yet, Parkhurst and Preskill (2014) also identify these limitations can be offset by prioritizing comprehensive evaluation before, during, and after CIT efforts. They outline how CIT efforts can be evaluated and the importance of backbone support to facilitate this evaluation.

Certainly, the potential for successful collaboration using CIT is still high; however, the potential for its application in BRs is largely unknown. BRs provide fertile ground for implementing CIT initiatives as they involve a wealth of stakeholders and an opportunity for inclusive and consensus-based decision-making. CIT can facilitate meaningful involvement of actors and can provide a framework to address the complex and contentious challenges faced by BRs. CIT offers an advanced method of structured collaboration to address the many systemic challenges BRs face (Anderson, 2015).

However, the supporting theories of CIT are contingent on building on existing collaborative efforts. CIT refers to a supporting dimension: *relationship and trust-building among stakeholders*. Hanleybrown et al. (2012) refer to trust as a "softer" dimension, essential to successfully achieving social change through collective impact. The notion of trust pertains to all collaborative efforts as it relates to human psychology and processes that include more than one individual. Trust can be best defined as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviors of another" (Rousseau et al., 1998, p. 395). As a concept, trust has been extensively studied and associated with many benefits, including facilitating goal attainment and cooperative behaviour (Davenport et al., 2007). In the context of BRs, trust is a crucial component for virtually every stakeholder involved. Not only is it important to grant trust to partnering agencies, but also to sustain this trust throughout the entirety of the relationship. A lack of trust can have destructive effects that can undermine constructive debates and stakeholder inquiries during decision-making processes (Davenport et al., 2007).

Trust theory embeds itself in four types of trust (Stern & Coleman, 2015). Dispositional trust is a general predisposition to trust based on past experiences of the trustor (Stern, 2018). Rational trust grounds itself in the trustor's evaluation and prediction of the probable outcome of the action. Affinitive trust is based on the relationship of the participating actors. Feelings of social connectedness, shared values, and positive shared experiences can enable affinitive trust. Systems-based or procedural trust is the trust in the process and procedure, rather than trusting an individual or organization. This leads to the perception of a low-risk trust activity (Stern, 2018).

There is a significant body of research pertaining to trust theory and its applications to natural resource management situations. The Midewin National Tallgrass Prairie, in Illinois,

USA, explored the perceived role of trust between local communities and USDA Forest Service personnel (Davenport et al., 2007). This study reveals many parallels to the potential of BRs as agents of trust. Analogous to BRs, Midewin was established through local efforts and largely relies on the participation of these local actors. Davenport et al. (2007) also explored the importance of the Forest Service being seen as individuals that the community can relate to and interact with rather than a "nameless faceless entity" (p. 365). This process draws on the relevance of affinitive trust in BRs to create genuine social connections to individual BR administrators. Strengthening interpersonal connections has strong potential to positively affect one's willingness to trust, thus facilitating collaboration (Davenport et al., 2007).

However, the concept of having trust still has limitations in collaboration. Establishing very high levels of trust has been critiqued for its ability to inhibit innovation (Bidault & Castello, 2010). Further, the concept of distrust has been explored for its constructive role in collaboration and deliberation (Parkins & Mitchell, 2005). These areas of distrust can encourage active engagement, careful scrutinization, and debate in collaboration, which can lead to more nuanced and holistic collaborations (Parkins & Mitchell, 2005). BRs are highly susceptible to deeply trusting relationships because of the personal relationships of multiple actors (Patriquin, 2014). Throughout this research, special attention to the potential of establishing too much trust will be considered.

Both collective impact theory and trust theory have their advantages and disadvantages, but both can be used as frameworks to evaluate collaborative efforts. Trust theory accounts more directly for interpersonal interactions and focuses on individual attitudes and behaviours (Stern, 2018). As a precursor to CIT, creating relationships with the foundation of trust can help mitigate unnecessary conflict. Due to the complexity and scale of challenges faced by BRs, CIT appears

to be a better-suited core model as it addresses collaboration at the agency level. However, trust theory has the potential for supporting microscale collaboration at the individual level. Even so, trust theory may be difficult to apply to BRs for whom individual actors are constantly changing.

Drawing conclusions from past CIT and trust theory applications can help direct future collaborative efforts. These theories can also provide a framework to collaborative investigators as they weigh the benefits and costs of collaboration in their sector. Understanding the proposed theories will enable agencies to investigate collaborative potential where they may have previously overlooked such potential. However, it is important to note these theories do not solve the problem at hand but rather seek to understand and improve the situation. The attempt itself is an important step and offers the intangible benefit of hope that can bring optimism to stakeholders about successfully working together (Hanleybrown et al., 2012).

CIT and trust theory will be used as a guiding framework for the following thesis research. Elements from both theories will be explored throughout research interviews and once again during the thematic analysis process.

Environmental Education and Interpretation

Collaborative frameworks can be applied to any discipline and in any domain. BRs are composed of several domains, including, but not limited to, land use planning, research, enforcement, and municipal operations. However, this chapter and the next chapter (Chapter 3) focus on interagency collaboration through the lens of environmental education and interpretation. One of the main objectives of BRs is to foster environmental education for sustainable development (Marks et al., 2017). Through an investigative study conducted in 2015, the potential to examine collaboration through strategic internal partnerships in environmental education was found to be particularly attractive to BHB partners (BHI, 2015). The BHB hosts a

considerable variety of agencies engaged in environmental education efforts. Examples of interpretive stakeholders in the BHB include Elk Island National Park, Miquelon Lake Provincial Park, Cooking Lake-Blackfoot Provincial Recreation Area, Ukrainian Cultural Heritage Village, Strathcona Wilderness Centre, Ministik Game Bird Sanctuary, and various representatives from municipal, provincial, and federal agencies (Reinicke, 2016).

Not only is there variation in environmental education stakeholders, but also vast differences in their programs offered and styles of delivery. Environmental education in BRs comes in many shapes and forms, from community-based environmental monitoring, teaching about the local environment through to school programming, park interpretive programs, and partnerships in learning and research (Marks et al., 2017). This variation provides an opportunity for extensive knowledge-sharing opportunities, as well as the identification of the most effective and innovative methods of communication. Collaboration between these agencies could manifest itself in joint training and job-sharing opportunities, interagency planning meetings, identification of key themes, inventory of existing strategies, and cross-program marketing efforts.

Collaborative initiatives can also benefit these education efforts by reducing duplication and increasing productivity. Due to the variability in audiences and educators, there is no 'one size fits all' approach to the creation and delivery of environmental education and interpretation programs. Monroe et al. (2008) highlight four purposes of environmental education: to convey information, build understanding, improve skills, and enable sustainable actions. Collaborative strategies for community education are essential to the success of educators in reaching these goals (Monroe et al., 2008). Ham (1992) thoroughly explores environmental interpretation and highlights its purpose as "translating the technical language of a natural science or related field

into terms and ideas that people who aren't scientists can readily understand" (p.3). Generally, BRs strive to achieve education that meets all of the purposes associated with environmental education and interpretation, which is why collaboration is so important.

Not only can collaboration benefit environmental education, but environmental education and interpretation equally hold significant potential as tools to facilitate interagency collaboration. Serving as frontline methods of communication for visitors and the local community, environmental education serves to increase public awareness of the conservation efforts tackled by the BR in order to foster stakeholder support and cooperation. Collaboration by the major education agencies within the BR can help deliver the message to the greatest number of individuals. Education has powerful potential in bringing together stakeholders to achieve a common goal. BRs provide stakeholders with the opportunity to further this relationship by becoming environmentally literate through environmental education as they pursue a livelihood through nature. Environmental education can help minimize the predefined risk of collaborating in a language incomprehensible to the various parties. In this way, environmental education and interagency collaboration can be mutually beneficial.

Another benefit of analyzing collaboration through an educational lens is its applicability to the aforementioned theories. For instance, CIT outlines a clear process to implement collaboration: identify the problem, identify key stakeholders, and create common goals. Drawing from a previous example, Waterton BR initiated its "Carnivores and Communities" program in 2009. Building on existing community initiatives, Waterton worked with several partners to support community-based and landowner-driven initiatives to reduce human-wildlife conflict (Quinn & Alexander, 2011). Applying the early steps of CIT regarding this environmental education initiative could materialize as follows:

Identify the problem: conflict between large carnivores and people in southwestern Alberta (special focus on agricultural conflicts: livestock, grain, infrastructure, and fencing).

Identify key stakeholders: ranchers, local landowners, farmers, Indigenous communities, parks, BR administration, tourists, municipalities, etc.

Create common goals: raise awareness through environmental education (increase public support and understanding of the importance of large carnivores in the area), replace current waste disposal bins with "bear proof bins", host workshops for farmers and ranchers to minimize the risk of wildlife vs livestock conflict, etc.

CIT has the potential to generate more efficient and holistic environmental education in BRs by bringing individual stakeholders together towards a common goal. Environmental education should encourage the participation of individuals within the BR to play their part in "building a better tomorrow" (UNESCO, 1980, p.12).

Conclusions

This research sheds light on the applications of collaboration in BRs. Through an analysis of its promises and perils, potential theoretical frameworks, and scope for environmental education, collaboration remains a constructive endeavour for stakeholders. This research has already begun to foreshadow a sense of the challenges faced by BRs. Collaborative constraints, such as a lack of capacity, identity and trust risks, and skepticism of success, are commonplace among BR stakeholders. However, education has the potential to minimize these risks and generate benefits from collaboration. A more thorough investigation will reveal the relevance and frequency of collaborative benefits and challenges within BR communities. Investigating

and analyzing real collaborative efforts currently practiced in the BHB will highlight the benefits of collaboration summarized in this chapter.

This research encompasses several limitations. First, with a concept as complex and comprehensive as collaboration, the specificity of the research itself can be a constraint. The limitation of focusing too broadly can overwhelm researchers and restrict their ability to see important details. However, narrowing in on collaboration for environmental education may reduce attention to pertinent collaborative challenges faced in other sectors of BRs. Additionally, this chapter lacks tangible data to support or oppose the authors' assumptions.

In terms of future research, it is important to further document the benefits, costs, and other dynamics related to collaboration in a variety of BRs, and the BHB in particular. Researchers could survey stakeholders to better understand the specific barriers and enablers faced by the BHB in light of interagency collaboration. This understanding of the broader issues in achieving successful collaboration could then be applied more specifically to a single operation within the BR. With respect to collaborating on environmental education and interpretation efforts, research could be conducted evaluating current communications efforts in place, their efficiency, and their potential for improvement.

This chapter focused on the potential for collaboration in environmental education and heritage interpretation of BRs. However, it would be equally beneficial to investigate the potential for collaboration using collective impact theory and trust theory for any component of BR operations (e.g., enforcement, planning). This could generate more holistic partnerships and collaborative efforts that include a true diversity of stakeholders. More broadly, this research could be extended beyond the scope of the BHB. An investigation into collaborative efforts nationally across Canada may also lead to other beneficial findings. For example, are the

collaborative barriers faced by this BR a result of internal operations, or rather are these challenges entrenched in the structure of Canadian BRs themselves? Future research could compare collaborative results within many BRs and seek out a set of best practices.

References

Anderson, T. (2015). *From competition to collaboration, what will it take?* [Master's thesis, Danube University Krems]. The Dragonfly Collective.

Beaver Hills Biosphere. (2022). *Resources*. https://www.beaverhills.ca/learn/resources

Beaver Hills Initiative. (2015). *Beaver Hills Biosphere Reserve Nomination Application*.

Beaver Hills Initiative. (2016). *Beaver Hills Initiative Strategic Plan (2016-2019).*

Beckett, R. C. (2005). Collaboration now a strategic necessity. *Handbook of Business Strategy*, 327-332. https://doi.org/10.1108/08944310510558124

Bidault, F., & Castello, A. (2010). Why too much trust is death to innovation. *MITSloan Management Review, 51*(4), 33-39.

Bodin, O., Baird, J., Schultz, L., & Armitage, D. (2020). The impacts of trust, cost and risk on collaboration in environmental governance. *People and Nature, 2*, 734-749.

de Bruin, W. B., & Morgan, M. G. (2019). Reflections on an interdisciplinary collaboration to inform public understanding of climate change, mitigation, and impacts. *National Academy of Sciences, 116*(16), 7676-7683.

Canadian Biosphere Reserves Association. (2019). *Working together to inspire a positive future: Best practices from Canada's UNESCO biosphere reserves.* https://static1.squarespace.com/static/5735fdc137013b8eeb217d63/

Canadian Biosphere Reserves Association. (2021). *Strategic Plan: 2020-2025*. United Nations Educational, Scientific, and Cultural Organization. https://static1.squarespace.com/static/5735fdc137013b8eeb217d63/t/5e986ffc9e859f2ac28149b0/1587048448464/CBRA+StrategicPlan+2020_2025.pdf

Canadian Commission for United Nations Educational, Scientific, and Cultural Organization. (2014). *Strategic Plan 2014-2021*. https://en.ccunesco.ca/-/media/Files/Unesco/About/Governance/StrategicPlan2014-2021.pdf?la=en

Chiara, A. D. (2015). From stakeholder engagement to the collective impact approach for sustainability paths in complex problems. *Sinergie Italian Journal of Management*, *33*(96), 75-91.

Conley A., & Moote, M. (2003). Evaluating collaborative natural resource management. *Society and Natural Resources, 16*(5), 371-386.

Cuong, C. V., Dart, P., & Hockings, M. (2017). Biosphere reserves: Attributes for success. *Journal of Environmental Management*, *118*, 9-17.

Cygler, J., Sroka, W., Solesvik, M., & Debkowska, K. (2018). Benefits and drawbacks of coopetition: The roles of scope and durability in coopetitive relationships. *Sustainability, 10*(8), 2688. https://doi.org/10.3390/su10082688

Daniel, J. R., Pinel, S. L., & Brooks, J. (2013). Overcoming barriers to collaborative transboundary water governance. *Mountain Research and Development, 33*(3), 215-224. https://doi.org/10.1659/MRD-JOURNAL-D-12-00121.1

Davenport, M. A., Leahy, J. E., Anderson, D. H., & Jakes, P. J. (2007). Building trust in natural resource management within local communities: A case study of the Midewin National Tallgrass Prairie. *Environmental Management, 39*, 353-368.

Duinker, P. N., Wiersma, Y. F., Haider, W., Hvenegaard, G. T., & Schmiegelow, F. K. A. (2010). Protected areas and sustainable forest management: What are we talking about? *The Forestry Chronicle*, *86*(2), 173-177.

Glasbergen, P. (1998). *Cooperative environmental governance. Public-private agreements as a policy strategy*. Kluwer Academic Publishers.

Ham, S. H. (1992). *Environmental interpretation: A practical guide for people with big ideas and small budgets*. North American Press.

Hanleybrown, F., Kania, J., & Kramer, M. (2012). Channeling change: Making collective impact work. *Stanford Social Innovation Review.* https://mappofskp.net/wp-content/uploads/2015/05/SSIR-Collective-Impact-2.pdf

Harris, J. K., Provan, K. G., Johnson, K. J., & Leischow, S. J. (2012). Drawbacks and benefits associated with inter-organizational collaboration along the discovery-development-delivery continuum: A cancer research network case study. *Implementation Science, 7*, 69.

Husby, W., & Fast, S. E. (2004). *Heritage appreciation development plan for protected areas located within the Beaver Hills.* Parks and protected area, Alberta community development, ecoleaders interpretation and environmental education, Edmonton, AB.

Hurst, K., Stern, M. J., Hull, R. B., & Axsom, D. (2019). Addressing identity-related barriers to collaboration for conservation through self-affirmation theory and moral foundations theory. *Conservation Biology, 34*(3), 572-580. https://doi.org/10.1111/cobi.13428

International Union for Conservation of Nature. (2021). *Biosphere Reserves*. https://www.iucn.org/commissions/commission-ecosystem-management/our-work/cems-thematic-groups/biosphere-reserves

Ishwaran, N., Persic A., & Tri, N. H. (2008). Concept and practice: The case of UNESCO biosphere reserves. *International Journal of Environment and Sustainable Development*, *7*(2), 118-31.

Kania, J., Hanleybrown, F., & Juster, J. S. (2014). Essential mindset shifts for collective impact. *Stanford Social Innovation Review*, 1-5.

Kania J., & Kramer, M. (2011a). Collective impact. *Stanford Social Innovation Review*, 36-41.

Kania J., & Kramer, M. (2011b). Collective impact; Essentials of social innovation. *Stanford Social Innovation Review*. https://ssir.org/articles/entry/collective_impact

Kania J., & Kramer, M. (2013) Embracing emergence: how collective impact addresses complexity. *Stanford Social Innovation Review.*

Man and the Biosphere. (2015). *MAB Strategy 2015-2025.* https://www.mabr.ca/s/Final_Draft_MAB_Strategy_2015-2025.pdf

Marks, M., Chandler, L., & Baldwin, C. (2017). Environmental art as an innovative medium for environmental education in biosphere reserves. *Environmental Education Research*, *23*(9), 1307-1321.

Monroe, M. C., Andrews, E., & Biedenweg, K. (2008). A framework for environmental education strategies. *Applied Environmental Education and Communications*, *6*(3-4), 205-216.

Nabukenya, J., Van Bommel, P., Proper, H. A., & de Vreede, G. J. (2011). An evaluation instrument for collaborative processes: Application to organizational policy-making. *Group Decision and Negotiation, 20*(4), 465-488.

O'Leary, R., & Vij, N. (2012). Collaborative public management: Where have we been and where are we going? *American Review of Public Administration 42*(5), 507–522. https://doi.org/10.1177/ 0275074012445780

Oxford English Dictionary. (2000). *Collaboration*. Oxford University Press.

Parkhurst, M., & Preskill, H. (2014). Learning in action: Evaluating collective impact. *Stanford Social Innovation Review, 12*(4), 17-19.

Parkins, J. R., & Mitchell, R. E. (2005) Public participation as public debate: A deliberative turn in natural resource management. *Society and Natural Resources*, 18(6), 529-540. https://doi.org/10.1080/08941920590947977

Parung, J., & Bititci, U. S. (2008). A metric for collaborative networks. *Business Process Management Journal, 14*(5), 654-674.

Prange, K., Allen, J. A., & Reiter-Palmon, R. (2016). Collective impact versus collaboration: Sides of the same coin or different phenomenon? *Metropolitan Universities Journal, 27*, 86-96.

Quinn, M. S., & Alexander, S. M. (2011). Final survey report: Carnivores & communities in the Waterton Biosphere Reserve. *Miistakis Institute*. https://www.watertonbiosphere.com/uploads/biosphere-resources_18_3002098588.pdf

Reed, M. G., & Price, M. F. (Ed.). (2020). *UNESCO Biosphere Reserves: Supporting biocultural diversity, sustainability and society*. Routledge: Earthscan, Routledge Taylor & Francis Group.

Reinicke, M. (2016). Beaver Hills Biosphere interpretive plan design: Stakeholder engagement and interpretive summary report. *Beaver Hills Initiative*, 1-19.

Renn, O., Webler, T., & Wiedmann, P. (1995). The pursuit of fair and competent citizen participation. In O. Renn, T. Webler, & P. Wiedemann (Eds.), *Fairness and competence in citizen participation: Evaluating Models for Environmental Discourse* (pp.339-367). Kluwer Academic Publishers. https://doi.org/10.1007/978-94-011-0131-8

Rousseau, D. M., Burt, R. S., Sitkin, S., & Camerer, C. F. (1998). Not so different after all: A cross-discipline view of trust. *The Academy of Management Review, 23*(3), 393-404.

Saarikoski, H., Raitio, K., & Barry, J. (2013). Understanding 'successful' conflict resolution: Policy regime changes and new interactive arenas in the Great Bear Rainforest. *Land Use Policy, 32*, 271-280.

Sagrestano, L. M., Clay, J., & Finderman, R. (2018). Collective impact model implementation: promise and reality. *Journal of Health & Human Services Administration*, *41*(1), 87-123.

Stachowiak, S., & Gase, L. (2018). Does collective impact really make an impact? *Stanford Social Innovation Review*. https://doi.org/10.48558/6GD9-MB47

Stern, M. J., & Predmore, S. A. (2012). The importance of team functioning to natural resource planning outcomes. *Journal of Environmental Management, 106*, 30-39.

Stern, M. J., & Coleman, K. J. (2015). The multidimensionality of trust: Applications in collaborative natural resource management. *Society & Natural Resources*, *28*(2), 117-132. https://doi.org/10.1080/08941920.2014.945062

Stern, M. J. (2018). *Social science theory for environmental sustainability: A practical guide.* Oxford University Press.

Stoll-Kleemann, S., & Welp, M. (2008). Participatory and integrated management of biosphere reserves: Lessons from case studies and a global survey. *Gaia, 17*, 161-168.

Swinnerton, G. S., & Otway, S. G. (2003, May). *Collaboration across boundaries - Research and practice: Elk Island National Park and the Beaver Hills, Alberta*. [Paper presentation]. Fifth International Science and Management of Protected Areas Association Conference, Victoria, BC, Canada.

Taggart-Hodge, T. D., & Schoon, M. (2016). The challenges and opportunities of transboundary cooperation through the lens of the East Carpathians Biosphere Reserve. *Ecology and Society, 21*(4), 29. https://doi.org/10.5751/ES-08669-210429

Tanaka, T., & Wakamatsu, N. (2017). Analysis of the governance structures in Japan's biosphere reserves: Perspectives from bottom-up and multilevel characteristics. *Environmental Management*, *61*, 155-170.

United Nations Educational, Scientific, and Cultural Organization. (1980). *Environmental education in the light of the Tbilisi Conference.*

United Nations Educational, Scientific, and Cultural Organization. (1996). *Biosphere reserves: The Seville strategy and the statutory framework of the world network.*

United Nations Educational, Scientific, and Cultural Organization. (2002). *Madrid action plan for biosphere reserves (2008-2013)*.

United Nations Educational, Scientific, and Cultural Organization. (2015). *MAB strategy (2015-2025).* Retrieved March 5, 2020, from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/MAB_Strategy_2015-2025_final_text.pdf

United Nations Educational, Scientific, and Cultural Organization. (2016). *Lima action plan for UNESCO's man and the biosphere (MAB) programme and its world network of biosphere reserves (2016-2025).* Retrieved March 20, 2020, from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/Lima_Action_Plan_en_final.pdf

United Nations Educational, Scientific, and Cultural Organization. (2017). *Main characteristics of biosphere reserves*. Retrieved March 22, 2020, from http://www.unesco.org/new/en/natural-sciences/environment/ecologicalsciences/biospherereserves/main-characteristics/

United Nations Educational, Scientific, and Cultural Organization. (2021). *Man and the Biosphere (MAB) Programme*. Retrieved 12 Jan, 2021, from https://en.unesco.org/mab/strategy

Vodosek, M. (2010). Relational models in cross-cultural collaboration. In Proceedings of the 3rd international conference on Intercultural collaboration, 279-282. https://doi.org/10.1145/1841853.1841907

Vu. (2015). *Why communities of color are getting frustrated with collective impact.* Nonprofit AF. Retrieved January 4, 2022, from, https://nonprofitaf.com/2015/11/why-communities-of-color-are-getting-frustrated-with-collective-impact/

Walker, G. B., & Daniels, S. E. (2019). Collaboration in environmental conflict management and decision-making: Comparing best practices with insights from collaborative learning work. *Frontiers in Communication, 4*, 2.

Weaver, L. (2014). The promise and peril of collective impact. *The Philanthropist*, *26*(1), 11-19.

Wolff, T. (2016). Ten places where collective impact gets it wrong. *Global Journal of Community Psychology Practice*, *7*(1), 1-11.

Wondolleck, J. M., & Yaffee, S. L. (2000). *Making collaboration work: Lessons from innovation in natural resource management.* Island Press.

Zietsma, C., Winn, M., Branzei, O., & Vertinsky, I. (2002). The war of the woods: Facilitators and impediments of organizational learning processes. *British Journal of Management,13*(2), 61-74.

Chapter 3: Interagency Collaboration in the Beaver Hills Biosphere for Environmental Education and Heritage Interpretation

Abstract

Biosphere regions/reserves (BR) help encourage a harmonious relationship between people and the land through the coexistence of biodiversity conservation and sustainable development practices (UNESCO, 2019a). The Beaver Hills Biosphere (BHB) strives to connect stakeholders and facilitate partnerships through the shared goal of a more sustainable future. The goal of this chapter is to understand and enhance the potential for interagency collaboration in environmental education and heritage interpretation within the BHB. This chapter explores current collaboration in the BHB through a series of interviews across 16 different agencies. Existing mechanisms of collaboration, benefits and drawbacks of collaboration, enablers and barriers of collaboration, and recommendations for future collaborations are investigated throughout this chapter. The findings of this research highlight the importance of interagency collaboration throughout the entire interpretive process from creation to delivery, and reviews what leaders in the field of interpretation can do to offset collaborative barriers.

Introduction

Interagency collaboration is recognized for its efficiency, innovation, and community-building abilities. Although challenging, meaningful collaboration is incredibly rewarding. Granted there are hundreds, if not thousands of stakeholders invested in the field of conservation within communities, agencies are presented with endless opportunities to collaborate. Involving community in decision-making processes through conservation efforts can be a crucial step

toward public acceptance and support. Certainly, establishing a strong sense of community has been associated with increased participation in community affairs, instilling a sense of civic responsibility, and ultimately increasing one's willingness to collaborate (Francis et al., 2012; Sense of Community Partners, 2004). This notion has been explored at both the individual level through increased professional confidence and ability to take risks, as well as the organizational level in terms of increased efficiency and continuous improvement in multiple different sectors and disciplines (Head, 2003). In the environmental field, fostering a sense of community and embracing collaborative opportunities is a highly desired outcome of research. From collaborating on communication and engagement in the national parks (Watkins et al., 2018), to collaborative implementation for ecological restoration (Butler et al., 2015), to stakeholder engagement in climate change education (Monroe et al., 2008), collaboration has recently become more critical than ever with the growing complexity of the environmental crises.

More specifically discussed in this chapter, collaboration is among the top priorities of UNESCO Biosphere Reserves/Regions (BRs) (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2019a). BRs strive to facilitate a harmonious relationship between people and the land through the coexistence of biodiversity conservation and sustainable development practices (UNESCO, 2019a). This chapter explores the potential for collaboration among education and interpretation agencies within the Beaver Hills Biosphere (BHB), located in central Alberta, Canada. Outlined in multiple frameworks and strategic action plans, collaboration and partnerships are highly desirable outcomes of BRs (see Chapter 2). At the international level, UNESCO (2017) encourages BRs to focus "on a multi-stakeholder approach with particular emphasis on the involvement of local communities in management." At the national level, the vision of the Canadian Biosphere Reserves Association (CBRA) (2019b) is for

member BRs to "work in partnership with all orders of government, Indigenous Peoples, the private sector, civil society organizations, academic institutions, youth, and residents," and to "facilitate dialogue, showcase models of co-governance, and coordinate projects that bridge environmental, economic, social, and cultural divides." At the local level, the BHB's principles are to promote open collaboration, inclusive engagement, and shared knowledge (Beaver Hills Biosphere [BHB], 2019). Last, the Beaver Hills Heritage Appreciation Development Plan (Husby & Fast, 2004) encourages various agencies to collaborate more extensively, specifically on environmental education and interpretation in order to broaden the audience, widen the scope of services, and reduce duplication.

In conceptualizing interagency collaboration in community, Polivka (1995) suggests that outcomes related to interagency collaboration are affected by the environmental context (political, demographic, social, and economic), situational factors (e.g. organizational elements that trigger a need to engage in relationships), task characteristics (scope, complexity, and uncertainty of tasks), and transactional factors (forces that affect interagency relationships: formality, decision making, size, connectivity). Interagency collaboration has been examined for many sectors, including nursing (Polivka, 1995), climate change responses (Howes et al., 2015), fisheries management (Lovrich et al., 2005), water sustainability (Huang et al., 2017), and environmental education (Hancock et al., 2001). Hancock et al. (2001) explore interagency collaboration through research on how to bridge the gap between academia and resource management. They explore complex university-level environmental education through various internships with the natural resource sector, highlighting the opportunity for collaboration among agency staff and academics. Howes et al. (2015) suggest that interagency collaboration can be improved by having a shared vision, multi-level planning, integrated legislation, networking

organizations, and cooperative funding. de Bruin and Granger-Morgan (2019) highlight the need for interdisciplinary perspectives to promote collaboration in climate change education efforts. Other theoretical frameworks and models that will help conceptualize collaboration include Collective Impact Theory (Kania & Kramer, 2011b) and Trust Theory (Stern, 2018).

Collective Impact Theory (CIT) consists of five conditions: a backbone support organization, a common agenda, shared measurement, continuous communication and mutually reinforcing activities; and three pre-conditions: adequate financial resources, influential champion(s), and a sense of urgency for change (Hanleybrown et al., 2012). These conditions were considered in this study during the interview creation and coding processes. CIT strives to initiate long-term commitment of stakeholders and has been used as a collaborative tool across sectors in North America (Kania & Kramer, 2011b). This approach to collaboration requires great initial energy input and is a formal and structured process. However, the benefits allow for meaningful and inclusive involvement of all stakeholders to address the complexities of collaboration within BRs.

Trust theory has been extensively studied as it pertains to individual relationships. In the circumstance of the BHB, personal networks and individual relationships are extremely valuable. Gaining and sustaining trust in collaborative endeavours should not be dismissed as it acts as an enabler for integrated and holistic collaboration. Participants in this research were probed to elaborate on the role trust played in their collaboration within the BR and how personal trust differed from organizational trust. These findings are explored using the typology defined by Stern and Coleman (2015) of the four different kinds of trust: dispositional, rational, affinitive, and procedural. Dispositional trust is general trust based on past experiences and relationships. Rationale trust is based on the trustor's calculation of the likely outcome of the situation.

Affinitive trust is rooted in the emotional judgment of the potential trustee. Finally, procedural trust is the trust in the procedures or system (Stern and Coleman, 2015).

For a more detailed analysis of Collective Impact Theory and Trust Theory see Chapter 2. This chapter more thoroughly explores collaborative theory in BRs and its practical application in the BHB.

The purpose of this research is to understand and enhance the potential for interagency collaboration in the BHB. The BHB strives to connect stakeholders and facilitate partnerships through the shared goal of a more sustainable future. With a revitalized governance structure and focused working groups (see history of the BHB in chapter 2), the BHB can now promote greater interagency collaboration through a progressive communications effort. Using various mechanisms, the BHB is working toward enhancing communication details to all partners about the BR designation (e.g., information about the Man and the Biosphere Programme (MAB), CBRA, and the BHB and its partners, along with the BHB's goals, strategies, benefits, concerns, and future plans). Among the various sectors of operations within the BHB, I chose to focus on interagency collaboration within environmental education and heritage interpretation for a few reasons. First, education and interpretation are the frontline methods of communicating to visitors, local residents, staff members, and broader audiences. Second, there is considerable variation already in program offerings and interagency collaboration among staff involved in education and interpretation operations. This variation helps to understand the unique drivers and barriers to collaboration. Third, during these early years of BR status, there is much potential to engage the BHB in strategies to enhance interagency collaboration. Last, there is much to learn about interagency collaboration in BRs; past work in the Beaver Hills region focused on the role of place attachment in decision-making and collaboration (Patriquin & Halpenny, 2017).

This chapter identifies synergies and overlapping opportunities among various environmental education and heritage interpretation agencies in the BHB. Interagency collaboration can help broaden the scope of interpretation and education programs across the BHB while reaching a wider audience. At the same time, if overlap is reduced, there may be financial efficiencies for the agencies involved. For instance, duplicating efforts in educational program development, training programs, or marketing strategies can decrease the efficiency of the BR concept itself (Husby & Fast, 2004). This research strives to illuminate these areas of overlap within environmental education agencies and explore the potential of generating new forms of collaboration.

The goal of this chapter is to evaluate current collaboration strategies in order to understand and enhance interagency collaboration in the environmental education and heritage interpretation sector of the BHB. The key objectives of this research project were to:

1. Document existing mechanisms of interagency collaboration
2. Evaluate the effectiveness of current collaboration in the BHB
3. Examine the benefits, drawbacks, enablers and barriers of interagency collaboration regarding education and interpretation efforts
4. Promote linkages and mechanisms for enhanced collaboration

Methods

Study Area: The Beaver Hills Biosphere (BHB)

The world network of UNESCO BRs consists of 727 BRs (December 2021) (International Union for Conservation of Nature, 2021). As of December 2021, there are 19 BRs

in Canada that appear in nine provinces and territories (Alberta, British Columbia, Manitoba, New Brunswick, Northwest Territories, Nova Scotia, Saskatchewan, Ontario, and Quebec) (Figure 3.1) (UNESCO, 2019a). This study took place within the BHB, Alberta, Canada (See Chapter 2, Figure 2.1). The study area included the current BHB, along with some representatives from organizations that lie beyond the boundaries of the BR in order to reach key collaborators.

Figure 3.1

Map of Canadian UNESCO BRs

Note. This map is not up to date. There are now 19 BRs. The Howe Sound Biosphere Region (BC) is not pictured in this map. (UNESCO, 2019a).

Located about 20km east of Edmonton in central Alberta, the BHB is composed of a variety of unique terrestrial and aquatic ecosystems. Additionally, the BHB is home to over 12,000 permanent residents, including Indigenous Communities, rural farmers, acreage owners,

and village residents who live, work, and interact in nature daily (Beaver Hills Initiative [BHI], 2015). The BHB encompasses parts of five rural municipalities (Strathcona, Leduc, Beaver, Lamont, and Camrose Counties), along with Elk Island National Park, Miquelon Lake Provincial Park, and several other parks and protected areas (BHI, 2016). As agriculture provides a livelihood to many of these inhabitants, the quality of life and economic potential of the BHB is closely tied to nature.

Prior to 2016, the BHB was formally recognized as the Beaver Hills Initiative (BHI). Upon its establishment in 2002, the BHI acted as a connecting force to unite the local community, all levels of government, industry, non-governmental organizations, and academia for over a decade. The successful creation of this network empowered respected decision-makers in the BHI to pursue a UNESCO BR designation. After years of dedication from local champions, and much collaboration, the BHB was designated a UNESCO BR in 2016. Although recently designated, major work toward BR objectives has only recently begun in earnest. Notably, the creation of the BHI provided a strong foundation and network for the BHB to continue pursuing the shared goal of a more sustainable future. Currently, UNESCO responsibilities within the BHB are overseen by the Beaver Hills Biosphere Reserve Association (BHBRA). The BHBRA acts as an overarching support organization for agencies within the BHB, as well as takes responsibility for actions required to sustain the UNESCO designation.

However, due to the increasing pressure of urbanization, dynamic politics, and climate change, this goal of a sustainable future will only be met with enormous dedication and serious collaboration. Fortunately, the BHB has already established strong partnerships with the local communities, academic institutions, private industry, as well as municipal, provincial, and federal government organizations (BHI, 2015). Nonetheless, the BHB still has a great

responsibility to maintain these relationships, as well as continue to form new partnerships with emerging stakeholders. Recently, the BHB has allocated capacity towards establishing relationships with the surrounding Indigenous Communities. As hosts to the BR, Indigenous Communities are integral to BR management and should be thoroughly involved in BR decisions (Canadian Biosphere Reserves Association [CBRA], 2019a).

The BHB has a long history of collaborative action combined with a strong motivation for continual improvement; thus, provided an excellent environment to research collaboration on a regional scale and analyze the most prominent barriers and facilitators (Patriquin, 2014). Potential interviewees were identified as their agency related to environmental education and interpretation efforts within the BHB. A comprehensive list of interviewed BHB partners can be found in Table 3.1.

Table 3.1

Inventory of interviewed agencies

Sector	Agencies	Number of Participants Interviewed	Pseudonyms (assigned in random order)
Municipal Representatives	Strathcona County	1	Participant A Participant B Participant C
	Strathcona Wilderness Centre	1	
	Ukrainian Village	1	
Provincial Representatives	Miquelon Lake Provincial Park	3	Participant D Participant E Participant F

Federal Representatives	Elk Island National Park	3	Participant G Participant H Participant I
NGO Representatives	Edmonton and Area Land Trust	1	Participant J Participant K Participant L Participant M Participant N Participant O Participant P Participant Q Participant R Participant S
	Go East of Edmonton	1	
	Friends of Elk Island Society	2	
	Global Foundations	1	
	Birkebeiner	1	
	North Saskatchewan Watershed Alliance	1	
	Beaver Hills Bird Observatory	1	
	Nature Conservancy of Canada	1	
	Beaver Hills Biosphere	1	
Indigenous Representatives	Metis Nation of Alberta	2	Participant T Participant U
Academic Representatives	University of Alberta	2	Participant V Participant W
Total Agencies: 16 Total Interviews: 23			

Note. Pseudonyms were assigned at random and are not organized in any particular order.

This study (protocol number Pro00099415) was approved by the University of Alberta Health Research Ethics Board. Written consent was obtained from all subjects prior to participation in the study.

Research Design

This research materialized as an exploratory study. While this study employed both qualitative and quantitative research methods, the qualitative aspects were heavily emphasized. Exploring a concept as comprehensive and abstract as collaboration can benefit greatly from a qualitative approach. Qualitative research acts as an umbrella term for methods of inquiry to describe, decode, and translate the meaning of "naturally occurring phenomena in the social world" (Al-Busaidi, 2008, p. 11). Patton (2002) advises researchers to take a qualitative approach while investigating people's lived experiences, inquiring about the meaning of those experiences, or gaining insights on an agency in the context of its social/interpersonal environments. Qualitative interviews illuminate deeper insights and meanings into one's lived experiences (Kvale, 2006).

Semi-structured interviews served as the primary source of data for this study. Semi-structured interviews allow both parties (i.e., the interviewer and interviewee) to engage in a formal interview process following a general script. However, this format also allows the flexibility to follow the natural and topical trajectory of the conversation (Cohen & Crabtree, 2008). Semi-structured interviews are best used in situations where you only have one chance to interview an individual (Bernard, 1988). Due to the timeline of this study, along with unexpected modifications due to the COVID-19 pandemic, I was only provided with a single opportunity for

interviews. However, employing this semi-structured interview approach allowed for more freedom during discussion, generating richer and more comprehensive data.

Additionally, minimal quantitative data was collected through a series of questions dispersed throughout the interview guide in the form of ratings on numerical Likert scales. The interview guide can be found in Appendix 3.A. The primary investigator conducted all of the interviews, which helped limit the amount of personal bias and increase the validity of the results (Bernard, 1988).

The desired sample size of this study was a total of approximately 20 semi-structured interviews. Qualitative research experts argue there is no standardized sample size as research can be contingent on epistemological and methodological issues (Vasileiou et al., 2018). The primary investigator completed 23 interviews with participants from 16 different environmental education agencies (or education adjacent agencies) within the BHB (see Table 3.1). In order to protect the anonymity of participants, interviewees will be referred to as the general representative category to which they were assigned (see Table 3.1 for representative categories and pseudonyms).

Interviews were completed between December 2020 - March 2021. Participants were selected if their agency related to environmental education and heritage interpretation within the BHB. Upon initial invitation, participants were given a *Participant Consent Form* (see Appendix B) to consent to an interview. Upon initial conception, interviews were to take place in person in the fall of 2019. Due to unforeseen circumstances with the COVID-19 pandemic, interviews occurred slightly later in the year and were all completed virtually using video-call software such as ZOOM, or telephone calls. Fortunately, these interviews took place far enough into the pandemic that most participants were familiar with ZOOM software, and those who requested

were able to complete the interview via a phone call. Although some additional participant information (i.e., body language, rapport, etc.) was compromised, I believe this platform still worked exceptionally well to complete interviews, especially with the "poll" option to insert quantitative questions throughout the interview. This platform was also helpful throughout transcription as video recordings were accessible after the interview and could be used to add contextual information such as facial expressions or hand gestures.

Rapport for the interviews was established both before and during the interview process. The primary investigator of this study (Julie Ostrem) has past experience living and working in the BHB:

1) She lived in the BHB for over 18 years;

2) She worked at Miquelon Lake Provincial Park as an environmental communicator for one summer season;

3) She worked at various environmental education and heritage interpretation sites within the BHB as a research assistant for a year; and

4) She regularly volunteers and/or engages in public events within the BHB

Thus she had pre-existing relationships with multiple participants. Additional rapport was built through a series of preliminary emails, as well as introductions at the beginning of the ZOOM call.

Interview Design

Participants were invited to complete a 20–30-minute semi-structured interview, with the average being 31 minutes and 32 seconds, that explored a wide variety of themes related to collaboration. The typical semi-structured interview lasts between 20 minutes and two to three

hours (Newing et al., 2011). However, being courteous to other commitments and duties of the interviewees, I aimed toward the lower end of the scale for time commitment, allowing conversation to flow naturally. The interview itself focused primarily on the concept of collaboration and was limited to five sub-themes within it: the role of trust, the importance of a backbone support agency, barriers and enablers to collaboration, the goals of environmental education in the BHB, and recommendations for future collaboration. Although collaboration encompasses a wide variety of topics, the selected ones coincide with the objectives for collaboration defined by UNESCO, CBRA, and the BHB, as well as the chosen theoretical frameworks. With the interviewee's consent, the interviews were audio-recorded and digitally transcribed.

In the interest of time and consistency, all interviews adhered to the questions suggested in the guide (See Appendix 3.A for full interview guide). This guide acted as an organizational tool to regulate the order of questions, provide leading probes, and obtain comparable data (Bernard, 1988). Adhering to an interview guide cultivated the notion of professional competency and control while encouraging the freedom to follow new leads (Bernard, 1988). Adjustments to the interview questions were made as necessary, depending on the trajectory of the conversation. Open-ended questions were paired with probes to encourage deeper insight and understanding.

Data Analysis

I used Otter.ai software to transcribe interviews and NVivo 12 software to interpret the data obtained from the interviews. Transcribing data was a detailed interpretive process that involved judgements on which information to include to ensure data are represented accurately

(Bailey, 2008). Excel was also used as a supporting software to store and analyze quantitative data. Upon transcription, the data were organized and coded to perform thematic analysis. Thematic analysis helped interpret broad insights and common themes faced by representatives from each organization (Braun & Clarke, 2012). This method helped make sense of the common challenges faced by environmental education organizations within the BHB and their pursuit for collaboration. Thematic analysis helped uncover implicit meanings from the interviews and a holistic understanding of the bigger picture within the BHB education community (Tate et al., 2010).

Thematic analysis was completed in five stages. The first phase was to do a general read-through of each individual transcript and make detailed notes about the main themes or focuses of the interview. Phase two once again involved an individual analysis of each interview and categorizing sections of the interview to inductively formed codes (259 nodes were created). Phase three materialized as a concept map where all codes were organized into parent codes (16 parent codes, 33 child codes, 259 nodes). Phase 4 and 5 further refined these codes into overarching themes (4 themes, 14 subthemes, 259 codes). These themes and codes will be explored in depth throughout the discussion section of this report. Extensive literature was used to support the creation of these codes. Themes were established based on an 85% prevalence rate, where at least 85% of participants must have discussed a topic for it to be considered a theme (Braun & Clarke, 2006; Creswell, 2014; Fugard & Potts, 2014). However, noteworthy outliers in sub-themes were also explored as they presented different ideas and valuable perspectives. Visuals and figures were created using NVivo software (can be found throughout the findings section). Additionally, coding comparison queries and comparison diagrams were created to compare the differences among various organizations (e.g., well-established federally

funded organizations vs. newly formed organizations, as well as differences between position titles (e.g., supervisor vs. interpreter)).

Findings

In total, 23 individuals participated in interviews. Just over half of participants identified as male (52%), and the remaining participants identified as female (48%). The average age of participants was 50 years old. The vast majority of participants were of European descent (91%). This demographic information should be considered as an important factor in understanding the findings. Although there was a large age span and equal distribution across female and male genders, there was a heavy bias of cisgender people and white people.

An additional factor to consider while reading these findings is the different levels of organizational maturity and different management levels of participants. Participants from well-established agencies with high levels of organizational maturity experienced different barriers and enablers than organizations in their infancy or organizations with lower capacity. Participant experience with the organization ranged from a single year to multiple decades. No apparent differences were observed among these participants; however, limited awareness of other agencies and collaborative initiatives was observed in participants with limited involvement within their agency. Additionally, participants who were educators had different responses than participants in higher levels of management or supervisory roles. These comparisons were made for larger organizations where more than one participant was interviewed from that agency.

In order to adhere to the guarantee of anonymity, participants will be referred to by the pseudonyms outlined in Table 3.1. The general categories of participants were municipal

representatives, provincial representatives, federal representatives, non-governmental organization (NGO) representatives, Indigenous representatives, and academic representatives.

Additionally, the following organizations were contacted for interviews but either declined the interview or did not respond to emails:

- Alberta Fish and Game Association (no response)
- Beaver County (no response)
- Ducks Unlimited Canada (no response)
- Lamont County (no response)
- Leduc County (declined interview)

This may be due to a lack of capacity or interest in participating in the study.

Quantitative Results

Although minimal quantitative analysis was performed (see limitations section), additional information was collected using the following two questions:

Which of the following statements best describes your current level of involvement with BHB decisions/operations?

- No Involvement
- Interested (e.g., newsletter, informed about opportunities to participate in events)
- Supportive (e.g., attend future community forums, answer surveys)
- Involved (e.g., attend topic specific discussions or workshops)
- Core (e.g., regular meetings, help develop sections of the plan)

Which of the following statements best describes your desired level of involvement with BHB decisions/operations?

- No Involvement
- Interested (e.g., newsletter, informed about opportunities to participate in events)
- Supportive (e.g., attend future community forums, answer surveys)
- Involved (e.g., attend topic specific discussions or workshops)
- Core (e.g., regular meetings, help develop sections of the plan)

Participants' responses ranged significantly for the first question, where most participants ranked their involvement as interested (42%), followed by core (33%), no involvement (17%), and supportive (8%). In the second question, participants' responses were more unified as the majority selected involved (42%) or core (42%) as their desired involvement with the BHB.

Additionally, 57% of participants completed the following quantitative question using the poll feature on zoom:

The following factors are common barriers faced by environmental education agencies found through an extensive review of the literature. Participants were asked to rate the extent to which they perceived each factor as a barrier to collaborating across agencies. Items were rated on a four-point Likert scale: (0 = to no extent, 1 = to a little extent, 2 = to a moderate extent, 3 = to a great extent). The mean, median, and mode of participants' responses are outlined in Table 3.2.

Table 3.2
Descriptive statistics of potential barriers to collaboration

Barriers	Mean	Median	Mode
Time	2.0	2	2
Lack of staff / Staff turnover	2.0	2	2
Financial constraint	1.6	2	2
Lack of trust between partnering agencies	1.4	2	2
Slow progress	1.4	1	1
Lack of cooperation from partnering agencies	1.4	2	2
Low priority goal within your agency	1.3	1	1
Difficulty Communicating	1.2	1	1
Different visions and/or education goals	1.0	1	1
Competition	0.3	0	0

Participants' responses to this question varied greatly among different organizations depending on their sector, as well as the individual participant's level of management. Due to the limited sample size, these results are inconclusive. Additionally, qualitative data collection complemented this question as participants were able to discuss their responses to each barrier and clarify in what ways these factors act as barriers (e.g., whether something was a barrier in the past, is currently a barrier or could be a barrier in the future, whether the barrier is present on the

agency's end or their partner's end). Further research using quantitative methods should be pursued to support the findings from this question.

Qualitative Analysis Findings

The findings from these interviews are presented as the themes emerging from the thematic analysis process described in the methods section. Each theme is broken into sub-themes and then discussed and supported by relevant quotes from participants. The four corresponding themes are existing mechanisms of collaboration, benefits and drawbacks of collaboration, enablers and barriers of collaboration, and recommendations for future collaboration. A description of these themes and the average thematic coverage for each theme can be found in Table 3.3.

Table 3.3
Description of inductive coding themes and percent of interview covering that theme

Theme	**Description**	**Average Thematic Coverage (%)**
Collaborative Mechanisms	Any means (formal or informal) in place to facilitate collaboration	20.0%
Benefits and Drawbacks	Advantages and disadvantages resulting specifically from a collaborative experience	22.1%
Enablers and Barriers	Factors that facilitate and impede collaborative processes	62.7%
Recommendations	Specific suggestions from participants to improve current collaboration	18.0%

[a]Average thematic coverage was an empirical inquiry that was calculated post-analysis to support the justification of the inductive coding process.

Note: Quotes are altered using parentheses and a disclaimer (e.g., "text removed for anonymity") to protect the anonymity of participants. Ellipses are used to indicate the removal of less relevant

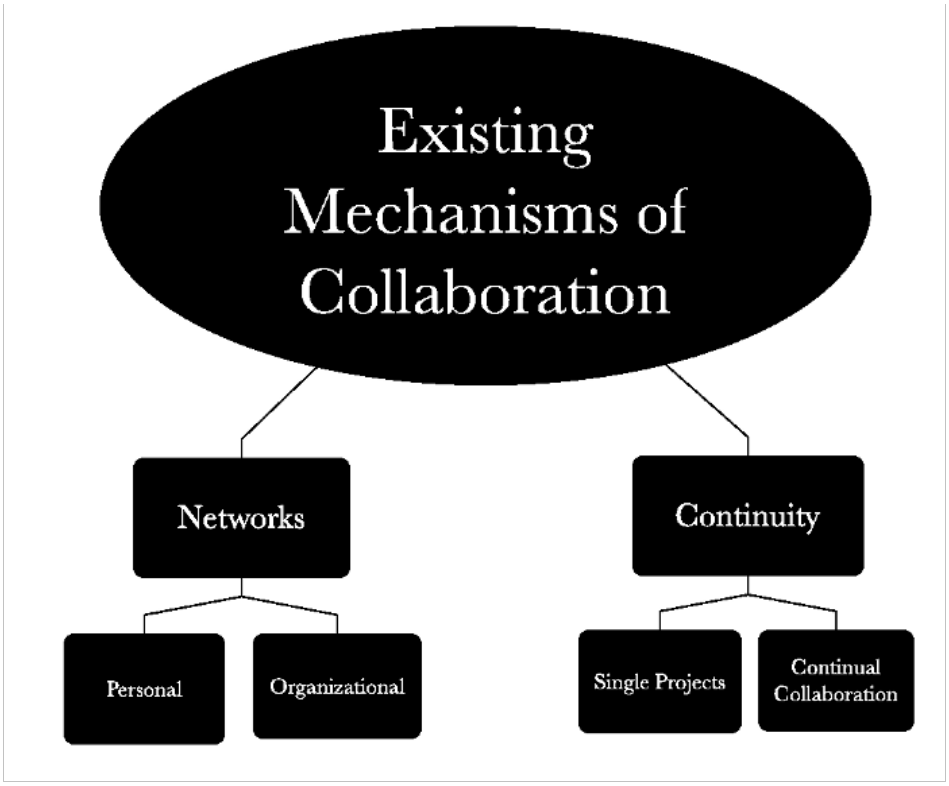
material. Repeated words, grammatical errors, hesitations, and false starts were removed from quotes where appropriate to increase clarity.

Theme: Existing Mechanisms of Collaboration in the BHB

The BHB has a long history of collaboration among education organizations. Participants described past collaborative processes and the mechanisms currently in place to facilitate collaboration. Existing mechanisms of collaboration can be described as any means (formal or informal) in place to encourage collaboration. Participants focused on two themes: networks and continuity (Figure 3.2). Both personal and organizational networks in place act as enablers to collaboration, and participants stressed the important role of the BHB and BHBRA in these processes. Participants also elaborated on the continuity of current and past collaboration and the benefits and drawbacks of short vs. long-term collaboration. Participants told stories in great detail of past collaborative efforts and the mechanisms in place to allow for that collaboration to occur. This section provides valuable insight for looking at what has worked in the past and what should be considered for future collaborations.

Figure 3.2

Common themes found in interviews: Existing mechanisms of collaboration



Networks

Participants described that most collaboration occurring between environmental education and heritage interpretation agencies was facilitated by personal and organizational networks. Many participants emphasized the role of the BHB and the BHBRA in enabling these relationships and explored the value of social capital in diverse contexts. Participants also explored how these personal networks can transpire into more formal meeting groups with regular check-ins and consistent communication. One participant described how the BHB facilitates these networks through both formal and informal relationship building:

> To me, it's how the real world works, is we all work through networking. And I think the core thing is, it's about relationships. It's all about relationship building. So whether it's on a formal level, like the biosphere, and the formation of the new organization, and the

board, and formal relationships, or the many informal relationships that result from that. (Municipal Participant A)

Participants were encouraged to tell stories of successful and failed collaborative endeavours. Almost all successful collaborations incorporated participants' personal networks. These are relationships established beyond organizational obligation and require capacity from the individual collaborating. Participants with extensive personal networks experienced a valued sense of reciprocity as they collaborated. These partners were noted as highly valuable and desirable relationships. These relationships were often built on trust and became deeply rewarding experiences for individual participants beyond their employment. This sense of personal fulfillment is illustrated in the following quote:

> My experiences with collaboration are all personal. We do have processes for very formal collaboration. The formal processes we have for collaboration are intimidating, and they're unwieldy... And that must suit their agenda for whatever they need, but it doesn't suit mine. So much of the success of our collaborations we've had, especially in this field, in terms of environmental education, and interpretation, have a very strong foundation of rapport and relationship between collaborators. And it's a godsend that they're all wonderful people. It makes them really easy to work with. But for me, I identify that as something that is a real strength of the collaborations we've engaged in. Rapport allows for trust and trust allows for relationships…It's pleasant. It's fun, it's very rewarding. The relational aspect of that journey is rewarding for folks, you can't deny that folks might be

> more motivated to work in collaboration that they find personally satisfying. (Federal Participant H)

On a macroscale, organizational partnerships were also found to be abundant throughout the BHB. Certain organizations collaborated based on their sectors (e.g., government agencies, NGOs, research institutes, etc.). However, multiple organizations partnered across these borders, which yielded highly successful collaboration opportunities. For instance, participants elaborated on how they could host educational events due to their physical space, and the other organization was able to supply staff to run the program. Participants also expressed that although organizational partnerships are less personally meaningful, they are also less fragile as the relationship does not rely as much on individual congruence.

Continuity

Continuity was deemed a significant factor in current mechanisms of collaboration. Participants explored a variety of different frequencies, commitments, and lengths of collaborative processes and elaborated on the benefits and drawbacks of each. Almost all participants explained a continuum of collaboration where there were opportunities for single-day events or partnerships with consistent and frequent communications. One participant explained some of the benefits and drawbacks of short versus long term collaboration:

> It's great when we can have projects that are short, and don't have any turnover on the teams because we can all rest fairly heavily on the rapport we have. In the long term, those changes can be shepherded in a personal way where an introduction is made to a

> new member, and there's a transition. But when there are those ongoing, recurring collaborations, it's just been great because our organization's continued to value the collaboration. But maintaining the cultural capital of the gift given to you by continuity is really nice. And when it's not there. It's just extra work for sure. The product probably suffers too. (Federal Participant H)

Within the BHB, there are ample opportunities to get involved in single-day or single-week events or festivals. This form of collaboration often requires high-capacity input in the short term but less prolonged and extensive capacity in the long term (Grant et al., 2020). Short-term collaboration was also perceived as less intimidating as it requires lower commitment levels. In turn, this can encourage agencies with less capacity to participate in collaborative events and create opportunities for new partnerships to flourish. Short-term partnerships are strengthened by the mutual goal of hosting the event and can be efficient tools for involving a variety of agencies. One participant expressed how short-term commitment opportunities are more desirable because of limited individual and organizational capacity, but also the potential for this collaboration to transition into a large-scale project:

> But I think continuing that conversation and maybe doing something like just a small pilot program, it doesn't have to be huge. Just to test it out to see like, what works, what doesn't work, anything can improve. And I think that's one of the downfalls that biosphere space often is, is kind of going for, like the big partnership, the big rolling out, like a big event. But I think kind of a pilot program or something smaller, could be even a weekend thing, a two-day thing, which is technically a project, right. I would hope to be

> successful. So just something small scale, that could be considered a project. Again, it doesn't utilize a lot of time or staff. It's fairly inexpensive, you know, so just something to that degree. And then if it is successful, then you can gauge it for large scale projects. I think it could transform into something bigger. (Indigenous Participant T)

Yet, continuous and long-term collaboration contributes to strengthened personal networks and relationships (Galbraith et al., 2002). These forms of collaboration often span across years and involve organizational and personal connections. Short-term collaboration has the potential to evolve into this more continual approach of collaboration through repeated annual events and continuous communication. Participants stressed the importance of longevity in their partnerships as this establishes trust and creates a harmonious and reciprocal environment for collaboration. Long-term collaboration can also materialize in more informal means of communication where partners collaborate frequently but for shorter periods of time. These informal relationships provide a space for knowledge sharing as well as a safe and constructive space for brainstorming.

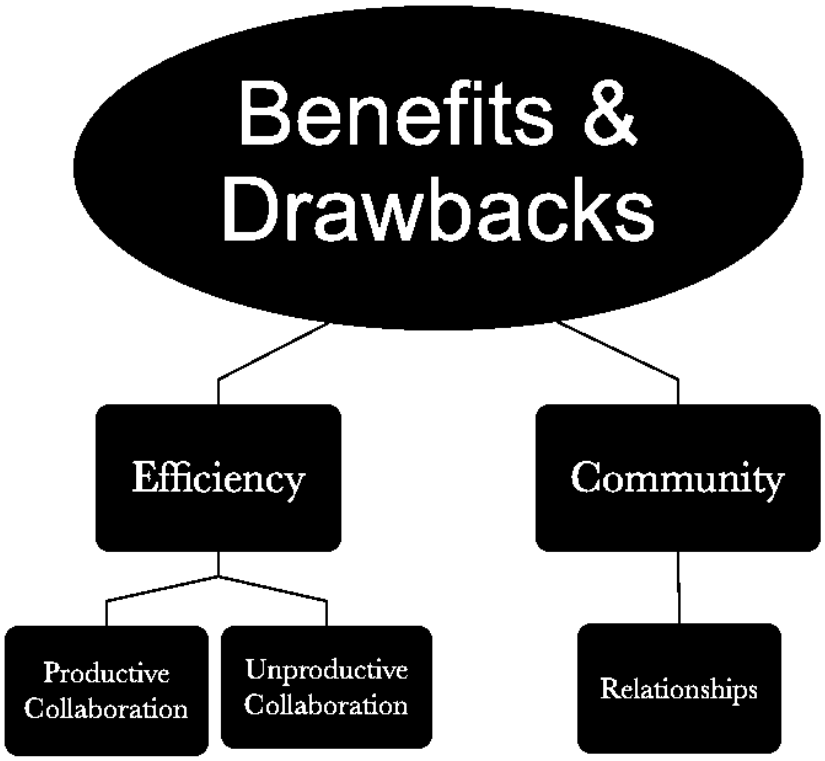
Theme: Benefits and Drawbacks of Collaboration

All participants were given the opportunity to reflect on the various benefits and drawbacks of interagency collaboration (Figure 3.3). In the context of this research, benefits can be described as advantages gained specifically from a collaborative experience, whereas drawbacks can be described as the disadvantages of collaboration. All participants emphasized the many benefits of collaboration, with around 50% of participants also exploring the potential drawbacks. Almost all participants (>90%) explored how collaboration enables a more connected

and stronger sense of community. Another common theme was how collaboration can affect the efficiency of their organization, as well as their own efficiency on a personal level. Understanding the potential benefits and drawbacks that accompany collaborative endeavours is imperative to managing conflict and being more proactive as a supporting agency. Each agency involved in collaboration should carefully consider the benefits and risks to their own agency, as well as their relationship with the supporting agency.

Figure 3.3

Common themes found in interviews: Benefits and drawbacks of collaboration



Efficiency

All participants stated that a significant benefit of collaboration was increased efficiency. They noted saving money, effort, and time when collaborating with partners. One participant also explained the knowledge-sharing benefits of collaboration:

> There's a lot more opportunities to get grants if we work together. That's definitely an empowering thing. Another empowering thing is just bringing people together with different experiences and information. Like people working in their own little groups. That just happens. So even just, you know, the opportunity to sit down together and find out what data is out there? What studies have been done, and what other people's experiences are. (NGO Participant M)

Participants also explored how synergies formed within the BHB benefited their agency through the following ways:

- Added staff/volunteers for programs and events
- Capacity redistribution
- Decreasing duplication
- Division of tasks and labour
- Educating a wider audience (more people and more diverse groups of people)
- Filling a gap (e.g., an agency outsources an expert on website design rather than learning this skill internally)
- Joint marketing and increased public profile & recognition
- Joint training

- Joint creation and delivery of programs
- Larger impact
- Provision of a venue for programming/events
- Sharing research, knowledge, and experiences
- Saving money

However, over half of the participants also elaborated on how collaboration can actually decrease efficiency. For instance, very high levels of collaboration were discussed as tedious and too complex. Some participants felt this kind of collaboration could increase the amount of time and effort into an otherwise simple task. Most participants discussing the drawbacks of collaboration had similar sentiments to those expressed in this quote:

> If you are coordinating during an event or something with multiple people, there's a bit more legwork that needs to go on in terms of facilitating and coordinating, right? Making sure everyone's on the same page, and everyone is happy with what they need, and they have what they need. (Provincial Participant E)

Community

One substantial benefit of collaboration noted by participants was the sense of community that is created. From personal relationships to organizational partnerships, collaboration allowed stakeholders within the BHB to establish invaluable networks. These networks allowed for an exchange of knowledge, education strategies, and capacity. For instance, several participants elaborated on how this community could support one another

during the creation and delivery of environmental programming. From added staff to providing a venue to host an event, stakeholders with well-established relationships expressed a sense of relief and gratitude for these partnerships. This sentiment is captured in the following quotes:

> It's a good demonstration of how the community can work together. But also, the reach of our efforts is broader. So we can accomplish more working together than we can, you know, as a piece of the apple versus the whole apple kind of thing. (Provincial Participant D)

> And you can build your own individual network from those introductions you've already established then trust because you're all participating in the same great, wonderful initiative. And then after that, it's anything that you collaborate on any initiative that you want to work on together. (Academic Participant V)

Given that all participants were affiliated with environmental education or heritage interpretation, the shared goal of a more sustainable future can come with tremendous responsibility. Having a network of like-minded individuals was seen as a significant benefit for the personal well-being of participants. This larger community established by the BHB allowed participants to feel like a part of something larger and acted as a reminder to participants that their work is important. Several participants described collaborating in this community as a pleasant and rewarding experience:

> Because it’s [collaboration] pleasant. It's like it's fun, it’s very rewarding. You know the concept of life worth living, sharing the success and the struggles through the collaborations we have for a positive benefit. The relational aspect of that journey is rewarding for folks, you can’t deny that folks might be more motivated to work in collaboration that they find personally satisfying. Of course we do. And I don't know if we just attract those kinds of people to this field. (Federal Participant H)

This sense of community also provided participants with an outlet for learning about each other’s successes and failures and provided a sense of reassurance.

> I think another one is us sharing stories, successes and failures…learning, you know, what's the best pathway that you went forward with it? Yeah, an interesting way to kind of learn from each other and learn about each other (NGO Participant L)

However, it is important to also recognize the potential disadvantage of having such a tight-knit community for collaboration. Some participants expressed concerns about the ambiguity and exclusivity of collaboration within the BHB. These sentiments of exclusion were discussed to further divide various stakeholder groups. When collaborating, participants also run the risk of conflict, which can negatively impact interagency trust and create a barrier to collaborating with certain partners again in the future.

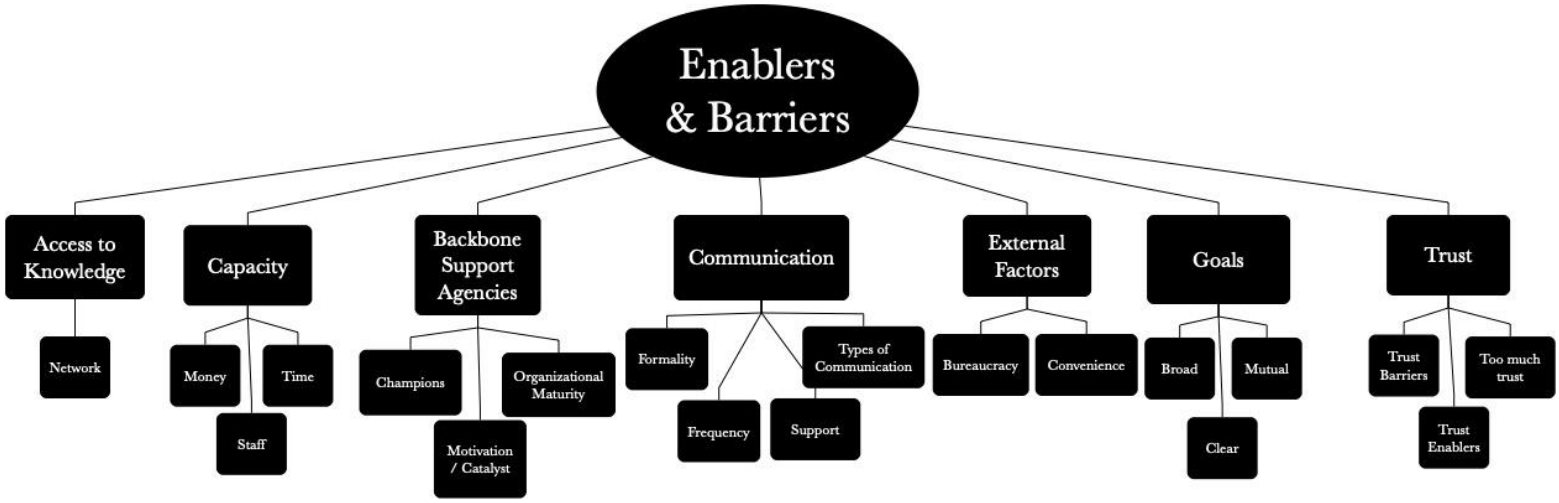
Theme: Enablers and Barriers to Collaboration

A large component of each interview focused on the various enablers and barriers of collaboration. Participants explored a wide range of factors affecting collaboration which were categorized to the themes outlined in the figure below (Figure 3.4). The most prominent themes discussed were access to knowledge, backbone support agencies, and communication. Becoming aware of the potential barriers to collaboration can be advantageous when considering a collaborative endeavour. Participants described remaining proactive, benevolent, and flexible to help mitigate multiple barriers, as well as contribute to the success of a collaborative process.

Enablers are defined as factors that facilitate collaborative processes to occur. Barriers are defined as factors that impede collaborative processes. Although themes are explored generally in the following several pages, it is important to note that each theme can act as an enabler or a barrier depending on the context. Many participants recognized their paradoxical relationship and discussed how each enabler could, in turn, be a barrier if it is not met.

Figure 3.4

Common themes found in interviews: Enablers and barriers of collaboration



Access to Knowledge

Knowledge and awareness play an important role in enabling collaboration. Information such as who potential partners are, what kind of programs are occurring in the area, when programs are taking place, and a facilitated means of knowledge exchange should be made accessible to participating agencies.

All participants explored the role of a collaborative network and access to this network as an enabler of joint initiatives. Larger networks and increased awareness of potential partners are extremely beneficial in decreasing duplicative efforts (Chetty & Michailova, 2011). For instance, many participants talked about how they would bring in experts to fill certain gaps. Having access to a network where experts can be easily identified is a valuable asset to an organization. Additionally, some participants expressed frustrations with a lack of access to knowledge and the inconveniences of duplicative efforts within the BHB.

> It was hard to have a new ecologist come in every time and ask me the same questions. And, you know, it got to the point where I sent out the exact same files about four times. So that sort of passing on of institutional knowledge, not just within the institution, but the branching threads that go out to the people that they've been playing with for a number of years…I would say another thing that is an opportunity, but a barrier at the same time, is you have new players coming in as well, like (name removed for anonymity). They haven't played with the people that have sort of been involved all the way along. So it's like, oh, we need to get somebody to do this. But they're not my Rolodex and I'm not in theirs. (Academic Participant W)

Depending on the organizational maturity and specific circumstances, all collaborating agencies have access to different levels of information. Well-established organizations often have access to a large network of partners, as well as more awareness of opportunities to get involved. A lack of awareness was observed to be a huge barrier to collaboration as many agencies were simply unaware of a collaborative opportunity or even that certain agencies existed within the BHB. Many collaborative opportunities emerge from convenience or tangential connections. Smaller agencies with less capacity often do not have the opportunity to have these conversations and do not have access to the same resources as more well-known agencies.

Agencies should prioritize sharing knowledge with other organizations and remain mindful of inclusive opportunities. Participants stressed the importance of personal networks remaining open to all stakeholders and organizational networks expanding to include organizations of all levels of maturity.

Capacity

Personal and organizational capacity both play an indisputable role in enabling collaboration. All participants discussed capacity as it pertains to time, money and resources, and staff. Because the BHB is a not-for-profit organization, it is almost inherent that collaborative processes are voluntary and decentralized - meaning that it is reliant solely on staff initiative and capacity (Kambic et al., 2017). Collaboration often requires a large time commitment upon initial conception. Although it often saves time and effort subsequently, the idea of collaborating can be overwhelming for agencies who lack this capacity. All participants expressed a time constraint to some extent. However, when describing the characteristics of a good collaborator, many emphasized agencies with enough time and capacity to collaborate.

Similarly, access to money and resources can also be a barrier to collaboration. Having a stable financial situation can encourage organizations to take risks and collaborate more extensively with others. Additionally, having access to a venue for events, adequate infrastructure, and general props and materials can enable collaborative opportunities. Although many participants also discussed the importance of reciprocity, organizational maturity and capacity must be considered when creating partnerships. Well-established organizations should look for opportunities to collaborate with organizations with lower levels of capacity to avoid an exclusive network. One participant described their perspective on the current state of capacity of the BHB:

> There's been some turnover since I was more heavily involved in (organization removed for anonymity). And so the connections have changed in that sense. And I think I would characterize it as kind of turning inwards and trying to sort out the next steps and there hasn't been as much deliberate outreach on their part, to agencies and partners. I think the opportunities are there, but I get the sense that it's more just 'let's get ourselves sorted out and, and ready to tackle new initiatives and then we'll start reaching out again'. (Academic Participant V)

Several participants expressed this notion of focusing inwards and investing their time and effort into their own agency, which prevented them from collaborating with other agencies. Organizations with limited staff tend to focus inwards and invest the little energy they have into their own agency, which in turn limits their ability to collaborate with others.

Another important insight of several participants was the barrier presented by staff turnover: “Rapid staff turnover in some of these organizations is probably the bigger barrier because of the loss of institutional knowledge through retirements or just people moving on or cutbacks.” (Academic Participant W). When key champions step away from their involvement with the organization, much knowledge and many networks have the potential to be lost. Establishing knowledge sharing continuity and documentation should be pursued in environments of high staff turnover.

Backbone Support Agency

A backbone support agency is a term borrowed from Collective Impact Theory (Kania & Kramer, 2011a) that describes a supporting infrastructure responsible for coordinating collaborative processes and keeping participating agencies accountable. Effective backbone support agencies and local champions are critical to successful collaboration (Kania & Kramer, 2011a). Many participants considered the BHBRA as a backbone support agency that helps establish networks and create long-lasting synergies through a joint initiative. This overarching agency can act as a catalyst for individual organizations to form their own connections with like-minded organizations, as well as empower them to take collaborative risks. Many participants felt that having secure backbone support allowed their agency to make connections they would have otherwise not made. Because the BHBRA has dedicated staff and capacity to facilitate this network (e.g., hosting meetings, creating committees, supporting collaborative projects, etc.), this, in turn, promotes interagency collaboration independent from BR-supported initiatives. One participant expressed gratitude for the contribution of the BHBRA in connecting with multiple stakeholders:

> Just really happy with how the Beaver Hills has really grown to what it is from, you know, an idea many years ago, to mobilizing support from multiple levels of government and NGOs and stakeholders, and just happy to see that it's still a relevant organization that has a role in trying to support and influence positive decision making in the region, by residents, and by companies and by levels of government, just to make sure that we're all working closely together on whatever decisions are made. (Municipal Participant C)

Additionally, participants felt this support from other well-established organizations within the BHB. Agencies with high levels of organizational maturity in the BHB were observed to collaborate more with a variety of agencies. Organizational maturity can be understood as the length of time an organization has existed and its growth in size and complexity over time. Due to their past experience and financial stability, they have higher capacity to allocate resources to other agencies in collaborative partnerships.

On a smaller scale, a common theme throughout interviews was the role of local champions. Champions were found to be an extremely important enabler of collaboration. Participants explored past collaborative endeavours and when asked how the collaboration started, they almost always said an individual's name. Many participants clearly identified these individuals as champions and stated that without these people's urgency and dedication, this collaboration simply would not have happened. For example, one participant said:

> Honestly, the biggest driver was (name removed for anonymity). He came to me, you know, having had initial communications and kind of gave me the lowdown on the

project. And I was like, of course, this is something that we would really benefit from as well. Not a ton of extra effort on our part either. So yeah, the biggest driver was I think (name removed for anonymity), and his communication. (Federal Participant I)

Communication

As expected, good communication is among the top enablers for any form of collaboration. Communication has been extensively explored in the literature across disciplines as a significant enabler of collaboration (Batt & Purchase, 2004; Suter et al., 2009). All participants stressed the importance of good communication to achieving successful collaboration. The continuity of communication also appeared to be a limiting factor of collaboration. Agencies able to maintain regular communication for prolonged periods of time expressed stronger relationships and more in-depth levels of collaboration. A lack of communication or unproductive communication was discussed as a huge barrier to collaboration. One participant illustrated the necessity of communication through a conversation on trust: "So there's just trust built on a lot of communication, there's nothing, no hidden agendas or anything even close to that. It's just, it's very forthright. And I guess that's what trust is, just good communication." (NGO Participant K)

Participants also discussed the optimal frequency and formality for successful communication. Many participants elaborated on the benefits of informal communication on an ad-hoc basis. They felt these types of communication were more genuine and led to stronger relationships with partners. Nonetheless, many participants also saw the value in more formal and scheduled means of communication, whether that be through committee meetings or facilitated board meetings. However, formal meetings should encourage informal discussions to

take place throughout and empower agencies to reach out to partners on their own afterwards. An important role for the BHBRA would be to remove these bureaucratic barriers of formality and continue to pursue discretionary communication through organized meetings. The power of quick check-ins and simply asking "how can we support you" should not be overlooked. This means of communication can proliferate into collaborative opportunities and strengthen relationships and trust. One particular example discussed throughout interviews was a small unofficial collaborative group called "The Good Neighbours". Several participants referenced this collaborative group as a great example of informal and serendipitous yet consistent communication.

> This Good Neighbours group is really just an informal sort of discussion. So we were doing that actually twice a month now every two weeks. (Names removed for anonymity), and I will sit down and have a chat just to catch up for an hour or so. We have started to do that on a more ad hoc basis. But with COVID, actually, we went to a biweekly call… So we're exchanging information that way back and forth. So that form I think, has been really, really good. And also it's very informal, but it's very kind of secure, if you will, because we get to vent to our peers, right? And, you know, look at what they did. Or maybe brag a bit too, you know, we've done this. So that kind of forum is started and is really cementing, and I think, to me, the next level will be the BHB, and their counterparts begin to do the same sort of thing maybe on a bit more sort of scheduled or routine basis. And, maybe (name removed for anonymity) at her level, that sort of thing would be happening to where we have been doing that maybe as a larger

group, with teams from each of those sites, once or twice a year kind of thing. (Provincial Participant D)

Participants also explored the different types of communication and their strengths and weaknesses. From brainstorming sessions and regular check-ins to planning discussions, and offering support, environmental education and heritage interpretation organizations are no strangers to communication. Due to the nature of this career, these communication skills should be considered as valuable assets to collaboration. Individuals in supervisory positions of these agencies should facilitate opportunities for staff to communicate across agencies regularly.

External Factors

All participants described several barriers and enablers of collaboration that were beyond their control. Participants elaborated on how external factors like bureaucratic and regulatory barriers can impede collaborative processes. These can materialize as dynamic political states or added layers of bureaucracy through formal and legal requirements associated with collaboration. Some participants expressed hesitation with partnerships that require lengthy time commitments due to bureaucracy. In turn, this can lead to informal partnerships, which can be advantageous, but this can be a barrier for agencies with legal requirements such as government organizations. A couple of participants perceived the BR as a potential source of added bureaucracy: “I think one, another underlying concern would be that the biosphere would just add another layer of bureaucracy to anything we might be trying to do?” (NGO Participant K)

Another external factor discussed was geographic and temporal convenience. Many participants told stories of successful collaboration and credited it to being in the right place at

the right time. Geographic proximity was noted as an important enabler for many organizations. Certain locations also have the optimal infrastructure and topographical conditions for hosting events (e.g., lakes for wetland programs, trails for cross country events, campgrounds for 'learn to camp' programs, etc.). These determinants can also facilitate collaboration.

Undoubtedly, this year has shown us the extreme impacts of external factors through the COVID-19 pandemic. The majority of participants (78%) mentioned the impacts of the pandemic in terms of collaboration. For some, the pandemic halted all collaboration and acted as one of the largest barriers to collaboration:

> I mean, it's definitely a little bit tricky with COVID here, because a lot of our opportunities for collaboration, at least from where my position comes from, is often through special events and special events didn't happen last year, they're probably not happening this year. So a lot of that collaboration has kind of been halted for the time being. And that kind of comes back to our ability to plan if you're collaborating with others to actually do programming, it takes more time to plan it. And I think that was kind of the biggest barrier. (Federal Participant I)

However, many also expressed being introduced to new forms of collaboration in response to the pandemic. Suddenly, attending board meetings became more accessible, people became better acquainted with technology, and regular contact through emails and video calls became more common. The breadth of collaborative opportunities also changed; some participants stated how they used others' examples for virtual programming and were able to collaborate more than ever in developing new programs.

Goals

Having mutual goals and a shared vision for the future is a significant enabler to collaboration. Establishing common goals is prolific among collaborative theory and is noted as one of the five conditions for collaboration as defined by collective impact theory (Kania and Kramer, 2011a). Fortunately, most agencies share common goals to some extent, as all participants are affiliated with environmental education or heritage interpretation. From an organizational standpoint, agencies seemed much more willing to work with organizations with a broad mandate as there was more room for setting mutual goals. One participant captured this potential whilst discussing criteria for collaborators: “We have to focus on where we have common ground, as opposed to what divides us.” (NGO Participant N)

Another participant expressed how organizational goal alignment is a main enabler of collaboration:

> I think the collaboration efforts that have come out this year have been from an organization level, like there's been some sort of mutual goal that we've each wanted to reach. So, even though it ends up being an individual reaching out to an individual, it's because of our organization's priorities and shared common interests and goals. (Federal Participant I)

On the one hand, collaboration can be facilitated by shared mandates. This form of collaboration is often more formal. On the other hand, some collaboration is facilitated by coincidental shared goals (e.g., both agencies happen to have the goal of educating people about dark sky preserves).

This collaboration is often more spontaneous and informal. Yet, clarity and achievability in goal setting were emphasized as enablers to creating a common agenda. Participants expressed the need for setting realistic goals and choosing to collaborate with agencies with similar expectations. “I think getting involved with organizations that have the same efforts, and kind of the same goals is huge.” (NGO Participant L)

However, a misalignment of goals or mandates can become detrimental to collaboration. Different goals can prevent partnerships from forming or can dismantle existing partnerships. Many participants recognized that differences in organizational goals were present, but as education (or education adjacent) agencies, focus should be put on overlapping areas during collaboration. One participant explicitly recognized the barrier that a misalignment of goals played in collaboration:

> The different agencies have a very different way of going about, like they have different educational events. I really don't often have time, or I don’t have the need, I guess, to invite them to things because they are very different in what they do and don't really often fit into what we do here (organization removed for anonymity). So, I mean, they're our partner but like, it's easier to invite (organization removed for anonymity) or something because they do similar things to us. (Provincial Participant E)

Trust

Building trusting relationships with partners was found to be an important enabler of collaboration. Several participants felt they had high levels of trust with most agencies within the

BHB and saw trust as neither a barrier nor an enabler of collaboration. One participant mentioned the ease of establishing and maintaining trust within their network:

> There's no issues about trust. We've all worked together for many years. A lot of our partners we have, you know, every two weeks, we have a conversation just to keep in touch with everybody. (Municipal Participant C)

However, when asked to elaborate, almost all participants explored the importance of trust in their relationships with partner agencies. Participants claimed this trust stemmed from:

- Longstanding partnerships
- Pre-existing personal relationships
- Organizational reliability/familiarity
- Routine collaboration protocol
- Transparency and honesty

Early engagement in collaborative opportunities was also noted to be a common theme among participants for establishing trust. However, various factors could compromise this trust, such as different expectations, organizational skepticism, individual identity threats, and perceived risks and red flags.

The diversity in responses from participants supported the notion that trust can act as an enabler and a barrier to collaboration. On the one hand, the majority of participants discussed the value of trust in collaboration. They stated that establishing trust through consistent communication, accountability, and respect enabled long-lasting and fruitful partnerships, as

well as great levels of collaboration: “But for me, I identify that as something that is a real strength of the collaboration we've engaged in. Rapport allows for trust and trust allows for relationships.” (Federal Participant H)

However, on the other hand, some participants expressed such high levels of trust that they no longer truly collaborated. For example, partners with pre-existing relationships who have worked together on the same event year after year no longer collaborate in the process. There is an expectation that each agency is responsible for their own individual tasks and no longer involves one another through the decision-making processes of the event. Due to the place-based nature of the BHB, agencies should be conscious of this phenomenon as they continue to collaborate with the same partners. Organizations with these high levels of familiarity should remain diligent as they divide labour among each other (Freudenburg, 1993; Parkins & Mitchell, 2005). This diligence is exactly what can drive novel, innovative and adaptive collaboration that yields great benefit. One participant expressed these high levels of trust when describing how they collaborate with past partners:

> So if we are collaborating on an event, or an activity, I know, these partners that I've been with in the past and I've done the most with, I know, I can easily just divvy things up. And we could just go. (Provincial Participant E)

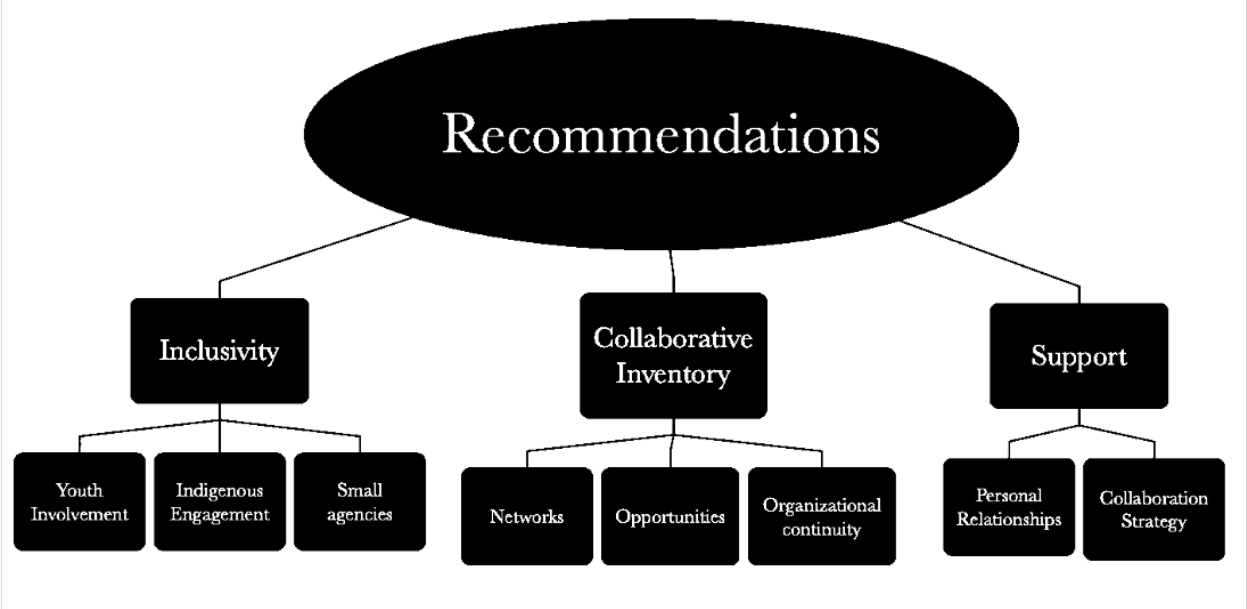
Theme: Recommendations

Participants were encouraged to recommend future collaborative endeavours throughout the interview. Multiple valuable recommendations emerged throughout this process.

Recommendations in the context of this study can be understood as specific suggestions from participants to improve current collaboration. Participants' recommendations are supported by further research and exploration of latent themes found throughout the interview. The three main categories explored for recommendations are inclusivity, a collaborative inventory, and support (Figure 3.5). Although many recommendations remain highly situational, they can be considered as tools to improve current collaborations within the BHB.

Figure 3.5

Common themes found in interviews: Recommendations



Inclusivity

"I think that the biggest struggle is trying to be inclusive to everybody." (NGO Participant P)

All participants discussed the need for inclusivity and accessibility in their collaborations. In addition to being inclusive with what kinds of people are represented in the agency, being inclusive with who is given the opportunity to collaborate is equally important. On the

macroscale, we can look at the concept of inclusive collaboration when we look at the diversity of organizations one agency works with. For instance, some participants felt that collaborative opportunities remained exclusive for the well-established, high-profile organizations and did not always include smaller non-profit organizations and Indigenous Peoples. This was partially due to a lack of knowledge on the mature organization's end, but also a lack of capacity on the smaller organization's end. Mature organizations should be making the utmost of efforts to be inclusive of smaller or start-up organizations and redistribute capacity when possible. One participant identified this need with respect to Indigenous participation:

> I think it's important for the Biosphere to be stronger at including Indigenous participation at the board and through the working groups. And through decision-making in the Biosphere. And I think it will help all of us at the table with our own individual places as well. (NGO Participant G)

Inclusivity also extends into microlevel collaboration. For instance, this includes individual collaboration within an organization where employees at all levels are invited to collaborate (i.e., ensuring not only the supervisors are able to collaborate among organizations but ensuring that educators and interpreters are given the chance to collaborate among themselves as well as between organizations). Multiple participants recommended that education supervisors facilitate opportunities for staff members to collaborate across organizations, whether this be through joint training initiatives, consistent communication with partners, or field days where employees are invited to visit other sites. These opportunities not only empower educators and interpreters, but

also build long-lasting interpersonal bonds and can inspire them to explore creative and effective methods of interpretation.

Additionally, opportunities for Indigenous engagement should be prioritized. Throughout this research year, the BHBRA has taken important steps to collaborate with Indigenous Communities and prioritized facilitating these connections. Going forward, participants felt the BR should remain constantly cognizant that they are guests on this land. CBRA's recently formed Indigenous Circle recognizes Indigenous Communities as the hosts of BRs, and they should be considered as so throughout decision-making processes (CBRA, 2021). Building an atmosphere of trust and reciprocity is extremely important as the BHB pursues relationships with surrounding Indigenous Communities. Prioritizing space and time for informal collaborative opportunities with Indigenous Communities, and recognizing the different voices and perspectives present within the different nations is crucial. As guests on the land, the BR must seek reciprocal opportunities to give back to the community. Multiple participants brought up Indigenous collaboration in their interviews and stressed the importance of early engagement. Participants explored how engaging Indigenous partners early on into collaborations is crucial towards holistic decision making, trust, and an important step towards reconciliation. One participant discussed working toward truth and reconciliation and the challenges and opportunities of Indigenous engagement throughout collaboration:

> So how are we going to each in our, in our own ways, work towards Truth and Reconciliation? … There's a really difficult interface between traditional Indigenous knowledge and science, and how we bring them together. And how do we do that respectfully as a biosphere to move forward? How do we deal with the economic side?

> We deal with the two opposing worldviews of you know, the gifts of the world and the resource view, which is what our economic models are based on. And that really is what the biosphere is about. Is living, working and playing and how do we do that? How do we really do that? … So we really are shifting. And we have a lot to do in Alberta, we have a lot to do in our region, to build those relationships it's more than a one day event. It's a fundamental transformation. I can speak, you know, myself the work it takes here. … You know, so we have to go ahead and do it authentically. And to really do the land acknowledgments, and to really look at what that means it's really difficult. And it will only be based on relationships. It's the only thing that will ever have long term sustainability through the generations. And you know, it's the gift of a person, you know, at a relatively beginning of your career, you know, so as you look forty years in the future, what will that world look like? And how will you have used your gifts, use your opportunities to go ahead, and slowly and steadily and move on, and you'll take a big jump forward, and five steps back and, you know, that's a life is lived, we'll get sidetracked. And that's how all of our organizations and all of us go ahead…We need to look at worldviews, and we really need to be prepared to go through the rough times of implementing them. (Municipal Participant A)

Many participants praised the BHBRA for their efforts to extend inclusive opportunities to vast education partners within the BHB. An Indigenous Representative participant described their perception of the BHBRA's efforts to Indigenous inclusion, including compliments and critiques:

> They've [the BHBRA] done their best kind of thing to like, do their due diligence and like to reach out, and early engagement, ask those questions, set up those meetings, make sure we've covered all the bases on that. But they're just trying to make sure, not only are they following the rules and regulations, it's just like they actually care. And they want our knowledge and thoughts, concerns. I mean, it would be lovely if every proponent did early engagement. Like I said, definitely early engagement, having those interactive, and knowledge sharing components, just to really understand if there is some confusion on the project. I mean, not everyone knows everything, right? So it's always best to just share that information out front and ask those questions. Maybe seeing especially from the Indigenous side, what benefits there are, if there's mutual benefits, or if there's something that's outstanding, that you'd have to be compensated for? And just training opportunities, learning, education pieces kind of thing. (Indigenous Participant T)

Collaborative Inventory

Participants strongly suggested creating an updated inventory and calendar of collaborative opportunities. Due to unforeseen circumstances and staff turnover, knowledge essential to collaboration is often lost as leaders step away from their organization. As explored in the barriers section, staff turnover is a prominent concern for organizations as they lose the networks and access to information that goes along with that individual. Many participants stressed the importance of organizational continuity even after leaders step down from their role. One participant described how leaving a 'breadcrumb trail' for future staff can help the longevity of current collaboration and decrease levels of duplication:

> So the other thing we're going to commit to is creating a manual on how to organize the festival, so that when I or others disappear, there's a how to manual that hopefully people can pick up and that will help facilitate it continuing on into the future. (NGO Participant O)

Additionally, some participants expressed the desire for an ongoing programming inventory for all partners. This could materialize as an ongoing document or calendar that allows stakeholders to become aware of the types of programming occurring and when they are taking place. This type of knowledge exchange could facilitate more convenient collaboration as two organizations or more may be exploring the exact same topics throughout their programming or hosting similar events on the same day. An inventory of current events could also encourage partners who may have staff, time, or resources to contribute to that event. This recommendation is captured through the following participant quote:

> So we're looking at ways of raising awareness of the similar events that are going on in the biosphere or close to the biosphere. And then how can we support it, are there ways of supporting it? So we do reach out and do some of those sorts of things…Again, in terms of these, like-minded agencies and some of their interpretive or educational activities that are going on, how we can support it. I would love to see a broad sort of almost like annual calendar, coordinated calendar between our agencies and nonprofits, and whoever is around in terms of a whole spectrum of activities throughout the year. That we lead some and then support comes our way, and they do some and we support their way. (Provincial Participant D)

Similarly, an inventory of potential partners would be equally as valuable. Many participants explained how they were unaware of all of the current players in the field of environmental education and heritage interpretation:

> You almost need a researcher network or organization network thing where it's easier to make those connections. Here's the project here, are any of these organizations interested in helping to facilitate this project either through funding or land access, right. And that could happen with education too, because you get lots of duplicate education stuff as well. Work that is happening around a lot of projects where we're not aware of each other, and we can probably help each other out. (Academic Participant W)

The majority of participants felt the BHBRA was a key resource to establish networks with other organizations. Creating an interactive map using an online mapping platform with network analysis capabilities (e.g., Kumu or Miro) could be extremely beneficial in connecting agencies further and increasing awareness for any new and emerging agencies.

Participants felt the BHBRA is taking steps in the right direction by facilitating board meetings and extending partnerships to willing organizations. Granted the capacity of the BHBRA is limited, continuing to pursue collaborative opportunities is important to achieving BR and UNESCO established goals. Although relatively recently established, the BHB should continue to raise awareness of its presence, especially within the education communities. One participant specifically personally addressed this lack of awareness:

> I feel like there's a lot of organizations out there that are doing a lot of great networking to try and connect other organizations that are out there. And do we need more of those organizations? Or do we need more that are doing stuff? Like actually delivering. So sometimes I have wondered what is the core business of the Beaver Hills Biosphere? Right? What is there? What is it beyond? It's just an observation. Is it more than a branding exercise? It's more than a community sense of space exercise? So like, what value are they bringing? Is it different from what other organizations are bringing or doing? So it's not a criticism of it. It's just a question. To make them relevant…Who is there? Who do they serve? What do they serve? So they are designation, but then beyond the designation, what, what are they? And how does that add relevance or value to people who live there beyond sense of space and place? And beyond? Kind of tourism branding? So how is the biosphere different? So just kind of questions that have mulled around my mind about it. (NGO Participant N)

Support

All participants explored support as an enabler of collaboration and emphasized its importance in future collaboration. External support from backbone support agencies, like the BHBRA, is a highly desirable factor for environmental education agencies. This support could materialize as facilitated meetings, provision of materials and resources, or promotion for other's events or programs. One participant described the importance of extending this support beyond the core collaborators in the BHB: "More support for collaborative efforts in the buffer zone through potential UNESCO funding opportunities related to conservation and stewardship

projects is appealing to (organizations removed for anonymity) and can help us achieve conservation goals within the biosphere." (NGO Participant Q)

Internal support established through personal relationships was discussed as equally valuable. In the context of a single organization, creating a safe environment where educators feel supported by their supervisors to take collaborative risks was recommended. Educators expressed the desire to collaborate freely without going through their supervisor for permission each time. One participant described this support as a key enabler of collaboration: "But we certainly have very supportive overhead, we have support of management locally for collaboration. You know, I very rarely if ever, have I proposed something particularly collaborative that was denied, I don't think ever." (Federal Participant H). Participants at all levels of management also expressed the benefit of support from their peers in other organizations. Many participants expressed the desire for increasing levels of support through regular check-ins and offering capacity and resources when possible as a means of facilitating more frequent and more comprehensive collaboration.

Additionally, many participants explored the importance of support during times of extreme change. For instance, being able to adapt during the COVID-19 pandemic, or able to respond to capricious political decisions. Any time there is large-scale change, backbone support agencies and mature organizations should be diligent and provide support in any way they can. Nonetheless, these agencies should seek ways to support small agencies during mundane processes as well and offer low commitment opportunities to collaborate. One participant explored this support specifically from the perspective of facilitating Indigenous engagement:

> I think it's the forward thinking of looking at where we're going to be in 10 years. So how are we going to each in our, in our own ways, work towards Truth and Reconciliation? How do we support each other? Individually, and as formal organizations, actions taken, and really dealing with the challenging stuff, it's easier to read a book than it is to change me or you in our beliefs name and recognize what they are. (Municipal Participant A)

Overall, these interviews suggest there are very high levels of collaboration occurring among partners in the BHB. Participants explored collaboration on both a personal and organizational level and described factors acting as enablers or barriers to collaboration. Many participants emphasized the role of the BR in facilitating this collaboration, and also suggested various ways for the BHBRA to improve its efforts.

Discussion

Collaboration is increasingly recognized as a critical element in BR management (Stoll-Kleemann & Welp, 2008). Many participants discussed how collaboration was facilitated through their network. The initial creation of these network structures in the BHB is explored thoroughly in Patriquin's (2014) research on collaborative action and the BHI. Through an analysis of social capital (resources, trust and reciprocity and network structure), Patriquin (2014) provides a comprehensive overview of interagency collaboration more broadly in the former BHI. Patriquin's (2014) work provides the rationale for further research in this area and presents an opportunity to analyze collaborations within specific sectors of the BHB. Particularly, Stoll-Kleemann and Welp (2008), identify environmental education as the top factor

influencing BR success. This discussion explores some of the nuances in interagency collaboration between environmental educators and heritage interpreters in the BHB.

Throughout the entirety of the interviews, participants detailed existing mechanisms of collaboration. All participants discussed how personal and organizational networks were the overarching mechanisms in place that facilitated collaboration. Findings from this research support the notion that networks facilitate information exchange, encourage innovation and adaptation, and enable input in decision-making processes (Dean 2010; Lin, 2001; Patriquin, 2014; Thompson, 2008). Participants described the role of continuity in these networks and how this can enable long-term relationships. Nurturing these relationships can have considerable benefits in establishing trust and reciprocity (Glanville & Bienenstock, 2009). Participants also explored how these trusting relationships established a beloved sense of community within the BHB. Head (2003) describes how a strong sense of community can encourage individuals to take collaborative risks by instilling feelings of security and support, which was supported through participant responses. Participants also discussed how these collaborations increased efficiency, whether that be through program conceptualization or delivery.

Participants also described hundreds of enablers to collaboration with ease. There are multiple ways of conceptualizing the success of collaboration within BRs. Participants identified collaboration enablers within seven broad themes: backbone support agency, communication, goals, capacity, trust, external factors, and access to knowledge. Many of these enablers have been recognized beyond the context of this research. For instance, a backbone support agency, communication, and goals are identified as key conditions for collaboration by Kania and Kramer (2011a). Capacity is also a supporting dimension mentioned throughout CIT, which was discussed in depth throughout interviews. Participants deemed capacity one of the most

important enablers of collaboration. Participants identified the associated risk with allocating too much capacity to collaborative opportunities, which can lead to them withdrawing from interagency collaboration generally (Caruso et al., 2009). Hanh et al. (2006) further contribute to this discussion as they describe the essential role of social capacity in order to build enough trust to bridge organizations.

This perceived risk of capacity loss was a common threat across agencies as most participants described how their agency was subject to dynamic funding situations. These rapidly changing circumstances, like dynamic politics or the COVID-19 pandemic, were further discussed as external factors affecting an agency's willingness and ability to collaborate. More mature organizations described resilience in their response to the COVID-19 pandemic, while the collective experience for smaller organizations also opened up new avenues for collaboration. Conversations about the perceived barrier of COVID-19 generated rich discussion on how collective barriers can facilitate collaboration. All participants mentioned the role of the COVID-19 pandemic on internal operations: "COVID has been an inhibitor for sure…That's an inhibitor for everything, or not everything but a lot of things" (NGO Participant S). Yet, a different participant recognized the collaborative opportunity that the COVID-19 pandemic had in terms of knowledge exchange and best practices, "We coordinated COVID safety protocols. I let them know what we had been doing for programming on site, and they follow the exact same measures that we had been doing." (Federal Participant I). Participants described the new opportunities for knowledge exchange as meetings and resources became available online. These conversations led to another important conclusion drawn by participants, how a lack of knowledge and awareness of collaborative opportunities remains a significant barrier to participation. Access to knowledge is key to mobilizing collaborators and leveraging collective

solutions (Luna-Reyes, 2008). Many participants discussed how they would benefit from a collaborative inventory, giving them access to what opportunities are available and who the respective stakeholders are in this field.

Further, these findings can be analyzed using theoretical lenses. Collective Impact Theory (CIT) and Trust Theory were both considered throughout the conceptualization of interviews, as well as during the analysis process.

Elements from CIT have great potential to advance collaborations among environmental educators and heritage interpreters in the BHB. The five conditions of CIT identified by Kania and Kramer (2011a) (common agenda, mutually reinforcing activities, shared measurement, continuous communication, and a backbone support organization) are met relatively well within many of the participating agencies. In fact, a common agenda, continuous communication, and a backbone support organization were identified as key enablers to collaboration. Solidifying a common agenda through continuous communication was noted as a precursor to collaboration to ensure participants were on the same page early in the project. The BHBRA was identified as a backbone support agency connecting these education organizations; yet, as explored by Patriquin (2014), this network of actors collaborated even before the BHBRA was established. Participants also discussed mutually reinforcing activities and establishing shared measurement practices throughout discussions on future recommendations. Although there was considerable variation among organizations interviewed, most of them expressed mutual benefit from collaboration, even if it involved capacity redistribution. Collaborations were explored as mutually beneficial as they increased agencies' networks, and often increased efficiency. Shared measurement was explored more broadly and informally as participants expressed the desire for consistent check-ins and debriefs throughout collaborations.

However, three preconditions for CIT identified by Hanleybrown and Kania and Kramer (2012) (adequate financial resources, influential champion(s), and a sense of urgency for change) are only partially fulfilled. As observed in the quantitative results, time, lack of staff/staff turnover, and financial constraint were ranked as the top three barriers to collaboration. Thus, capacity is a determining factor in participation in collaborative endeavours. These barriers pose a potential threat to fully implementing CIT practices, as adequate financial resources could be compromised. Yet, participants did clearly identify influential champions within their networks. Ravindra (2004) recognized champions as essential to the success of a Canadian BR. Ravindra (2004) goes so far as to say the role of the local champion "may as well be viewed as a 'condition of success'" (p.54). Many participants shared this view as they attributed collaborative success to individuals within their networks. Although united by the common goal of education and interpretation, a sense of urgency for change was not so apparent in interviews. When discussing motivations and benefits of collaborating, participants rarely discussed the need for change in their current collaborative situation. This satisfaction suggests a strong and resilient network, but can also signify a level of stagnancy that reduces innovation in collaboration (Bidault & Castello, 2010; Parkins & Mitchell, 2005). Further, this complacency can reduce efforts for inclusivity in collaboration as the perceived need to extend collaborative invitations decreases (Canham & Bunescu, 2020). Partnerships should remain dynamic as organizations continue to learn, and people and contexts are constantly changing.

These findings can also be explored using Trust Theory. Building trust is an incredibly complex process that was found to be integral to collaboration within the BHB (Davenport et al., 2007). Participants described high levels of dispositional, rational, and affinitive trust, but mentioned low levels of procedural trust (Stern & Coleman, 2015) (Table 3.4).

Table 3.4

Four types of trust and their definitions (Table adapted from Stern and Coleman, 2015; p.122)

Types of Trust	**Definition**	**Interagency applications**
Dispositional Trust	The general tendency or predisposition of an individual to trust or distrust another entity in a particular context.	Participants trust in well-established mature organizations (e.g., government agencies, like Alberta Parks or Parks Canada).
Rational Trust	Trust in an entity based primarily on a calculation of the perceived utility of the expected outcome of placing one's trust in another entity.	Participants described establishing trust based on the reciprocal nature of collaborations within the field, and their expectation of receiving cross-promotion or increased capacity from the collaborating agency.
Affinitive Trust	Trust in an entity based primarily on the emotions and associated judgments resulting from either cognitive or subconscious assessments of the qualities of the potential trustee.	Trust within their community of educators and interpreters because they felt like a part of something larger by collaborating within the BHB.
Procedural Trust	Trust in procedures or other systems that decrease vulnerability of the potential trustor, enabling action in the absence of other forms of trust.	Low levels of procedural trust as participants discuss the transactional nature of this kind of trust, and they put more importance on personal relationships and community in their collaborations.

Participants discussed trusting their partners for a variety of reasons outlined in Table 3.4. However, participants did not seem to put very much emphasis on procedural trust in collaboration. In fact, one participant described how establishing trust based on the process itself

can yield to cooperation, but at the same time, they engaged in a nuanced conversation about the disadvantages of settling for this kind of trust:

> But for me, I identify that as something that is a real strength of the collaboration we've engaged in. Rapport allows for trust and trust allows for relationships. You know, could we do these things without trust? Yea like probably because we engage in these collaborations in a way that satisfies our interest. And we hopefully find collaborations that satisfy our mutual interest. So like, you know, I bought a truck last year, I don't trust the people that sold me that truck as far as I can throw, but we have paperwork that defines our relationship in the business deal where I bought the truck. And I thought that was an OK price. So I don't trust those people at all, but we work together. But that's a crap way to do business. And that's a crap way to go about environmental education and interpretation, because it's high risk, trust as a risk management issue. (Federal Participant H)

This quote illustrates Ostrom's (1998) exploration of the role of trust in collective action. Initial cooperation requires relatively low levels of trust and is based on a shared goal or problem. Ostrom (1998) discusses how building trust over time can overcome the temptation of short-term self-interested collaborative opportunities. This participant discusses procedural trust as "high risk" because there is no personal relationship and describes a short-term, self-interested transactional relationship. Most participants shared this understanding of trust being formed over time with individuals and steered away from organizational trust conversations. Although some participants did discuss a lack of awareness of the role of the BHB, many participants identified

key individuals of the BHBRA and how these personal relationships enabled trust on an organizational level.

Yet, one participant described how the weak trust established through initial introductions and transactional relationships could develop into more affinitive forms of trust:

> And you can build your own individual network from those introductions you've already established then trust because you're all participating in the same great, wonderful initiative. And then after that, it's anything that you collaborate on any initiative that you want to work on together. (Academic Participant V)

This quote illustrates a shift between two forms of trust, procedural and affinitive. The participant begins by describing more procedural forms of trust based on surface-level introductions through processes like a board meeting. They then explain how this can grow into affinitive trust as they feel a sense of belonging and shared purpose being part of the "same great, wonderful initiative" (i.e., the BHB). Trust was also considerably discussed throughout conversations on Indigenous engagement, where once again, procedural trust was criticized. Due to the limited capacity of Indigenous Communities and high demand for engagement, collaborating for the sake of collaborating was critiqued. Several participants expressed the need to develop deep, trusting relationships when collaborating with Indigenous communities. Although explicitly described in conversations about Indigenous engagement, most participants carried this mindset of developing personal forms of trust to enable successful collaboration.

Overall, CIT and Trust Theory provided useful lenses to discuss the intricacies of interagency collaboration between educators in the BHB. Both theories had various applicable

elements supported through this research. Although agencies within the BHB did not fully meet the pre-conditions outlined by CIT, the five conditions were discussed throughout interviews as important enablers of collaboration. Trust theory had many valuable implications as participants challenged the value of procedural trust because of their strong interpersonal relationships within the community of the BHB. The specific role of trust in collaborative relationships could be pursued further in future research and more specifically discussed through interviews.

Limitations and Future Research

The scope of invited participants could act as a key limitation to this research. There are likely multiple other small agencies that were not contacted due to personal network bias. This research expanded using a snowball effect where participants were able to suggest other individuals that would have valuable insights to this research; however, there were likely agencies of which even the interviewed participants were unaware. Another important consideration is the capacity of agencies: 18% of participants contacted declined an interview, likely due to limited capacity during the timeline of the study. This phenomenon itself is very important to note as the individuals who declined the interview are already facing different barriers to collaboration than those who participated. This trend was most commonly observed throughout the municipalities. Possible reasons for this could be due to a lack of organizational capacity, political barriers to participating, or a general lack of involvement in the field of environmental education and heritage interpretation within the BHB. There is likely an even larger component of environmental education and heritage interpretation agencies that have limited capacity for collaborating at any level. Additionally, the short timeline of this project restricted the ability to interview a larger sample from each agency. Due to the time constraint of

allocated funding, all interviews, transcription, and analysis had to occur within a single year. More time would be beneficial to interview a greater breadth of participants from all levels of management at each organization.

As some interviews took place over the phone and some took place over video calls, this variation limited the amount of quantitative data that was able to be collected. Quantitative data collection was set up as structured questions throughout the interview via the 'poll' function on ZOOM. However, as several participants completed the interview via telephone call, these quantitative questions were not asked. This was due to a limited amount of time for each interview as verbally reading quantitative questions became too time-consuming of a process. The researcher decided the qualitative questions contained more valuable information and should be emphasized during the telephone calls. Unfortunately, this limited the capabilities of quantitative statistical analysis. However, due to the relatively low sample size, the power of statistical analysis would be limited even with a full dataset.

This research project could be greatly supported by future research on interagency collaboration in the BHB. A similar study focusing on factors such as organizational maturity and levels of management could be pursued to add context to the existing body of research on collaboration in the BHB. Similarly, an analysis of the type of organization (e.g., NGOs, government agencies, academic institutions, Indigenous communities, etc.) could be compared to understand the role type of agency plays in willingness to collaborate. Additional research on collaborative opportunities beyond the boundary of the BR could also be pursued to provide a more holistic collaborative inventory of agencies in the surrounding area. A specific project with a focus on engaging Indigenous communities within the BHB and its surrounding area could also provide great insights and practical tools to increase engagement within the BR. Also, in-depth

studies with educators from across Canadian BRs could also add to the transferability of results. Multiple representatives from environmental education and heritage interpretation agencies within Canadian BRs specifically could complete a similar interview which would yield a larger dataset for cross-comparisons and analyses.

Conclusion

This research explored interagency collaboration among representatives of environmental education and heritage interpretation within the BHB. Participants discussed current, past, and future mechanisms for collaboration along with their benefits and drawbacks, enablers and barriers, and recommendations for future collaborations. Social science theory was used to explore participant responses and frame the discussion around interagency collaboration. CIT and Trust Theory both contained useful elements to discuss the nuances of collaboration and relationship building. Trust established based solely on the process itself was critiqued by participants for its ability to sustain long-term partnerships.

The research findings from this study can shed light on opportunities for progressive development through collaboration. Although this project focused on collaboration among environmental education and heritage interpretation agencies, these benefits, drawbacks, enablers, barriers, and recommendations are also relevant to various sectors within the BHB, such as conservation, research, enforcement, and planning. This research also benefits natural resource management sectors and land-use governance, as the key outcomes are transferable to any collaborative effort involving diverse stakeholder collaboration. Sharing successes and failures from collaborative attempts generate great lessons to consider through any collaborative endeavour. Participants perceived the BHB highly and relied on a backbone support agency (the

BHBRA) for leadership and to act as a key facilitator of networks and relationship-building. The tangible outcomes for the BHB are certainly important, but the broader lessons for other regions that can benefit from interagency collaboration are valuable too.

References

Al-Busaidi, Z. Q. (2008). Qualitative research and its uses in health care. *Sultan Qaboos University Medical Journa*l, *8*(1), 11-19.

Bailey, J. (2008). First steps in qualitative data analysis: transcribing. *Family Practice*, *25*(2), 127-131.

Batt, P. J., & Purchase, S. (2004). Managing collaboration within networks and relationships. *Industrial Marketing Management*, *33*(3), 169-174.

Beaver Hills Biosphere. (2019). Vision and mission. Retrieved May 6, 2019 from: http://www.beaverhills.ca/about/vision-mission/

Beaver Hills Biosphere. (2022). *Resources*. https://www.beaverhills.ca/learn/resources

Beaver Hills Initiative. (2015). *Beaver Hills Biosphere Reserve Nomination Application*.

Beaver Hills Initiative. (2016). *Beaver Hills Initiative Strategic Plan (2016-2019)*.

Bernard, H. R. (1988). *Research methods in cultural anthropology*. Sage Publications.

Bidault, F., & Castello, A. (2010). Why too much trust is death to innovation. *MITSloan Management Review, 51*(4), 33-39.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101.

Braun, V., & Clarke, V. (2012). Thematic Analysis. In H. Cooper (Eds.), *APA Handbook of Research Methods in Psychology: Vol. 2. Research Design* (p.57-71). American Psychological Association.

Butler, W. H., Monroe, A., & McCaffrey, S. (2015). Collaborative implementation for ecological restoration on US public lands: Implications for legal context, accountability, and adaptive management. *Environmental Management*, *55*, 564-577. https://doi.org/10.1007/s00267-014-0430-8

Canadian Biosphere Reserves Association. (2019a). *Working together to inspire a positive future: Best practices from Canada's UNESCO biosphere reserves*. https://static1.squarespace.com/static/5735fdc137013b8eeb217d63/

Canadian Biosphere Reserves Association. (2019b). *Vision*. Retrieved May 1, 2020 from: https://www.biospherecanada.ca/

Canadian Biosphere Reserves Association. (2021). *Our Team / Notre Equipe*. Retrieved May 15, 2021 from https://www.biospherecanada.ca/team

Canham, A. R., & Bunescu, L. (2020). Advancing inclusivity and citizenship: Adapting theory, changing practice. In E. Sengupta, P. Blessinger, & M. Makhanya (Eds.) *Developing and supporting multiculturalism and leadership development: international perspectives on humanizing higher education* (Vol. 30, pp.63-83). Emerald Publishing Limited. https://doi.org/10.1108/S2055-364120200000030006

Caruso, H. M., Rogers, T., & Bazerman, M. H. (2009). Boundaries need not be barriers: Leading collaboration among groups in decentralized organizations. In T. L. Pittinsky (Eds.), *Crossing the Divide: Intergroup Leadership in a World of Difference* (pp. 113-126). Harvard Business Press.

Chetty, S., & Michailova, S. (2011). Geographical proximity and inter-firm collaboration. *Journal of General Management*, *36*(4), 71-87.

Cohen, D., & Crabtree, B. (2008). *Qualitative research guidelines project: Semi-structured interviews*. Robert Wood Johnson Foundation. https://sswm.info/sites/default/files/reference_attachments/COHEN%202006%20Semistructured%20Interview.pdf

Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage.

Davenport, M. A., Leahy, J. E., Anderson, D. H., & Jakes, P. J. (2007). Building trust in natural resource management within local communities: A case study of the Midewin National Tallgrass Prairie. *Environmental Management, 39*, 353-368.

Dean, K. S. (2010). *Strategies and benefits of fostering intra-organizational collaboration* (Paper No. 15). College of Professional Studies Professional Projects.

de Bruin, W.B., & M.G. Morgan. (2019). Reflection on an interdisciplinary collaboration to inform public understanding of climate change, mitigation, and impacts. *Proceedings of the National Academy of Sciences, 116*(16), 7676-7683.

Francis, J., Giles-Corti, B., Wood, L., & Knuiman, M. (2012). Creating sense of community: The role of public space. *Journal of Environmental Psychology, 32*(4), 401-409.

Freudenburg, W. R. (1993). Risk and recreancy: Weber, the division of labour, and the rationality of risk perceptions. *Social Forces, 71*(4), 909–932.

Fugard, A. J. B., & Potts, H. W. W. (2014). Supporting thinking on sample sizes for thematic analyses: A quantitative tool. *International Journal of Social Research Methodology, 18*(6), 669-684.

Galbraith, J., Downey, D., & Kates, A. (2002). How networks undergrid the lateral capability of an organization: Where the real work gets done. *Journal of Organizational Excellence*, *21*(2), 67-78.

Glanville, J. L., & Bienenstock, J. (2009). A typology for understanding the connections among different forms of social capital. *American Behavioral Scientist, 52*(11), 1507-1530.

Grant, H. M., Wilkinson, K., & Butts, M. (2020). Building capacity for sustained collaboration. *Stanford Social Innovation Review*. https://doi.org/10.48558/V5BG-2308

Hahn, T., Olsson, P., Folke, C., & Johansson, K. (2006). Trust-building, knowledge generation and organizational innovations: The role of a bridging organization for adaptive comanagement of a wetland landscape around Kristianstad, Sweden. *Human Ecology, 34*, 573-592. https://doi.org/10.1007/s10745-006-9035-z

Hancock, C., Storey, A., Downing, J., & Szewczak, S. M. (2001). Interagency resource teams: A model for collaborative approaches to environmental education. *Conservation Biology, 15*(3), 596-602.

Hanleybrown, F., Kania, J., & Kramer, M. (2012). Channeling change: Making collective impact work. *Stanford Social Innovation Review.* https://mappofskp.net/wp-content/uploads/2015/05/SSIR-Collective-Impact-2.pdf

Head, G. (2003). Effective collaboration: Deep collaboration as an essential element of the learning process. *Journal of Educational Enquiry, 4*(2), 47-62.

Howes, M., Tangney, P., Reis, K., Grant-Smith, D., Heazle, M., Bosomworth, K., & Burton, P. (2015). Towards networked governance: improving interagency communication and collaboration for disaster risk management and climate change adaptation in Australia. *Journal of Environmental Planning and Management*, 58(5), 757-776.

Husby, W. & Fast, S. E. (2004). *Heritage Appreciation Development Plan for Protected Areas located within the Beaver Hills*. Parks and Protected Areas, Alberta Community Development, EcoLeaders Interpretation and Environmental Education, Edmonton, AB.

International Union for Conservation of Nature. (2021). *Biosphere Reserves*. https://www.iucn.org/commissions/commission-ecosystem-management/our-work/cems-thematic-groups/biosphere-reserves

Kania J., & Kramer, M. (2011a). Collective impact. *Stanford Social Innovation Review*, 36-41.

Kania J., & Kramer, M. (2011b). Collective impact: Essentials of social innovation. *Stanford Social Innovation Review*. https://ssir.org/articles/entry/collective_impact

Kambic, E. B., Herrin, D., & Crawford-Lackey, K. (2017). Fulfilling the promise: Improving collaboration between cultural resources and interpretation and education in the U.S. National Park Service. *George Wright Society*.

Kvale, S. (2006). Dominance through interviews and dialogues. *Qualitative Inquiry*, *12*(3), 480-500. https://doi.org/10.1177/1077800406286235

Lin, N. (2001). *Social capital: A theory of social structure and action*. Cambridge University Press.

Lovrich, N. P., Gaffney, M. J., Weber, E. P., Bireley, R. M., Matthews, D. R., & Bjork, B. (2005). Interagency collaborative approaches to endangered species act compliance and salmon recovery in the Pacific Northwest. *International Journal of Organization Theory & Behavior*, *8*(2), 237-273.

Luna-Reyes, L. F., Black, L. J., Cresswell, A. M., Pardo, T. A. (2008). Knowledge sharing and trust in collaborative requirements analysis. *System Dynamics Review, 24*(3), 265-297. https:doi.org/10.1002/sdr.404

Monroe, M. C., Andrews E., & Biedenweg K. (2008). A framework for environmental education strategies. *Applied Environmental Education and Communications*, *6*(3-4), 205-216.

Newing, H, Eagle, C. M., Puri R. K., & Watson C. W. (2011). *Conducting research in conservation: A social science perspective*. Routledge Taylor & Francis Group.

Ostrem, J. A., & Hvenegaard, G. H. (2020). Reaching common ground: The potential for interagency collaboration in UNESCO biosphere reserves. *International Journal of UNESCO Biosphere Reserves, 4*(1). https://doi.org/10.25316/IR-15211

Ostrom, E. (1998). A behavioral approach to the rational choice theory of collective action. *American Political Science Review, 92*, 1–22.

Parkins, J. R., & Mitchell, R. E. (2005) Public participation as public debate: A deliberative turn in natural resource management. *Society and Natural Resources*, *18*(6), 529-540. https://doi.org/10.1080/08941920590947977

Patriquin, D. L. (2014). *Landscape of hope: The influence of place and social capital on collaborative action in sustainable management* (Publication No. 10100143) [Doctoral dissertation, University of Alberta]. ProQuest Dissertations Publishing.

Patriquin, D. L., & E. A. Halpenny. (2017). Building consensus through place: Place-making as a driver for place-based collaboration. *Cogent Social Sciences, 3(1)*: 1300864. https://doi.org/10.1080/23311886.2017.1300864

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage Publications.

Polivka, B. J. (1995). A conceptual model for community interagency collaboration. *Journal of Nursing Scholarship, 27*(2), 110-115.

Ravindra, M. M. (2004). A road to tomorrow: Local organizing for a biosphere reserve. *Environments, 32*(3), 43-59.

Sense of Community Partners. (2004). *Exploring sense of community: An annotated bibliography*.

Stern, M. J. (2018). *Social science theory for environmental sustainability: A practical guide*. Oxford University Press.

Stern, M. J., & Coleman, K. J. (2015). The multidimensionality of trust: Applications in collaborative natural resource management. *Society & Natural Resources*, *28*(2), 117-132. https://doi.org/10.1080/08941920.2014.945062

Stoll-Kleemann, S., & Welp, M. (2008). Participatory and integrated management of biosphere reserves: Lessons from case studies and a global survey. *Gaia, 17*, 161-168.

Suter, E., Arndt, J., Arthur, N., Parboosingh, J., Taylor, E. & Deutschlander, S. (2009). Role understanding and effective communication as core competencies for collaborative practice. *Journal of Interprofessional Care*, *23*(1), 41-51.

Tate, W. L., Ellram, L. M., & Kirchoff, J. F. (2010). Corporate social responsibility reports: A thematic analysis related to supply chain management. *Journal of Supply Chain Management*, *46*(1), 19-44.

Thompson, L. (2008) *Making the team: A guide for managers* (3rd ed.).Pearson Prentice Hall.

United Nations Educational, Scientific, and Cultural Organization. (2017). *Main characteristics of biosphere reserves*. Retrieved May 6, 2019 from http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/main-characteristics.

United Nations Educational, Scientific, and Cultural Organization. (2019a). *UNESCO in brief – Mission and Mandate*. Retrieved May 1, 2020, from https://en.unesco.org/about-us/introducing-unesco

United Nations Educational, Scientific, and Cultural Organization. (2019b). *Biosphere reserves*. Retrieved May 1, 2020, from https://en.unesco.org/biosphere

Vasileiou, K., Barnett, J., & Thorpe, S. (2018). Characterizing and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*, *18*, 148.

Watkins, T., Miller-Rushing, A. J., & Nelson, S. J. (2018). Science in places of grandeur: Communication and engagement in national parks. *Integrative and Comparative Biology*, *58*(1), 67-76. https://doi.org/10.1093/icb/icy025

Wondolleck, J. M., & Yaffee, S. L. (2000). *Making collaboration work: Lessons from innovation in natural resource management.* Island Press.

Chapter 4: Creating, sustaining, and improving collaboration across Canadian Biosphere Reserves/Regions

Abstract

"*From our perspective, collaboration has really always been our identity.*" (Research Participant)

Canada is home to 19 designated UNESCO Biosphere Regions/Reserves (BR), each with their own diverse cultures and environments. This variation provides a unique opportunity for extensive knowledge-sharing, as well as the identification of the most effective and innovative methods of collaboration. This study examines current forms of collaboration across Canadian UNESCO BRs. Fourteen representatives from Canadian BRs completed interviews in the winter of 2021 to uncover common benefits, barriers, and enablers to collaboration. Additionally, participants explored the potential of future collaborations and shared recommendations from practitioners' perspectives for best practices when collaborating across agencies. The findings of this research highlight the importance of adequate organizational and individual capacity in enabling collaboration. Participants also highlighted the indispensable role of the Canadian Biosphere Reserve Association (CBRA) as a connecting force that unites all of the Canadian BRs beyond personal relationships. Participants described the importance of inclusion and accessibility in collaborative endeavours. Specifically, participants discussed the desire for increased participation opportunities for Indigenous Peoples and youth. This chapter also explores mechanisms of collaboration between Canadian BRs and describes significant enablers of collaboration like trust, goal alignment, and awareness and accessibility, and what leaders in the field can do to promote collaboration. These findings can be used as a rationale for

organizations to apply for funding to increase capacity and offer more inclusive collaborative opportunities. Additionally, these findings are transferable to other sectors beyond BRs and shed light on collaborative theory in general.

Introduction

Biosphere Reserves/Regions (BRs) are cutting-edge models for reconciling the relationship between the ecological, social, and economic worlds (United Nations Educational, Scientific, and Cultural Organization [UNESCO], 2021). Designated by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), BRs are places where the ecological, economic, and social worlds meet. These regions provide sites for the innovative application of sustainable development approaches. Nominated by national government systems, BRs promote a balance between ecological conservation and sustainable economic development (UNESCO, 2021). With over 727 BRs spanning across 131 countries, UNESCO's Man and the Biosphere Programme has proven to be a valuable approach to current conservation efforts. Contrary to many historical and contemporary conservation theories that separate the environment and economy, BRs are predicated on their affinity and strive for a prosperous economic sector while simultaneously sustaining biodiversity and culture. However, to balance the environmental, economic, and social worlds, collaboration is necessary.

Effective conservation is dependent on the collaboration of diverse stakeholders (World Wildlife Fund, 2021). However, getting stakeholders to collaborate is an iterative process that requires compromise. BRs face the challenging task of navigating and balancing stakeholder groups with conflicting interests and priorities. Balancing stakeholder interests takes careful consideration, constructive negotiation, and dedication to conflict resolution (Frooman, 1999;

Markiewicz, 2005; Reynolds et al., 2006). Through this collaborative process, individual pressures can be revealed, and stakeholders can respond appropriately and coherently (World Wildlife Fund, 2021). Subsequently, this variation in stakeholders holds opportunities for innovation and novel approaches to conservation, specifically within the context of Canadian BRs (Zbyranyk, 2012).

Within Canadian BRs, there are diverse cultures and environments. They have been described as "geographically-dispersed communit[ies] with shared interests and challenges, but without a concrete platform from which to collaborate" (Reed et al., 2014; p.231). This variation provides a unique opportunity for extensive knowledge-sharing, as well as the identification of the most effective and innovative methods of collaboration. Collaboration and community engagement within Canadian BRs have interested academic researchers across Canada (e.g., Reed & Price, 2020; Patriquin, 2014; Pollock, 2009; Zbyranyk, 2012). Although the UNESCO BR concept has been explored globally throughout the literature, little is known about the potential for collaboration across BRs. Many countries have established national umbrella organizations to oversee and support BRs. For example, the United States Biosphere Network connects BRs within the United States nationally and internationally by facilitating sharing of best practices and supporting BRs' pursuits to fulfill UNESCO objectives (United States Biosphere Network, 2022). In Canada, BRs are connected through the Canadian Biosphere Reserve Association (CBRA). CBRA acts as a supporting agency that facilitates a network among Canadian BRs, as well as a conduit to the federal government and to UNESCO (Canadian Biosphere Reserves Association [CBRA], 2021). Granted official charitable status in 1998, CBRA's mission is to "support Canadian Biosphere Reserves in the achievement of their mandates and demonstrates their collective value nationally and internationally." (CBRA, 2012).

CBRA secured funding with the federal government in 2009, which allowed them to support BRs in training and capacity building, partnership development, communications, organizational development, and community engagement (CBRA, 2012). Federal funding has since been withdrawn, and CBRA relies on grants and project-based funding and only has one part-time staff member. The current funding insecurity threatens CBRA's existence and critically impacts their ability to achieve goals outlined in their current strategic plan (CBRA representative; personal communication). Most recently, CBRA's 2020-2025 Strategic Plan strategic priority areas (CBRA, 2021; p.4) outlines rationale for this research:

1.1 *Develop training, enhance knowledge transfer, disseminate pertinent information and create mentorship opportunities between Canadian, Indigenous and international networks*

1.2 *Enhance inter-biosphere communication as well as create virtual and in-person networking opportunities*

1.3 *Leverage the learnings from core mandate successful projects and programs by individual BRs and scale these regionally or nationally*

Similar collaboration imperatives can be found in the Man and the Biosphere Programme strategic action plans. The Seville Strategy (1995), Madrid Action Plan (2002), Lima Action Plan (2016), and MAB Strategy (2015-2025) all outline collaboration as an objective in several instances (see Chapter 2).

Individual BRs in Canada also outline collaboration as a priority in their strategic plans.

For example, the Beaver Hills Biosphere (AB) identifies *collaboration* and *partnerships* as two objectives in their 2016-2019 strategic plan (Beaver Hills Initiative, 2016). Likewise, Frontenac Arch Biosphere (ON) emphasizes collaboration with community, Indigenous Peoples, and stakeholders in their 2018-2019 strategic plan (Frontenac Arch Biosphere, 2018). Several other BRs have similar goals outlined in their strategic plans as collaboration is a highly prioritized goal both nationally and internationally. International commitments of BRs are upheld by UNESCO, and national accountability is upheld by the Canadian Commission of UNESCO (CCUNESCO). CCUNESCO acts as a supporting agency to UNESCO to aid in the achievement of UNESCO outlined goals (Canadian Commission for United Nations Educational, Scientific, and Cultural Organization [CCUNESCO], 2022). Amidst these diverse functions, CCUNESCO also oversees Canadian BRs and ensures they are fulfilling UNESCO objectives. For example, in 2018, Frontenac Arch Biosphere was challenged by CCUNESCO to address several recommendations accentuating collaborative efforts (Frontenac Arch Biosphere, 2018). For example, some of these recommendations were to:

"Establish a new strategic plan that identifies new strategic partners and inclusive governance and management arrangements. Indicate how this plan will improve the financial stability of the biosphere reserve"

"Demonstrate ongoing relationships with Indigenous partners, and the sharing of Indigenous knowledge and ways of knowing in projects and governance of the biosphere reserve"

"Demonstrate activities of the biosphere reserve with specific partners in education and

research."

"Demonstrate effective communication and engagement of strategic partners."

(Frontenac Arch Biosphere, 2018)

These recommendations further reinforce the international and national commitment to collaboration by UNESCO BRs. Multiple studies have examined collaboration within the geographic boundary of BRs. From implementing adaptive co-management strategies in BRs (Plummer et al., 2017), to evaluating the success of BRs using indices of collaboration, governance and resources (Cuong et al., 2017), to stakeholder participation in BRs (Shultz et al., 2011), to an analysis of place-based collaborative governance in Canadian BRs (Edge & McAllister, 2009), collaboration within BRs is a critical area of research. However, there is little research on the potential for collaboration between BRs. Plummer et al., (2017) identify this gap in their study on adaptive co-management in BRs and the potential for future research in this area. Reed et al. 's (2014) novel study attempted to address this gap by exploring "whether organizations that span spatial scales and governance responsibilities can establish effective communities of practice" in the context of Canadian BRs (p.230). This study explored the effects of a partnership between CBRA and Canadian academic researchers to develop a "community of practice" in 2011. Findings from this study suggest that prior to the project, there was limited collaboration between BRs and only one-third of BRs reported having even attempted to collaborate across BRs. Fear of imposition, difference in languages, and long distances between sites were identified as primary barriers to collaboration across BRs before imposing processes

of a community of practice (Reed et al., 2014). After this three-year partnership, their findings support that "the partnership successfully built trust, established shared norms and common interest, created incentives to participate, generated value in information sharing and willingness to engage, demonstrated effective flow of information, and provided leadership and facilitation" (Reed et al., 2014; p.230). A key contributor to this success was a multilingual facilitator that bridged linguistic and cultural differences. However, Reed et al. (2011) identify the need for further evaluation and research to see if this collaboration is maintained long term without intervention from an outside facilitator. Qualitatively, the study discussed in this chapter will explore similar questions and provide insight into the longevity of effort to enable collaboration across BRs.

Additionally, this study contributes to the research conducted by Pollock (2009), Patriquin (2014), and Zbyranyk (2012). These three dissertations explore collaboration within the context of Canadian BRs. Pollock (2009) explored BRs as models for collaboration and multistakeholder organizations in governance for sustainability by comparing three case studies of Canadian BRs. Patriquin (2014) used actor network theory to analyze the role of social capital and place-making in collaboration, with a specific focus in the context of the Beaver Hills Initiative, in Alberta, Canada. And lastly, Zbyranyk (2012) examined partnerships between researchers and BR practitioners and the factors that affect this collaboration in Redberry Lake BR, in Saskatchewan, Canada. Zbyrynyk (2012) also identifies national collaboration as an area for future research, "It would be beneficial to look at the collaboration across the World Network of Biosphere Reserves, nationally and internationally. What opportunities and challenges are present and how should they be addressed?" (p.68). This question is explored throughout this chapter as I explore the potential for inter-BR collaboration at the national level and identify

common challenges and opportunities for collaboration.

Theoretical perspectives can further this exploration in what enables and what prevents collaborations within and among Canadian BRs. Two specific theories to frame this discussion are Collective Impact Theory (CIT) and Trust Theory. Both provide insights on actively pursuing consensus in multi-stakeholder decision-making processes. CIT discusses collaboration that is predicated on five conditions: a common agenda, shared measurement, continuous communication, mutually reinforcing activities, and a backbone support organization (Kania & Kramer, 2011). Alongside these conditions are three essential pre-conditions: adequate financial resources, influential champion(s), and a sense of urgency for change (Hanleybrown et al., 2012). CIT efforts have been implemented in a variety of multi-stakeholder and interagency contexts; however, this theory has yet to be explored in the context of UNESCO BRs. To assess the suitability of this framework in the context of BRs, this chapter explores the potential for BRs to meet these five conditions and three pre-conditions.

A supporting theory referenced throughout CIT is Trust Theory. Trust Theory considers both interpersonal relationships and organizational trust, both of which are important for interagency collaboration in BRs (Stern & Coleman, 2015). Trust theory can be broken into four types of trust: dispositional trust, rational trust, affinitive trust, and procedural trust. Respectively, dispositional trust refers to the general predisposition to trust based on personal history and contextual cues from the environment. Rational trust is based on an individual's judgment of the probable outcome of the situation. Affinitive trust is deeply personal trust based primarily on the relationship with the other person and the associated emotional and cognitive assessment. Lastly, procedural trust is the trust in the process or systems where that relational trust aspect is otherwise absent (Stern & Coleman, 2015). Granted that the literature on the

importance of trust in collaboration is justly unified (Davenport et al., 2007; Stern & Coleman, 2015; Tschannen-Moran, 2001), this chapter investigates which forms of trust are perceived as most important in the context of interagency collaboration in UNESCO BRs. However, research on the limitations of having too much trust in collaborative efforts will also be explored as it relates to interpersonal relationships within BRs (Bidault & Castello, 2010; Parkins & Mitchell, 2005).

The purpose of this study is to examine current forms of collaboration across Canadian UNESCO Biosphere Reserves and the primary enablers and barriers of this collaboration. Canada provides a unique opportunity for collaborative research as it incorporates diverse geographical conditions and socio-cultural settings. Representatives from Canadian BRs were interviewed to uncover the common enablers, barriers, benefits, and drawbacks of collaboration. Additionally, participants explored the potential of future collaborations and shared recommendations from practitioners' perspectives.

The research question and objectives explored in this chapter are:

What factors influence collaboration among Canadian BRs?

- Evaluate perceptions of current collaboration efforts between Canadian BRs by key representatives of those BRs
- Identify the benefits, barriers, and enablers of collaboration between Canadian BRs, as perceived by key representatives of those BRs

Methods

Study Context

Canadian Biosphere Reserve Association (CBRA)

The world network of UNESCO BRs consists of 727 BRs (November 2021) (International Union for Conservation of Nature, 2021). This study took place within Canadian BRs. At the national level, the vision of CBRA (2019) is for member BRs to "work in partnership with all orders of government, Indigenous Peoples, the private sector, civil society organizations, academic institutions, youth, and residents" and to "facilitate dialogue, showcase models of co-governance, and coordinate projects that bridge environmental, economic, social and cultural divides". As of December 2021, 19 BRs in Canada appear across nine provinces and territories (Alberta, British Columbia, Manitoba, New Brunswick, Northwest Territories, Nova Scotia, Saskatchewan, Ontario, and Quebec) (See Chapter 3, Figure 3.1) (UNESCO, 2021) within the traditional territories of over 50 Indigenous Communities (CCUNESCO, 2021). This geographical spread represents the country's climatic, ecological, economic, and cultural diversity (UNESCO, 2021; Husby & Fast, 2004).

Participants

The Primary Investigator (PI) selected representatives from each Canadian BR based on their extensive involvement and position within the BR, with the goal of receiving responses from all 19 designated BRs. Because of the exploratory nature of this research, reaching saturation was not a significant concern as this research aimed to gain a nuanced understanding of the subjective experience of each BR representative.

All 19 BRs were invited to participate in the interview with a 74% response rate. Likely, due to capacity limitations (i.e. limited staff members, and time constraints of the available staff members), responses were only collected from 16 respondents, one representative from each of the 14 participating BRs across seven different provinces, as well as one representative from CCUNESCO and one representative from CBRA (Table 4.1). The average age of participants was 51, with 50% identifying as female and 50% identifying as male. The majority of participants were of European descent (93%). Additionally, two interviews were conducted with CBRA and CCUNESCO representatives and were separately analyzed from the rest of the participants. Keeping in mind these structural power dynamics, this chapter explores research findings through an interpretive paradigm with appropriate levels of critical analysis of social influences. This study's findings are analyzed through a relativist ontology where multiple realities exist, and the only truth that can be experienced is subjective to that individual (Mayan, 2009).

Table 4.1
List of participating BRs

Biosphere	**Province/Territory**
Beaver Hills Biosphere	Alberta
Biosphère du Lac St. Pierre	Quebec
Clayoquot Sound Biosphere	British Columbia
Frontenac Arch Biosphere	Ontario
Fundy Biosphere	New Brunswick
Georgian Bay Biosphere	Ontario
Howe Sound Biosphere	British Columbia
Long Point Biosphere	Ontario

Manicouagan Biosphere	Quebec
Mount Arrowsmith Biosphere	British Columbia
Niagara Escarpment Biosphere	Ontario
Redberry Biosphere	Saskatchewan
Southwest Nova Biosphere	Nova Scotia
Waterton Biosphere	Alberta

Note. Number of participants; n=1 for each BR.

Data Collection and Research Design

This research is an exploratory study that employs qualitative research methods. Exploring a concept as comprehensive and abstract as collaboration can benefit greatly from a qualitative approach. Patton (2002) advises researchers to take a qualitative approach while investigating people's lived experiences, inquiring about the meaning of those experiences, or gaining insights on an agency in the context of its social/interpersonal environments. Qualitative interviews reveal insights into one's lived experiences (Kvale, 2006). Semi-structured interviews served as the primary source of data for this research, allowing for both parties (i.e. the researcher/interviewer and interviewee) to engage in a formal interview process following a general script. The interview guide was informed by two collaborative theories: Collective Impact Theory and Trust Theory, along with knowledge from a literature review of collaboration in BRs (Appendix 4.A). In order to obtain reliable and comparable qualitative data, all interviews adhered to this interview guide. However, this format also allowed flexibility to follow the natural and topical trajectory of conversations, which was essential in gaining a nuanced understanding of participants' individual experiences (Cohen & Crabtree, 2008; Goldkuhl,

2012). The PI of this study conducted all interviews reducing personal biases, thus increasing the validity of these findings (Bernard, 1988).

Each interview was 20-50 minutes in length, with the average length of interview being 34 minutes and 49 seconds. Data collection took place remotely via virtual communications (n=14) and telecommunication (n=2). In light of the COVID-19 pandemic, travel to other provinces and territories was not advised and prohibited travel for research purposes by the University of Alberta. These interviews consisted of general questions pertaining to collaboration across all sectors of a BR's operations and analyzed the role of CBRA and CCUNESCO in sustaining an inter-BR network. With participant consent, all interviews were recorded and transcribed. Participation in this study was voluntary, and participants were given a participant consent form for their interview (Appendix 4.B).

This study (protocol number Pro00099415) was approved by the University of Alberta Health Research Ethics Board. Written consent was obtained from all subjects prior to participation in the study.

Pilot Test

Hertzog (2008) highlights the uses of pilot testing as it pertains to both qualitative and quantitative research through the following purposes: (a) feasibility, (b) adequacy of instrumentation, (c) problems of data collection strategies and proposed methods, (d) answering methodological questions, (e) planning a larger study, and (f) obtaining sufficient preliminary data to justify a grant award (p.180). For this research, using a semi-structured interview approach during pilot tests is recommended to finalize a standardized guide that could be

replicated with each subsequent interview (Newing et al., 2011). Additionally, conducting a pilot test can enhance both construct and content validity of data collection (Maryam, 2016).

A limited pilot test was conducted through informal conversations with three Canadian BRs (Waterton Biosphere Reserve, AB; Redberry Lake Biosphere Reserve, SK; and Southwest Nova Biosphere Reserve, NS). These conversations lasted approximately one hour and provided insight into question development methods, appropriate levels of detail, approximate timeline of interviews, as well as the feasibility of remote administration of questions. Additionally, the PI of this study had comprehensive conversations with the Beaver Hills Biosphere, AB, which helped inform the interview guide, and reinforced the rationale for this study.

Data Analysis

Data collected from interviews were transcribed automatically using OtterAi software. These scripts were then manually transcribed and reviewed for errors. Transcribing data was a detailed interpretive process that involved judgements on which information to include to ensure data were represented accurately (Bailey, 2008). Transcriptions were then thematically coded using NVivo12 software. This analytical software was advantageous as you are never separated from the data throughout the coding process. NVivo allows researchers to code transcripts to various nodes and always attaches the exact location of the node within the transcript for context purposes. Thematic analysis allows for a rich understanding of shared or collective experiences (Braun & Clarke, 2012). This method helped uncover common factors affecting UNESCO BRs and their pursuit of collaboration (Tate et al., 2010). Thematic analysis was done through five phases. This method of thematic analysis is suggested by NVivo software practitioners and enhances the rigour of analysis (QSR International, 2021). The first phase of analysis involves a

general scan of each interview individually, which familiarizes the researcher with each participant's individual responses. Each participant's interview provided contextual insight that could be used to inform the next phases of coding (Richards, 2015). The second phase of analysis requires the researcher to deductively code sections and statements from each interview and identify primary patterns and the semantic themes of the dataset. These codes are then iteratively refined and categorized in phases three and four of coding, where the researcher goes through the interviews again. In phase five, these codes are then categorized using a virtual mapping application through NVivo where they can be rearranged into conceptual themes. NVivo also allows the researcher to conduct coding comparison queries and create comparison diagrams to compare the differences among various BRs (e.g., BRs with high vs. low capacity).

A comprehensive datalog was maintained throughout the analysis to keep track of the coding timeline and details, along with any additional researcher notes.

Findings: Canadian Biosphere Region Interviews

After conducting thematic analysis using NVivo12, 524 individual categories were developed which were subsequently categorized into five main themes and 16 subthemes. A description of the main themes and the average thematic coverage for each theme can be found in Table 4.2. These themes will be explored in the discussion below, supported by participant quotes, academic literature, and the PI's subjective interpretation of the interviews.

Table 4.2
Description of inductive coding themes and percent of interview covering that theme

Theme	Description	Average Thematic Coverage[a]
Capacity	The amount of staff, time, funding and resources an organization has	45.9%
Canadian Biosphere Network	Inter-biosphere collaboration across Canada and the role of CBRA	56.5%
Inclusivity and Indigenous Engagement	Providing equal opportunities to participate in collaborative endeavours (especially for Indigenous Peoples and agencies with limited capacity)	46.7%
Collaborative Mechanisms	Any means (formal or informal) in place to facilitate collaboration	34.8%
Enablers and Barriers of Collaboration	Factors that facilitate and impede collaborative processes (not including comments on capacity)	51.0%

[a]Average thematic coverage was an empirical inquiry that was calculated post-analysis to support the justification of the inductive coding process.

Note: English was not the first language of two participants - this chapter quotes verbatim what participants said throughout the interview. Quotes are altered using parentheses and a disclaimer (e.g., "text removed for anonymity") to protect the anonymity of participants. Ellipses are used to indicate the removal of less relevant material. Repeated words, grammatical errors, hesitations, and false starts were removed from quotes where appropriate to increase clarity.

Theme: Capacity

Although not explicitly asked in the interview guide, every participant stressed the role capacity plays in collaboration. Capacity refers to the participant's perceptions of adequate time, staff, funding, and resources. Participants stressed the role of adequate staff/volunteers, time, funding, and resources. Several participants described how these three factors are a perpetual loop where having enough resources/funding enables enough staff, which enables enough time, etc. Notably, funding was the most frequently discussed variable as it affects BRs' abilities to engage in collaboration with internal organizations, as well as inter-BR collaborative

opportunities. From an organizational standpoint, inadequate and inconsistent funding is a significant barrier across BRs (Reed & Price, 2020).

Each participant described how capacity affected their ability to collaborate, along with how capacity affected their collaborator's ability to participate. One participant described this capability to collaborate with other BRs as different pillars of participation:

> We are more looking at a learning and witnessing capacity than really active. We have sort of different pillars of participation. … It's one thing to come to a CBRA event, but ensuring that CBRA information is taken back to the BR, especially so that folks know that they're part of a bigger network. (Participant 1)

These levels of involvement were coded into three subthemes: passive participation, active participation, and capacity redistribution. Many participants described how a lack of time, staff and funding contributed to passive participation which includes subscribing to emails and newsletters, attending webinars, or being passive members of a group. One participant attributes their passive participation to prioritizing incapacity to fulfill internal responsibilities:

> The biggest thing, I think, would just be capacity, because who's going to participate? And it's one thing just to sit in on the meetings, but you also want to be able to contribute, for instance, if they have a project that they're trying to do collaboratively. And we have to go no, sorry. Because you know, our plate's just full with our own projects and work. (Participant 4)

Active participation was described as opportunities for collaboration that require adequate capacity like hosting events, joint training opportunities, preparing a webinar, and engaging in consistent communication. Participant interviews indicate that those BRs with higher capacities are more likely to actively participate in ambitious collaborative opportunities. Multiple participants described how having these needs adequately met establishes a sense of security, which then translates into the ability to take collaborative risks. The participants interviewed from BRs that satisfy these capacity requirements also described more instances of active participation through an analysis of NVivo coding queries. This trend is anticipated by CIT (Kania and Kramer, 2011), along with other studies investigating the role of capacity on levels of engagement (Cuong et al., 2017; King & Cruickshank, 2012).

The last pillar of participation is capacity redistribution. This level of participation describes when BRs can satisfy their internal capacity needs and redistribute this capacity internally to partners or externally with other BRs who cannot meet those needs. These BRs were noted to have high levels of organizational maturity, multiple volunteers, as well as external sources of funding. Participants both on the giving and receiving end of capacity redistribution detailed this process and the many benefits it can have on both ends. On the one hand, redistributing capacity helps the receiver by increasing their staff, time, and funds which allows them to operate more efficiently. On the other hand, this redistribution also has benefits for the distributor as they extend their networks and create an environment for future fruitful partnerships as the receiver builds capacity. While describing the role of capacity, one participant stated:

> The evolution of individual biospheres can be different. So just being able to kind of hold that is important as we're looking at partnerships, because it doesn't necessarily mean that you're equal partners, it can be like different roles in that partnership. And that's something that's been successful more recently for CBRA is having (removed for anonymity) talk about it as team involvement in projects so that there's folks that are learning and witnessing the project and looking at how it might apply to them, folks who are more actively involved, and then biospheres that are, like already, perhaps leaders in a certain area, and they're really sharing on building that capacity. (Participant 1).

However, some mature organizations described resisting capacity redistribution because although they are mature relative to other Canadian BRs, they still have a long way to go in their own BR. Naturally, some participants implied sentiments of resentment for those on the receiving end of capacity redistribution. These participants expressed their desire and intentions for capacity redistribution, but noted the inconveniences induced from this effort. However, all BRs described collaboration as the root of what a BR is and the need for capacity redistribution in order for collaboration to take place. The following quotes illustrate examples of capacity redistribution and the feelings of resentment and hesitation along with this effort:

> And so the other Biosphere Reserves like they pretty much like peaced out after that, because they don't have the capacity to be on phone calls every day, or like, you know, be writing letters of support and stuff like that. And so I took that on and was chatting with all of the proponents who are intending to apply. I wrote a letter of support, I sent it to the other biosphere reserves and said, like, put your signature on this, like, this is what we're

> doing. And again, like looking back, I think that's exactly how it should work, is that biospheres who have more capacity should be propping up the ones that don't in terms of trying to find new funding, or new projects or whatever. At the time, I was like, am I the only one who's gonna be on these calls? But then at the same time, it's like, it's okay, they've told me I can speak for them. And so here I am representing all three Biosphere Reserves, even though I'm coming from my own. So I'm hoping there's going to be more opportunities like that. (Participant 12)

> It's just like, we don't have enough money anyway to do the work that we need to do, so now you're asking for us to do more?...We actually have an obligation to support the other biospheres if they're struggling in some way...I think just generally, everybody. There needs to be an attitude of, that the burden of running the network shouldn't be falling to just a few people for one thing because then they get resentful. So it needs to be spread out. (Participant 6)

While discussing capacity, participants also explored the importance of adequate individual capacity and the role of champions. For the purpose of this research, champions can be described as people who act as influential and dynamic leaders of accountability that "take personal risk to overcome organizational obstacles" (Shane, 1994). The role of champions is broadly explored in the literature as it pertains to collaboration and specifically discussed as a necessary precursor to implementing CIT (Hanleybrown et al., 2012). The majority (79%) of participants brought up champions in their interview and explored how these individuals' personalities and passion were invaluable to the collaborative process. Many of the participants described their own role within

the BR as organizers, coordinators, and representatives, and in some cases, they are the only staff members of their BR. The participants themselves act as champions for their BR as they take on the role of collaborating for the purpose of this research. Still, these participants recognized other champions within their networks and described them with terms such as: “egoless”, “approachable”, “happy to hear ideas”, “curious and interested”, and “dedicated”. However, these champions were often expected to act as a “jack of all trades,” which was noted to cause personal burnout. Since so many BRs are run as not-for-profit models, the mere existence of a BR is often reliant on individual capacities. This reliance can become threatening with staff turnover. At the organizational agency level, staff turnover was discussed to be a frequent occurrence, yet its impacts did not affect collaborative processes as adversely as staff turnover at the BR level. Participants described the challenges associated with staff turnover of executive directors or key practitioners of the BRs. However, one participant also recognized the opportunity of staff turnover to create room for innovation and new relationships:

> And so there has been a certain level of engagement between the sites, and also recently, there's been some retirements and some turnover. And so that interrupts relationships, continuity and familiarity, and it also creates opportunities for new relationships. (Participant 13)

Evidently, all participants ascribed a great deal of importance to the role of capacity in collaboration. From having enough time, staff, funding and resources, capacity was deemed a critical limiting factor for the ability to collaborate both among agencies and between BRs. Not only was having enough capacity internally important to participants but also ensuring their

partners also had adequate capacity to participate was vital. Unfortunately, most participants expressed doubt in their ability to redistribute capacity as many BRs do not have enough staff internally or a secure source of funding. However, champions were regarded as key actors that compensate for this lack of capacity and were often reputed as the sole reason for collaborative success. This reliance on champions can be dangerous as participants detail inevitable staff turnover.

Theme: Enablers & Barriers

The most prominent overarching theme of all interviews was the enablers and barriers to collaboration. Participants identified over 100 specific enablers and barriers that were categorized into the following three sub-themes: trust and perceived threat, alignment, and awareness and accessibility.

Granted that capacity was identified as a major enabler and barrier to collaboration, capacity was coded as its own theme because of the novel insights and level of detail each participant went into (refer to the preceding section for a detailed description of the role of capacity in collaboration).

Trust and Perceived Threat

Widely accepted as an enabler of collaboration, all participants emphasized trust as a condition of collaboration. Some participants explored the concept of trust on a personal level, while others looked more broadly at the interagency level. One participant related their inclination to trust to having similar mandates and objectives as the other partner's organization. They criticize how capitalism influences the private sectors by putting organizations in direct

competition with each other. They also discussed how the necessity to collaborate due to limited capacity decreases the perceived threat of the collaborating organization because they did not view them as competition. One participant explicitly explored collaboration within the conservation sector:

> My experience is that the conservation sector is designed to collaborate because of a lack of resources. It is almost inherent that they would want to work together and not compete because we share a mandate in terms of the environment, we have to share resources, we have to share knowledge and data and science in order to be effective or more effective. Whereas in the private sector, which is sort of a capitalist model of competition, people are less trusting, they inherently see each other as competition rather than an opportunity to create something even better jointly. And so we try to continually share the view that if we can have a win for the region, it's a win for individual businesses and other operators. So this expression from out east, the rising tide floats all boats, means working together will ultimately benefit you individually. So it's been difficult in that setting, honestly, to develop the kind of trust among partners that we find is needed. It's just taken longer, and sometimes it's failed. (Participant 13)

The notion of a perceived threat surfaced as internal concerns between agencies within the BR. Several BRs expressed how the mere entity of their BR could be perceived as threatening - especially to organizations that fulfill similar roles or to industry who perceive the BR as the "*green police*". This perception materializes as a barrier to collaboration. Several participants explicitly expressed this concern throughout their interviews:

> But I think the tourism people kind of took that as like, encroaching on their territory of what they're supposed to be doing. And I think that's sort of where this barrier started is like, perceived ideas of responsibility. Rather than just being straightforward and talking about something and defining roles and responsibilities, organizations just block each other (haha). So we kind of backed off of that… I had one organization tell me that the biosphere doesn't do conservation. So basically, don't try and do conservation projects because that's not your role here. I was like, okay, that's interesting. (Participant 8)

> And again, I think that scares some of the municipalities, that they see that we could be going into a county system and their, I guess, their little domains, their municipalities might be threatened. So I think that could be a challenge for us that we are thinking bigger than a lot of municipalities think. (Participant 3)

Other participants outlined effective solutions to perceived threats through transparent communication and mission clarity:

> And we try when we apply for funding if that we think might overlap what they do, like we often have phone calls to make sure that we're not like in direct competition with one another like, yeah, there's a lot of collaboration that happens within the organizations that like are living and working in the biosphere. (Participant 12)

> I was very clear from the beginning that we created this new nonprofit society, not to compete with existing organizations and not to compete for funding, but to find and attract new ways of funding and collaboration that can support their efforts. So it was very much us coming in to serve our existing wonderful organizations versus trying to take from them. (Participant 6)

Another participant spoke broadly about establishing trust through transparency, accountability, inclusivity, and serendipity:

> In order to build trust, you have to have transparency. And you need to practice what you preach by being open, inviting people in demonstrating that you are doing everything you can to invite people into the conversation. I think one of the things that I have stayed away from and that's creating too much formality in our governance structure. It's very much open to anybody that wants to jump in and join us. So when there's no resistance from our side, then the curious and the skeptical come in. And they take a look around and decide to either stay and continue to support us, or contribute in some way, or they go back to where they came from. (Participant 6)

A few participants then proceeded to describe how a large part of CBRA's success as a trusted backbone support agency is accredited to their non-governmental affiliation. This skepticism in government and affiliated agencies of authority is supported by multiple research findings (Blind, 2006; Cook & Gronke, 2005). Since CBRA acts as a conduit to the government,

participants felt this was a trusted agency to collaborate with and trusted their guidance in establishing a transnational network.

Participants viewed trust on both personal and organizational levels to be an important enabler of collaboration. Through conversations about the perceived threat of being a UNESCO BR in a community, participants recognized their role in establishing trust with partner organizations. Trust was explored on a higher systemic level when discussing national collaborations between Canadian BRs.

Alignment

Participants explored how similar missions and a shared purpose among agencies can support cross-disciplinary collaboration, which is ultimately more inclusive, relevant, effective, and mutually reinforcing (Head, 2003). Some participants recognized how a misalignment in individual goals leads to more dispersed efforts which can undermine the entire collaborative process itself. Due to the diversity of stakeholders within Canadian BRs, participants described past experiences of disagreements, as well as the potential for future conflict with certain collaborators:

> What we would look at is mission alignment, so we have some, you know, obviously, core objects of our society of the biosphere. And we would want to ensure that those align with what another organization's mandate or mission is…If there was an organization that wanted to be a member or partner with us that kind of struck in the face of that [lobbying and advocacy] we probably wouldn't align ourselves. (Participant 9)

> We had a lot of opportunities to work with a lot of companies. But working with the high, like environmental impact companies such as petroleum where I don't know, it's not the kind of work we're going to do… But we integrated some criteria to select the kind of mandate we want to do. And that's kind of a big thing for us. Because sometimes we were asking ourselves, do we want to work with them? Do we fulfill our mission as a Biosphere Reserve when we work in that kind of mandate? And so based with these criterias, we have a better picture of how we can relate the mandates to our biosphere mission. (Participant 10)

However, collaborating can help bring these differences to the surface so that they can ultimately be resolved and a common goal can be established. Despite organizational differences, one of the key objectives of a BR is collaboration, as defined in UNESCO's statutory framework (Ostrem & Hvenegaard, 2020). Granted that UNESCO outlines multiple common goals prioritizing collaboration, BRs seldom collaborate with one another (Reed et al., 2014). Although actively working towards the common goal of harmonizing the relationship between humans and nature, each BR has their own understanding of their problems and solutions in unique socio-cultural and environmental contexts. Yet, one participant explicitly recognized goal misalignment on the national level as an opportunity for development and growth, rather than the perceived barrier several other participants discussed. They further discussed the opportunity for innovation and reflection that bolsters further value in creating common ground:

> Because to me, I'm like, why are you a biosphere if you're not going to be working with the other biospheres, that's the whole point of being like, under the UNESCO thing is

> like, we're all part of the, we might as well just be all individual incorporated NGOs if we're not going to work together, you know what I mean. (Participant 12)

As expressed by participants, alignment in goals can be a necessary enabler for collaboration, and misalignment can significantly threaten the collaborative process. Both among agencies within the BR and in inter-BR collaborations, diverse perspectives and goals are unavoidable; but being able to find operational synergies where goals and missions overlap can enhance collaboration by creating a shared purpose.

Awareness and accessibility

All 14 participants discussed how awareness and accessibility affected their ability to collaborate. Awareness refers to the participants' knowledge of what opportunities exist, what players are present, and how to get involved. Accessibility refers to the participants' ability to engage in collaboration based on the expected level of involvement, as well as spatial and temporal alignment with the opportunity. Several participants suggested that a collaborative inventory be created by the BR and maintained by participating agencies. This was also discussed at the national level, where CBRA would be responsible for creating an inventory of opportunities for the various Canadian BRs:

> What are your needs? And so we started doing an inventory of who's doing what, which was hugely valuable to understand on the landscape. It's sort of what I would call a governance analysis of who's doing what, what players are involved, and where are the gaps? And also, where's the duplication? (Participant 13)

As reflected in this quote, this participant has already taken it upon themself to initiate this process for their BR. They further discuss the value in increasing awareness of opportunities as it decreases duplication and increases efficiency.

However, despite increasing awareness of collaborative opportunities, accessibility to these opportunities was discussed at equal importance. Several participants discussed spatial and temporal conditions as considerable barriers. One participant expressed concerns of futility with hosting meetings for geographically dispersed partners within their BR as they require much more effort to attend: “So it's quite a big geographic area. So people have to travel basically to come to meetings. So you don't host these meetings. You don't call these meetings if there's nothing to discuss.” (Participant 2). This was also noted as a barrier in the Canadian BR context because Canadian BRs are so vastly dispersed and have different time zones, which can limit the opportunities to collaborate across BRs. Another participant described how this geographic distance translates into socio-cultural differences as well, that poses yet another challenge to collaboration:

> And collaboration in Canada is a challenge. That's the first impression I had when I started to be a director on the board. Canada is really complicated (hahaha). It's very big. And especially with the Indigenous, we have so many nations across the country. (Participant 10)

Although more taxing, transboundary collaboration has been found to be dramatically more efficient in achieving large-scale objectives, such as those outlined by UNESCO action plans

(Neeson et al., 2015; Ostrem & Hvenegaard, 2020). Three participants discussed the promising potential of creating collaborative groups based on subgroups of BRs. For example, they proposed separating BRs based on geographic locations as well as similar natural characteristics. One participant detailed the benefits of these subgroups if member BRs had similar contexts:

> We definitely have worked together with all of the ones in [province removed for anonymity] more than other sites in Canada. Our context is similar. There are opportunities for joint funding and joint projects. There is knowledge exchange that can happen on different topics. How did you do a conservation action plan? How did you apply to the Ministry of Tourism with your region? How did you engage First Nations in traditional ecological knowledge projects? (Participant 13)

Although similarities in context can enable collaboration, the accessibility to the collaborative endeavour is compromised. This can create a barrier to collaboration for those with different contexts.

Theme: Canadian Biosphere Network

The Canadian Biosphere Network was an anticipated theme of this research as participants were explicitly asked questions about BR structure, as well as multiple questions about the role of the CBRA. All participants discussed the structure of the BR they were representing. Although participants discussed an overarching similarity of applying UNESCO's Man and the Biosphere concept to their BR, they detailed how this concept can be applied differently within each of their individual contexts. Participants described a wide range of

structures with differences in board and committee structure, membership systems, general staff/volunteers and operations, mandates, and how each BR is financed. Although noteworthy, participants explained how these differences are not major barriers to collaborating with other BRs and rather could be used as learning opportunities. One participant suggested a twinning BR approach to increase the potential of this learning opportunity:

> Yeah, we've always talked about, wouldn't it be great if we had the resources to do an actual exchange program, where one staff could go, or a board member volunteer, go to another biosphere for a couple of days and shadow them and pick their brains and learn about how they approach community challenges. Find out what's worked well. Or if they were to start over a certain initiative, what they would do differently. So there's a lot of potential knowledge sharing in that kind of twinning biosphere approach. We haven't really done that. (Participant 13)

Some BRs described intricate networks and committees within their own BR, allowing them to operate more autonomously. These networks were praised for local interventions; however, they also acted as a barrier to collaborating with CBRA because there was a lower need for support. Contrarily, BRs in their infancy expressed utilizing this partnership with CBRA much more than more mature BRs:

> Yeah, we just started and CBRA has been very, very, very welcoming. And, they've done great outreach, actually, I've come to know the organization only in the last few months, and they're very active and very well organized I must say. And it's great to see, it's great

> to see this Canadian network. And I can already see the value added of what they're doing in terms of, first of all, in terms of sharing of information and best practices. I mean, that's a real plus. I'm beginning to realize that all biospheres in Canada have a different setup, a different approach, different ecological issues to manage, different types of different organizational setup, and all that. So we're quite different from one to one to another. (Participant 2)

Granted that participants were specifically asked about the CBRA, all participants discussed CBRA's role in facilitating collaboration. CBRA is uniquely positioned to act as a backbone support agency that connects BRs across Canada. Participants discussed how CBRA facilitates inter-BR collaboration through numerous different mechanisms (Table 4.3).

Table 4.3
CBRA's role in facilitating collaboration (participant responses)

Mechanisms	Specific Comments
Increasing biosphere capacity	Increases staff and volunteers
	Increases resources
	Increases time
	Increases funding
	Aids in grant application process
	Redistributes capacity
Knowledge-sharing	Shares knowledge and research

	Shares best practices from other biosphere regions (both nationally and internationally)
	Provides templates for UNESCO reports
Inclusivity	Creates a place of belonging (feeling apart of something larger)
	Offers diversity and inclusion training opportunities
Enables networking	Creates structured communication practices and sustains a network
	Facilitates workshops/presentations and knowledge dissemination
	Increases biosphere awareness
	Acts as a conduit to the Federal Government and a link to UNESCO

Many participants delved into a deeper discussion on the necessity of CBRA as a backbone support agency and claimed inter-BR collaboration was only possible because of this agency. Participants described relationships between their BR and CBRA as deeply personal. Almost all participants clearly identified a specific individual as the champion of CBRA and the sole reason for its continuity. This champion was praised for their organization, communication, coordinating capabilities, accountability, generosity, and information and opportunity dissemination. One participant claimed this champion to be a critical connecting force in inter-BR collaboration:

> I think it's [CBRA] the most connecting force that we have most definitely. And (name of individual removed for anonymity) is a connecting force, through email communications,

> through sharing funding opportunities, and through supporting areas where there's mutual interest, like, also for our strategic plan. (Participant 1)

Although, many participants once again described how CBRA's capacity is the main limiting factor in their ability to facilitate collaboration. Currently, CBRA consists of one part-time staff member responsible for all roles. BR practitioners recognized that this limit in staff and funding seriously jeopardizes the organization itself and CBRA's ability to support Canadian BRs. One participant described the limited capabilities of CBRA because of limited capacity:

> Ideally, the CBRA office would be like six staff, and one would help with national marketing. And one would have, you know, orchestrate national funding for projects so that five members could be involved in climate and three others could be involved in Indigenous youth and I mean, you can see that CBRA itself could benefit from enormous capacity building. And yet, we haven't been able to see that in Canada. Other countries have provided a little bit of a model, but we're not there yet. We still continue to message our MPs about the opportunities. (Participant 13)

Among the many opportunities and benefits CBRA provides, participants had several recommendations and requests as well (Table 4.4). Participants detailed the different ways they would like to see CBRA support them in the future through facilitating inclusive partnerships, developing communication, and praised CBRA for current efforts that they would like to see sustained. Admittedly, the representative from CBRA acknowledged that meeting BR recommendations is a challenging task due to limited organizational capacity.

Table 4.4

Recommendations for CBRA

Recommendations	Specific Comments
Facilitate inclusive partnerships	Promote tourism
	Continue to support other languages
	Continue to host Indigenous engagement workshops
	Help biospheres enlist the corporate world and encourage corporate social responsibility
	Continue to provide low commitment opportunities to network (e.g., zoom webinars)
	Facilitate collaboration with other UNESCO designated areas
	Facilitate biosphere exchange programs (for staff from other biospheres, as well as for university students)
Develop communication	Standardize communication
	Encourage knowledge dissemination from representatives at CBRA meetings
	Increase biosphere profile and awareness
	Create an inventory of collaborative opportunities (who is doing what, where is it happening, how to get involved, appropriate contact information, etc.)
Sustain current support	Continue to support biospheres in pursuit of federal initiatives (e.g., Sustainable Development Goals)
	Continue to support grant writing and applications
	Continue to disseminate opportunities for funding and networking
	Maintain the longevity of CBRA and increase CBRA capacity

Overall, all participants expressed gratitude and appreciation for CBRA's role in facilitating a national network and look forward to future collaborations with CBRA.

Theme: Collaborative Mechanisms

Participants described countless examples of how they collaborate both within their respective BRs and among BRs. All participants mentioned that communication with partners is one of the most important ways they collaborate, whether that be through recurring meetings, regular check-ins, emails or phone calls leading up to an event, or even newsletters with BR information. Some participants described how the shared trauma of the COVID-19 pandemic actually increased communication among partners as individuals sought advice on how to continue to operate in unforeseen circumstances. This trend of increased virtual communication and increased long-distance collaboration has also been observed in several recent studies following the effects of COVID-19 on workplace collaboration (Byrnes et al., 2020; DeFilippis et al., 2020; Waizenegger, 2020).

Nonetheless, the longstanding adverse effects of the COVID-19 pandemic were not dismissed in interviews and were noted to significantly affect BR operations: "But as I said, starting a network and maintaining it are two totally different activities. And maintaining a strong network through COVID has been extremely challenging." (Participant 13)

Respondents discussed both formal and informal means of communication as they facilitate collaboration. Some participants explained how formal means of communication could increase knowledge dissemination capabilities as they are structured, and important information is often prioritized. However, others also described how informal means of communicating

facilitated relationships, which inevitably involved information sharing as well and required less capacity. Ideally, both the process for learning and sharing knowledge would be readily available for all partners to engage in. During various points throughout the interview, all participants brought up the necessity of knowledge sharing to increase efficiency and decrease duplication. One participant discussed the importance of having the "spirit of knowledge sharing":

> I think what happens is biospheres tend to be always inundated with people wanting to get information out of how you do something. And I am experiencing that as well. It's just like, we don't have enough money anyway to do the work that we need to do, so now you're asking for us to do more? I think that there has to be a spirit of not always being the experts, but actually knowing you can learn from somebody else. And that we actually have an obligation to support the other biospheres if they're struggling in some way...I think just generally, everybody. There needs to be an attitude of, that the burden of running the network shouldn't be falling to just a few people for one thing because then they get resentful. So it needs to be spread out. And, and then there needs to be this spirit of sharing knowledge and looking at the whole network as our strength. (Participant 6)

Additionally, participants explored the potential of this communication transpiring into extended networking opportunities. However, one participant recognized how although this means of communication requires little upfront capacity in the initial stages, sustaining a network was found to be a more challenging task:

> I think that the biosphere's role in collaboration is highly undervalued. And one of the things I found in my work, and in my experience, is that it's relatively easy to set up a network. I mean, it takes time and effort and skill, but it's relatively easy to sort of launch a network. But what's hugely time consuming and resource consuming are the transactional costs of keeping that network strong. In other words, communicating with them, sending out the quarterly newsletter, bringing them together for the meetings, making sure that they feel that it's valuable to them, and that there's benefit in their collaboration. (Participant 7)

Some participants stressed the importance of creating organizational networks to offset the amount of individual capacity to sustain a personal network, as well as to account for staff turnover. CBRA was noted as a key player in sustaining these organizational networks as key BR practitioners resigned, retired, or moved to other organizations.

Various other mechanisms of collaboration were discussed in terms of specific opportunities for collaboration. Participants discussed opportunities such as:

- App creation (e.g., a touring app of local tourist attractions and organizations within the BR)
- Attending other biosphere region events (e.g., biosphere exchange programs for practitioners and students)
- Branding, marketing, and sponsorship
- Collaboration on the development and delivery of education programming
- Community forums and consensus-building opportunities

- Corporate social responsibility (e.g., BR branded products by partnering with local companies committed to sustainability)
- Cross-promotion with organizations and other BRs
- Documentation and report templates
- Economic development and tourism
- Engaging businesses
- Evaluation and reflective work
- Hosting agencies and internships
- Joint-grant applications
- Newsletters and webinars
- Research opportunities and university collaboration
- Website development and advertising (e.g., having a consistent model for BR websites and profiling what a BR is to the general public)

Additionally, participants clearly identified three larger opportunities for collaboration: a docu-series produced by TVO called Striking Balance, the Amazing Places project (an education, conservation and tourism initiative highlighting five Canadian BRs), and the Tree Project (where 14 BRs agreed to plant 100,000 trees across Canada). These three initiatives were mentioned on several occasions by multiple participants as key examples of past inter-BR collaborative successes. CBRA was identified as a key driver for all three collaborations. In all three cases, participants identified the nature of the collaboration to be mutually beneficial and working towards a common goal. Participants also explained how funding for this collaborative

work had already been provided, which in turn increased their capacity to take part in these projects specifically.

When asked to elaborate further on the tree-planting project, one participant explained how this project was a relatively small project with very clear and achievable goals.

> So [BR name removed for anonymity] kind of took the lead as the contact agency, because it was actually happening in their biosphere. But they reached out to all the biospheres and said, will you plant some trees, and then they kind of subcontracted to each of us, they got the core funding. And then they said, okay, well here's some funding for (name of biosphere removed for anonymity) to do planting, the number of trees it's able to plant. And so that was a good kind of working model of how we could do it. I think that was actually a catalyst for us thinking about, hey, we could do this in lots of other ways. So that was and it was a small, very defined discrete project, but it got us all thinking how can we work together and meet some national goals that also serve our biospheres? (Participant 14)

Participants explored interagency and inter-BR collaboration broadly and identified dozens of specific mechanisms. Participants deemed networks, in general, to be the main catalyst for collaboration. Creating and sustaining these networks allowed participants to have innovative and mutually beneficial collaborations.

Theme: Inclusivity and Indigenous Engagement

Participant responses were particularly insightful when discussing levels of Indigenous engagement. Although not explicitly asked, all participants discussed levels of Indigenous engagement within their BR when discussing inclusivity. BR directors are given the opportunity to support reconciliation directly through their work. CBRA's recently formed Indigenous Circle recognizes Indigenous Communities as the hosts of BRs, and they should be considered as so throughout decision-making processes (CBRA, 2021). CBRA's Indigenous circle (2018), as well as a hosted training workshop held in Vancouver, BC, were mentioned frequently as participants explored ways to increase collaboration in reconciliation. However, many participants claimed there are no common processes for Indigenous engagement and attribute this to the vast cultural diversity of Indigenous Peoples across Canada:

> Canada is really complicated. It's very big. And especially with the Indigenous we have so many nations across the country. They have their own practices, they have their own ways of seeing the territory...You have to be really careful with Indigenous with the cultural sensitivity of each nation. (Participant 10)

> The challenge that we've had is, and I think this is similar wherever you go, there's a perception that, you know, when they say, First Nations or Indigenous Communities, that we think it's like one amorphous sort of group. No, they're not. And some of them don't even like each other. So trying to get our arms around, how do we have meaningful Indigenous engagement? The fortunate part is that there's actually an Indigenous Circle that supports the Canadian UNESCO. (Participant 11)

Some participants delved into a more nuanced conversation about their personal role in Indigenous engagement as white settlers. This conversation is prolific among historical conservation as colonialism continues to guide conservation efforts today (Grzanka, 2010; Rudd et al., 2021). Participants discussed how BRs act as contemporary conservation in practice and must be prudent not to perpetuate the colonial systems associated with conservation. Several participants once again traced this motivation and priority to do better in terms of reconciliation back to CBRA's Indigenous Circle and the meeting led by CBRA on Vancouver Island:

> We have to prioritize, obviously, there's so many things that can be done. And we're, as I said, we're a small, small organization with a limited financial capacity. So we have to pick and choose and that's part of the strategic planning exercise that we're doing. We're kind of reorienting ourselves and saying, okay, what areas do we really want to focus on and where, what areas we'll leave to someone else? One of the things that's driving this is we've done very little in the way of reconciliation. And that's part of the issue there is that there are no Indigenous Communities within our Biosphere Reserve. There are two large ones near like, adjacent to us, but we've never had a relationship with them, which is different than many Biosphere Reserves who actually have Indigenous Communities within the Biosphere Reserves or adjacent to them. So we're working on building that as part of our way of kind of viewing the world and moving through our programming and stuff. So that's a new kind of interesting development for us. And it really comes out of our relationship with CBRA and our participation with the Indigenous Circle and the meetings we had in Vancouver Island. For me, it was personally a very eye-opening

> experience. And I came back from there kind of determined to say, hey, we've kind of missed this whole issue, we've been kind of blind to it. And to be honest, the the Indigenous Communities, their orientation is not to the west, where we are, it's more to the (location removed for anonymity) where they're located reserves out of the six nations of the (location removed for anonymity) so that we're kind of on the edge of their ecosystem. Right. So we have this, so we're trying to build some relationships across that because we are in fact on their traditional lands, right? (Participant 14)

Yet, one participant expressed concern about the compulsory motivation to engage with Indigenous partners to merely achieve mandated objectives. They explored how guilt can act as the driving force to form relationships:

> There's already a mandate for CBRA. And it was a big step forward reconciliation, what we have done…But I think CBRA is going maybe too much. And I don't know how to phrase it, because I do collaborate on a daily basis, as I said, with the Indigenous, but we do not collaborate like other Biosphere Reserves are collaborating and sometimes I think that maybe some members or board members are not quite sensible, but maybe afraid of Indigenous reactions or they feel guilty about the colonization or they feel guilty about what has been done to the Indigenous Peoples and it created a feeling of guilt, or guiltiness or it created that feeling during the strategic planning process when it shouldn't. It should be more something positive and working together. (Participant 12).

Additionally, participants recognized extending their invitation to Indigenous Communities is yet another bid for attention among an influx of opportunities. With this in mind, several participants

suggested opportunities for low commitment engagement, as well as more passive participation opportunities. One participant suggested working in collaboration with surrounding communities to include an Indigenous Culture section to their website that includes resources on inclusivity and reconciliation, as well as a platform for Indigenous Peoples to share their stories or work. BRs create a platform to share and create an ethic of care. CBRA has recognized this as one of their key objectives (CBRA, 2021).

Likewise, the concept of establishing and sustaining relationships was commonly discussed throughout the interviews. Creating both accessible and reciprocal opportunities for engagement was found to be an incredibly important factor in creating relationships. Access to knowledge on what is going on and who the main actors are plays a large role in who is able to participate. Ensuring knowledge dissemination both within the BR and beyond its boundaries to any pertinent agencies can increase levels of engagement and inclusivity.

Granted that many BRs struggle to maintain their own existence, the majority of participants described their internal priorities as strongly place-based. Many BRs with lower capacities elaborated on their eagerness to empower local people. They noted investing most of their time and energy into local interventions before extending the invitation to other organizations or other BRs. One participant captured the need to focus on internal operations in the following quote:

> But the reason being is, I think biosphere reserves are very, very place-based. And we run into that even with, you know, local groups saying, well why don't you extend your education outreach and we're like, ‘we don't want to, we want to provide educational opportunities for people who live in the (biosphere name removed for anonymity)’. That's

> our mandate. We're very, very place based...We don't want to spend our time doing education programming for people that are from (place name removed for anonymity). You know, it's really, it's capacity based. Yeah, we could invite everyone sure, but we can't. And so therefore we choose to be placed based. So when you're talking about collaboration with other Biosphere Reserves, you have to have that real connection. So that what you're doing is applicable in both Biosphere Reserves to your own, you know, your own circumstances. Some of the projects that we've done or initiatives that have been available to us to collaborate on. We just kind of gone 'doesn't fit with our mandate'. It's in the broader sense of biosphere reserves there's nothing wrong with it, it's a fine project, but it doesn't suit our local needs. (Participant 4)

Another group that was specifically mentioned in the interviews was the inclusion of youth. Participants discussed the missing perspective of youth in current BR operations, but also the potential for enhanced youth participation. Youth inclusion in advisory committees, specific youth councils, or more opportunities for collaborative projects with youth were all suggested as ways to further engage youth in BRs as they develop over time. One participant identified how this gap in inclusivity opens up doors for collaboration between BRs to see models of what others are doing:

> But then through a discussion, we found that we're kind of missing the youth aspect. So now we've put out a call to try and find a youth representative…Another biosphere reached out to me not that long ago asking about our youth program. Because they want to start something similar. So they're asking for any tips or tricks or the methodology. So

> I think the relationships are good. They could probably be stronger, and we could collaborate more. (Participant 11).

All participants discussed the need to prioritize inclusivity in collaborations within and beyond the BR. On an interagency level, Indigenous Peoples and youth were identified as missing perspectives. On a national level, inclusivity to BRs with all levels of capacity was deemed important, and gaps in inclusivity was identified as a potential catalyst for collaboration.

Findings: Canadian Biosphere Region Association CBRA & CCUNESCO

In addition to the 14 interviews with various representatives of Canadian BRs, two additional interviews were conducted with a representative of CBRA and a representative of CCUNESCO. Although covering similar themes to those probed in the interview guide, these two interviews were much less structured and exploratory analyzed separately from those of the BR representatives.

Both CBRA and CCUNESCO representatives described their roles as a backbone support agency of the BRs from their perspective. They also discussed the various enablers and barriers they face in collaborating with Canadian BRs. The most important barrier discussed was capacity. Particularly, CBRA only has one part-time staff member whose permanence is not guaranteed. Granted that many other BR participants discussed the significant role of CBRA in facilitating collaboration and sharing opportunities, participants described how this cutback would be a significant loss to the BR community and act as a paramount barrier to inter-BR collaboration. Due to limited funding and staffing, CBRA faces significant challenges in increasing their involvement in facilitating collaboration. They described how the association

prioritizes its efforts to help connect multiple BRs together or with an opportunity, rather focusing their efforts on individual BRs:

> If I can help multiple biospheres, so if I can do like a joint application, and it helps like three, four or more of the biosphere regions, and they're all included, then I think that's a great use of my time…I can't be helping, you know, 19 different sites, through their individual fundraising and relationship building, so I can help provide, like, brainstorm some ideas, or, you know, I can put them in touch with my national contact. For example, Parks Canada, who can then kind of translate that into a site level relationship, but traditionally, in addition to an initial contact, or providing a national contact to get their regional site contact, I don't really do that. (Participant 15)

CBRA also recognized participation in this research could benefit their organization long term by providing rationale for future funding:

> I think it'd be really valuable too like what you've come up with both in terms of like things that we're doing really well, but also things that we need help with or that you know, it was so we can point to funders and say like, you know, it's recommended that or identify that, you know, with x, y and z, you know, we'd be able to do this better, or these are similar challenges that all the sites are facing or, partners that we need to tap into or whatever that think we can likewise with you sharing it with us, but we can also use it as a tool to help us build our own capacity. (Participant 15)

One particular topic explored in the interview with CBRA was wants and recommendations. Because CBRA is normally on the receiving end of feedback, this interview provided an opportunity for CBRA to discuss their organizational needs. Specifically, the CBRA representative expressed their appeal for knowledge dissemination. CBRA explained how their efforts could be more effective if BR directors took information discussed in meetings back to their own BR and shared appropriate resources:

> The first thing that comes to the top of my head is that I think there is a lack of information transfer from coming to the board of directors meeting, and then that CBRA Board of Directors rep going to their own board of directors meeting and kind of translating, or sharing information from the CBRA board meeting. Now, I don't know that for sure. But that's the sense I get is they're kind of two separate meetings, and not everyone is kind of translating the information that they get at CBRA down to their individual board level…Having the one point of contact is really helpful, because it allows me to disseminate the information, and then they can then kind of, you know, share it to whoever is most appropriate, because there tends to be more turnover at the individual level, I think. So, for me having to keep multiple distribution lists based on the themes and people changing, it's easier just to have the one person. So I think that really helps with communication. And then, it's difficult to fundraise or to help build capacity or get some funding when I don't have information from the site level. So, I'm trying to get them like the collective network funding so that they can build capacity. And yet I also need information from a site level to build those proposals or to have those conversations with partners to build their capacity. So it's kind of a never ending cycle. Like I need

> information from them, but they need money or capacity from me, so that being able and taking the site level information and being able to summarize it easily like in consistent categories or forms, and trying to like, be able to pull it up to the national level easily, without creating a lot of extra work for the site levels…And I don't want to add another database that they're just gonna have to learn and figure out how to add information into, so I need some way to collectively compile all that information and summarize it without adding a lot of extra work on the site level. (Participant 15)

CBRA also discussed how they hoped to create more opportunities to showcase specific individuals associated with Canadian BRs to share information and expertise among this community:

> I think that's one thing that we don't do particularly well is to pull in someone who's, you know, an expert on a particular topic and have them kind of lead it. It's always either CBRA, or an outside person. And that's something that I'd like to really see pushed is having more of a peer to peer, like, pulling together people who are already doing that on the ground or have ideas or have them lead the discussion or the sharing of information, as opposed to just CBRA coming up with these ideas. (Participant 15)

Furthermore, the perspective shared by CCUNESCO was one less directly involved with the Canadian BR network. The representative interviewed explained how collaborating with BRs was only 25% of the work they do. They explained how they act in a more regulatory role, rather than an active participant in CBRA meetings & operations. CCUNESCO described their

responsibilities to CBRA and the BR network as a direct conduit to the UNESCO headquarters. They also discussed ways CCUNESCO currently supports the BRs and the potential for increased financial aid, relationship facilitation, and help build capacities.

The interview with CCUNESCO focused on a recent collaborative study they have been conducting. The rationale behind this project stemmed from a UNESCO objective, which was paraphrased by the participant as:

> UNESCO wants the world net- well, wants all of its designated sites to do, including world heritage and the geoparks, and the biospheres, it positions them as sites for sustainability, where you can mobilize knowledge between the sites to tackle some of the biggest global problems, you know, things like climate change, loss of biodiversity and disaster risk reduction and that sort of thing. And it wants to do that by facilitating collaboration between sites within the world network, but UNESCO hasn't actually set up any kind of way that sites can do that. (Participant 16).

This discussion led to the creation of a survey where CCUNESCO collected data on common threats in UNESCO designated sites in Canada and the UK:

> And so and we've done a kind of cluster analysis to say you can group sites by the threats they face, and this and what so, essentially, what we're doing is developing a methodology which could be applied across the whole, across the world network for where sites can identify similar threats, and then there's an opportunity for them to then share knowledge. And the other thing is a site, some sites do not have a cluster because

> they don't identify any of any threats at all. So it could be that they might be particularly good at managing a particular threat. So they could share knowledge with those that are struggling with a threat, if you see what I mean. So essentially, we developed a methodology, which would help them to identify sites facing similar threats and facilitate collaboration. (Participant 16)

CCUNESCO explained how they hope to push for open science and open access to publications on this research. Circulating these findings can help BRs more specifically identify their own threats, as well as introduce collaborative solutions to common threats multiple BRs face.

Overall, CBRA and CCUNESCO both act as connecting forces between Canadian BRs and facilitate capacity building with BRs. Both representatives recognized their roles as both an organization and an individual to support BRs in their pursuit of collaboration.

Discussion

"From our perspective, collaboration has really always been our identity." (Participant 1).

All participants shared this sentiment of collective identity through collaboration. Granted that BRs have strategic goals for collaboration internationally (UNESCO), nationally (CBRA and CCUNESCO), and locally (individual BRs), it was expected that participants would have extensive insights and perspectives on the emerging themes of collaboration from this research. These findings emphasize the integral role of collaboration in UNESCO BRs. From interagency collaboration within the BR, to national collaborations between the various Canadian BRs, collaboration lies at the heart of being a BR. Thoroughly explored in the literature, collaboration within and among BRs is an incredibly complex and context-specific endeavour

(Reed et al., 2014; Reed & Price, 2020; Patriquin, 2014; Pollock, 2009; Zbyranyk, 2012). From what kinds of collaborations occur, to how frequently they occur, to who is involved in them, there are many factors that affect one's ability to partake in collaborative endeavours. Even the ability and willingness to participate in this study itself can frame participants' intent to collaborate. Equally important in this research are the BRs that did not participate. All 19 BRs were contacted about this research and 14 of them agreed to participate. The reason for the five BRs that did not participate is unknown, yet informed speculation can be made that capacity played a role in a BR's ability and desire to participate in the study. In Reed et al.'s (2014) study, they received a 100% response rate with all 15 designated BRs at the time attending a workshop and participating in the research component. This could be attributed to financial reimbursement, the multi-functionality of this event, and the direct capacity-building benefits involved. Whereas with this research, participation was completely voluntary with no compensation offered. BRs that did not participate in this research likely hold extremely valuable insights as they declined this collaborative opportunity; there are likely more barriers to participation for them than the interviewed BRs. Organizational maturity and security could also play a role in BR practitioners' ability to participate.

These findings also illuminated the current priority to collaborate between BRs. Reed et al. (2014) noted that only five out of the 15 participating BRs claimed to have collaborated with other BRs in the past, whereas all 14 participating BRs in this research confirmed having collaborated with BRs in the past, and all participants traced these collaborations back to CBRA. Reed et al.'s (2014) study seemed to act as a catalyst for inter-BR collaboration that was upheld and supported by CBRA. Participants in Reed et al.'s (2014) study identified time and money to be the top barriers to collaboration, positive attitudes, support within their boards, and a project

facilitator as top drivers for success. These barriers and enablers are supported by my findings as participants described the critical role of capacity as well as support from champions and backbone support as enablers to collaboration. Contextually, the state of BRs has evolved over the course of the past decade, and there are several important findings to add to those of Reed et al.'s (2014) research. Inclusivity and Indigenous Engagement are relatively new priorities as CBRA's Indigenous Circle was formed in 2018, and several participants expressed this catalyzed the process for inclusive engagement opportunities within their BR. Also, capacity redistribution was discussed more thoroughly as BRs mature, and new BRs are formed. Dynamic governments, funding insecurities, and the start of the COVID-19 global pandemic have also affected participants' attitudes and practices toward collaboration.

These research findings can also be practically discussed using the aforementioned theoretical frameworks, Collective Impact Theory (CIT) and Trust Theory. The potential of CIT in BRs was found to be somewhat practical, with limitations. Firstly, the three preconditions: adequate financial resources, influential champion(s), and a sense of urgency for change (Hanleybrown et al., 2012), are not fully met. Assuredly, participants identified the presence of influential champions and their importance in catalyzing collaboration and sustaining this process over time. They also described a sense of urgency for change as they actively work to meet UNESCO goals on a strict timeline and fight for their existence. Reed et al. (2014) capture this urgency for change by stating, "BRs are often caught up in a rush to complete project after project, simply to retain funding." (p.233).

However, the ambiguous condition is adequate financial resources. All participants described capacity to be a limiting factor, which includes access to funding. Significant funding is required to initiate a collaborative effort using CIT. Reed et al. (2014) discussed the uneven

and limited funding that was available almost a decade ago and how this restricted inter-BR collaboration. Funding insecurity was still discussed as a significant barrier to collaboration by participants today. The disparities in capacity between BRs threaten the usefulness of CIT in this context as all collaborating BRs must have adequate funding, as well as a champion with individual capacity. Participants also deemed capacity a limiting factor for internal collaboration with agencies within their own BR. Certain organizations were unable to commit to collaboration with the BR because of too many other priorities. This was particularly relevant when discussing Indigenous engagement in BRs and is explored as a significant barrier to collaborative inclusion throughout the literature (Cornell & Jorgensen, 2019; Hunt et al., 2008; Lane & Hibbard, 2005; Von der Porten et al., 2015). Participants recognized Indigenous perspectives to be integral to intra-BR collaboration processes, yet many participants expressed hesitation for how to appropriately involve them without infringing on capacity barriers. If possible, financial compensation for collaborative involvement could incentivize inclusive participation; yet, this could be a difficult request considering many BRs struggle to support themselves. A substantial financial investment is required to support the backbone organization, as well as to develop a shared measurement system for all agencies to monitor progress of the collaboration (Kania & Kramer, 2011). Since BRs have no secure source of funding, the potential for practically implementing CIT efforts is debatable. Mature organizations could consider using elements from CIT to enhance their collaborative efforts, but until BRs can secure a reliable source of funding, a full CIT effort may be challenging.

Certainly, the five conditions of CIT can still be useful to evaluate what enables collaboration within BRs. Four of the five conditions of CIT were supported throughout interviews: having a common agenda, mutually reinforcing activities, continuous

communication, and a backbone support organization (Kania & Kramer, 2011). Shared measurement was not a central theme throughout interviews. A common agenda and mutually reinforcing activities are discussed throughout the alignment theme as participants described the importance of a common agenda in creating a shared purpose. Actively pursuing these goals allows collaborators to undertake activities that complement one another and mutually benefit the collaborative process (Stern, 2018). The CBRA representative discussed how having a common goal can leverage sharing successful models for a whole realm of BR responsibilities in order to avoid duplication. Continuous communication was brought up dozens of times throughout each interview as the underlying enabler of all collaboration. Honest and sustained communication is critical to developing common goals and important throughout all phases of collaboration (Kania & Kramer, 2011). Lastly, the backbone support organization was extensively discussed throughout interviews when discussing the role of the BR in facilitating interagency collaboration and CBRA in facilitating inter-BR collaboration. Ideally, these backbone support organizations would have more capacity to be able to adequately support collaborative processes; but participants described that even with limited capacity, these organizations were supported by influential champions that went above and beyond personal responsibilities. The indispensable role of these champions is further supported by Reed et al.'s (2014) discussion on the importance of the project facilitator in their research. Their research participants identified the facilitator as a key enabler for the success of collaboration. Yet, this reliance on champions has been a challenge for BRs since their inception and causes staff turnover to be an imminent threat to the integrity of the collaborative process.

Another supporting dimension of CIT is trust, which can be further explored using Stern & Coleman's (2015) typology of Trust Theory. Trust is a widely studied concept in the context

of collaborative applications. Establishing trust across agencies in natural resource management has been found to support the process of collaboration (Beierle et al., 2000; Davenport et al., 2007; Stern & Coleman, 2015). Bodin et al. (2020) explored the role of trust in collaboration for environmental governance using UNESCO BRs as an empirical basis for the study. Through social network analyses of four BRs (two in Sweden and two in Canada), they relate stability with the potential to develop trust. Stability is understood as low levels of disturbance in staffing, funding, and network structures. Cultivating organizational confidence was explored and credited with increased intentions for collaboration (Bodin et al., 2020). Participants in my study discussed how stability in personal relationships can foster increased trust and how staff turnover can reduce trust. Participants revealed the ease of trusting more mature organizations with longstanding champions as they rely on these BRs to provide models for collaboration. Research on social capital also suggests creating and sustaining trust in relationships can enable higher levels of innovation in collaboration (Patriquin, 2014).

The concept of trust in collaboration has further been explored through the different dimensions of threats that surface either personally (through identity threat, opportunism, or miscommunications) or organizationally (through misalignment of goals, or as direct competition) (Williams, 2007). These findings can further be discussed using Stern and Coleman's (2015) trust typology. Participants expressed relatively high levels of procedural trust in inter-BR collaborations, which is trust in the process of collaboration itself. Participants explained how inter-BR collaborations were relatively infrequent compared to collaborations within their own BR. Due to this infrequency and large geographic distances, participants explained how they established more organizational relationships between BRs, rather than personal. Some participants admitted they did not have strong interpersonal relationships with

representatives in all of the other BRs; yet, they trusted in the collaborative system facilitated by CBRA. Participants also expressed a sense of affirmative and dispositional trust as they felt a sense of belonging as UNESCO BRs and had a "perceived shared identity" in the Canadian BR network (Stern & Coleman, 2015). They also expressed strong trust in CBRA and its ability to facilitate collaboration between BRs. However, participants described lower levels of rational trust in the context of inter-BR collaborations. Participants lacked rational trust as they questioned the utility of inter-BR collaboration as well as were unsure about the potential outcome. Some participants questioned the potential benefits of these collaborations given the diverse contexts of each BR and feared wasting capacity on inefficient collaboration.

In the context of interagency trust within BRs, participants expressed how low levels of affinitive trust could be a barrier as some agencies consistently questioned the legitimacy of the BR. Participants also described low levels of rational trust in interagency collaboration, which is based on their ability to make a calculated decision to trust or not given the "expectation of reciprocity or perceived utility in strategic interaction" (Stern & Coleman, 2015; p.123). Although participants recognized the strategic need to collaborate to fulfill BR responsibilities, several participants described interagency trust to be compromised when working with agencies with different goals than their own (e.g., the private sector or large industry). Transparent communication, consistent check-ins, and relationship building all contributed to participants' abilities to trust in collaborative endeavours. Additionally, participants explored the specifics of trust in their partnerships with Indigenous Communities. One participant described how early engagement and co-creation through consultation can create trusting relationships; as opposed to collaborating out of obligation and hoping Indigenous People will simply "cooperate". They

discussed the importance of moving beyond the "check-box" mentality toward creating meaningful and lasting relationships based on ethical obligation, not a strategic obligation.

In general, both CIT and Trust Theory were useful to analyze the incredibly complex processes of collaborating within and between BRs. Although CIT may not be the best-suited model for collaboration between BRs, it could serve as useful for mature BRs considering interagency collaboration. Trust theory is a useful lens to explore collaboration and relationship building and could be investigated more specifically in future research.

Limitations and Future Research

One important limitation of this research was the lack of participation from all 19 BRs. Although a 74% response rate is agreeable, the BRs that did not participate would have valuable insights as they declined this opportunity to collaborate. These research findings are subject to individual participants' biases, and certain barriers to collaboration may only be present for the BRs that did not respond to interview invitations. Another limitation was the potential language barrier for participants as the interview was only offered in English. Two of the four BRs in Quebec did not participate in the study, and this language barrier could have played a role.

Another limitation of this chapter was the researcher's ability to distinguish interagency collaboration within the BR and inter-BR collaboration. Although adequately separated by participants throughout interviews, the PI should have further distinguished these differences throughout analysis and discussion for clarity.

Future research could analyze the role that different governance structures play on a BR's willingness to collaborate with other BRs. Each participant briefly discussed the structure of their BR in this study, but a more detailed discussion on the role of structure and governance in

collaboration could be valuable to further unravelling the common enablers and barriers to inter-BR collaboration. Additionally, research on a BR's willingness to collaborate internationally with BRs outside of Canada could be insightful as the role of geographic distance become greater. Comparing international to national collaboration could reveal to what extent geographic and cultural differences act as barriers to collaboration.

Conclusion

The purpose of this research was to understand the intricacies of collaboration in Canadian BRs. From interagency collaboration within BRs, to inter-BR collaboration across Canadian BRs, this research highlights the benefits of collaboration, along with the common challenges. Participants navigated conversations about general collaboration while specifying their experiences subjectively. The exploratory findings from this study contribute to the understanding of collaborative processes of UNESCO BRs and provide a baseline for more specific research in this field. From the important role of capacity and the Canadian BR network to inclusivity and Indigenous engagement to current collaborative mechanisms and the barriers and enablers to these processes, this research sheds light on a variety of topics of interest to UNESCO BRs. This study has the potential for transferability beyond the scope of BRs as it analyzes characteristics of collaboration itself. This research identifies the broad enablers and barriers of collaboration in a multistakeholder context, making it applicable to many collaborative efforts undertaken by an agency. Similar agencies can use this information as a preliminary knowledge source for future collaboration endeavours.

References

Bailey, J. (2008). First steps in qualitative data analysis: Transcribing. *Family Practice*, *25*(2), 127-131. https://doi.org/10.1093/fampra/cmn003

Beaver Hills Initiative (BHI). (2016). *Beaver Hills Initiative Strategic Plan (2016-2019)*.

Beierle, T. C., & D. M. Konisky. (2000). Values, conflict, and trust in participatory environmental planning. *Journal of Policy Analysis and Management*. *19*(4), 587–602.

Bernard, H. R. (1988). *Research methods in cultural anthropology*. Sage Publications.

Bidault, F., & Castello, A. (2010). Why too much trust is death to innovation. *MITSloan Management Review, 51*(4), 33-39.

Blind, P. K. (2006). *Building trust in government in the twenty-first century: Review of literature and emerging issues*. [Paper presentation]. 7th Global Forum on Reinventing Government. Vienna, Austria.

Braun, V., & Clarke, V. (2012). Thematic Analysis. In H. Cooper (Eds.), *APA Handbook of Research Methods in Psychology: Vol. 2. Research Design* (p.57-71). American Psychological Association.

Bodin, O., Baird, J., Schultz, L., & Armitage, D. (2020). The impacts of trust, cost and risk on collaboration in environmental governance. *People and Nature, 2*, 734-749. https://doi.org/10.1002/pan3.10097

Byrnes, K. G., Kiely, P. A., Dunne, C. P., McDermott, K. W., & Coffey, J. C. (2020). Communication, collaboration and contagion: "Virtualisation" of anatomy during COVID-19. *Clinical Anatomy*, *34*, 82-89.

Canadian Biosphere Reserves Association. (2012). *Canadian Biosphere Reserves Association Annual Report 2011-12*. https://www.biospherecanada.ca/annual-reports-rapports-annuels

Canadian Biosphere Reserves Association. (2019). *Vision*. Retrieved May 1, 2020 from: https://www.biospherecanada.ca/

Canadian Biosphere Reserves Association. (2021). *Strategic Plan: 2020-2025*. United Nations Educational, Scientific, and Cultural Organization. https://static1.squarespace.com/static/5735fdc137013b8eeb217d63/t/5e986ffc9e859f2ac28149b0/1587048448464/CBRA+StrategicPlan+2020_2025.pdf

Canadian Commission for United Nations Educational, Scientific, and Cultural Organization. (2021). *Biosphere Reserves Network*. Canadian Commision for UNESCO. https://en.ccunesco.ca/networks/biosphere-reserves-network

Canadian Commission for United Nations Educational, Scientific, and Cultural Organization. (2022). *Action for the Future: 2021-2026 Strategic Plan*. https://en.ccunesco.ca/about-ccunesco/governance/strategic-plan

Cohen, D., & Crabtree, B. (2008). *Qualitative research guidelines project: Semi-structured interviews*. Robert Wood Johnson Foundation. https://sswm.info/sites/default/files/reference_attachments/COHEN%202006%20Semistructured%20Interview.pdf

Cook, T. E., & Gronke, P. (2005). The skeptical american: Revisiting the meanings of trust in government and confidence in institutions. *The Journal of Politics*, *67*(3), 784-803.

Cornell, S., & Jorgensen, M. (2019). What are the limits of social inclusion? Indigenous Peoples and Indigenous Governance in Canada and the United States. *American Review of Canadian Studies, 49*(2), 283-300.

Cuong, C. V., Dart P., & Hockings M. (2017). Biosphere reserves: Attributes for success. *Journal of Environmental Management*, *118*, 9-17.

Davenport, M. A., Leahy, J. E., Anderson, D. H., & Jakes, P. J. (2007). Building trust in natural resource management within local communities: A case study of the Midewin National Tallgrass Prairie. *Environmental Management, 39*, 353-368.

DeFilippis, E., Impink, S. M., Singell, M., Polzer, J. T., & Sadun, R. (2020). *Collaborating during coronavirus: The impact of COVID-19 on the nature of work*. (NBER Working Paper No. 27612). National Bureau of Economic Research. https://doi.org/10.3386/w27612

Edge, S., & McAllister, M. L. (2009). Place-based local governance and sustainable communities: lessons from Canadian biosphere reserves. *Journal of Environmental Planning and Management, 52*(3), 279-295. https://doi.org/10.1080/09640560802703058

Frontenac Arch Biosphere. (2018). *Frontenac Arch Biosphere Network Strategic Plan 2018-2019*. https://www.frontenacarchbiosphere.ca/about

Frooman, J. (1999). Stakeholder influence strategies. *Academy of Management Review, 24*, 191–205.

Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information system research. *European Journal of Information Systems, 2*, 135-146.

Grzanka, P. R. (2010). *White guilt: Race, gender, sexuality and emergent racisms in the contemporary United States* (3409581.) [Doctoral dissertation, University of Maryland]. ProQuest Dissertations Publishing.

Hanleybrown, F., Kania, J., & Kramer, M. (2012). Channeling change: Making collective impact work. *Stanford Social Innovation Review.* https://mappofskp.net/wp-content/uploads/2015/05/SSIR-Collective-Impact-2.pdf

Head, G. (2003). Effective collaboration: deep collaboration as an essential element of the learning process. *The Journal of Educational Enquiry, 4*(2), 47-62.

Hertzog, M. A. (2008). Considerations in determining sample size for pilot studies. *Research in Nursing & Health*, *31*, 180-191.

Hunt, J., Smith, D., Garling, S., & Sanders, W. (2008). Between a rock and a hard place: Self-determination, mainstreaming and Indigenous Community governance. In L. Slater, (Eds.) *Contested governance: Cultural, power and institutions in Indigenous Australia* (pp.27-53). Australian National University Press.https://doi.org

International Union for Conservation of Nature. (2021). *Biosphere Reserves*. https://www.iucn.org/commissions/commission-ecosystem-management/our-work/cems-thematic-groups/biosphere-reserves

Kania, J., & Kramer, M. (2011). Collective Impact. *Stanford Social Innovation Review, 9*(1), 36-41. https://doi.org/10.48558/5900-KN19

King, C., & Cruickshank, M. (2012). Building capacity to engage: Community engagement or government engagement? *Community Development Journal, 47*(1), 5-28. https://doi.org/10.1093/cdj/bsq018

Kvale, S. (2006). Dominance through interviews and dialogues. *Qualitative Inquiry*, *12*(3), 480-500. https://doi.org/10.1177/1077800406286235

Lane, M. B., & Hibbard, M. (2005). Doing it for themselves: Transformative planning by Indigenous Peoples. *Journal of Planning Education and Research, 25*(2):172–184.

Markiewicz, A. (2005). 'A balancing act': Resolving multiple stakeholder interests in program evaluation. *Evaluation Journal of Australasia*, *4*(1-2), 13-21.

Mayan, M. J. (2009). Theory and method. In M. J. Mayan (Eds.), *Essentials of Qualitative Inquiry* (pp. 22-33). Routledge. https://doi.org/10.4324/9781315429250

Maryam, D. (2016). Establishing construct validity and reliability: Pilot testing of a qualitative interview for research in Takaful (Islamic Insurance). *Qualitative Report*, *21*(3), 521-528.

Neeson, T. M., Ferris, M. C., Diebel, M. W., Doran, P. J., O'Hanley, J. R., & McIntyre, P. B. (2015). Enhancing ecosystem restoration efficiency through spatial and temporal coordination. *Proceedings of the National Academy of Sciences*, *112*(19), 6236-6241.

Newing, H, Eagle, C. M., Puri R. K., & Watson C. W. (2011). *Conducting research in conservation: A social science perspective*. Routledge Taylor & Francis Group.

Ostrem, J. A., & Hvenegaard, G. H. (2020). Reaching common ground: The potential for interagency collaboration in UNESCO biosphere reserves. *International Journal of UNESCO Biosphere Reserves, 4*(1). https://doi.org/10.25316/IR-15211

Parkins, J. R., & Mitchell, R. E. (2005) Public participation as public debate: A deliberative turn in natural resource management. *Society and Natural Resources*, 18(6), 529-540. https://doi.org/10.1080/08941920590947977

Patriquin, D. L. (2014). *Landscape of hope: The influence of place and social capital on collaborative action in sustainable management* (Publication No. 10100143) [Doctoral dissertation, University of Alberta]. ProQuest Dissertations Publishing.

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage Publications.

Plummer, R., Baird, J., Dzyundzyak, A., Armitage, D., Bodin, O., & Schultz, L. (2017). Is adaptive co-management delivering? Examining relationships between collaboration, learning and outcomes in UNESCO Biosphere Reserves. *Ecological Economics, 140,* 79-88.

Pollock, R. M. (2009). *The role of UNESCO Biosphere Reserves in governance for sustainability: Cases from Canada* (Publication No. NR68242) [Doctoral dissertation, Trent University]. ProQuest Dissertations Publishing.

QSR International Party Ltd. (2018). *QRS International: NVivo* (Version 12). https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home

Reed, M. G., Godmaire, H., Abernethy, P., & Guertin, M. (2014). Building a community of practice for sustainability: Strengthening learning and collective action of Canadian biosphere reserves through a national partnership. *Journal of Environmental Management, 145*, 230-239.

Reed, M. G., & Price, M. F. (Ed.). (2020). UNESCO Biosphere Reserves: Supporting biocultural diversity, sustainability and society. Routledge: Earthscan, Routledge Taylor & Francis Group.

Reynolds, S. J., Schultz, F. C., & Hekman, D. R. (2006). Stakeholder theory and managerial decision-making: Constraints and implications of balancing stakeholder interests. *Journal of Business Ethics, 64*, 285-301.

Richards, K. A. R., & Hemphill, M. A. (2018). A practical guide to collaborative qualitative data analysis. *Journal of Teaching in Physical Education*, *37*(2), 225–231. https://doi.org/10.1123/jtpe.2017-0084

Rudd, L. F., Allred, S., Bright Ross, J. G., Hare, D., Nkomo, M. N., Shanker, K., Allen, T., Biggs, D., Dickman, A., Dunaway, M., Ghosh, R., Gonzalez, N. T., Kepe, T., Mbizah, M. M., Middleton, S. L., Oommen, M. A., Paudel, K., Sillero-Zubiri, C., & Davalos, A. (2021). Overcoming racism in the twin spheres of conservation science and practice. *Proceedings of the Royal Society B: Biological Sciences, 288* https://doi.org/10.1098/rspb.2021.1871

Shane, S. A. (1994). Are champions different from non-champions? *Journal of Business Venturing*, *9*(5), 397-421.

Shultz, L., Duit, A., & Folke, C. (2011). Participation, adaptive co-management, and management performance in the world network of biosphere reserves. *World Development, 39*(4), 662-671.

Stern, M. J. (2018). *Social science theory for environmental sustainability: A practical guide*. Oxford University Press.

Stern, M. J., & Coleman, K. J. (2015). The multidimensionality of trust: Applications in collaborative natural resource management. *Society & Natural Resources*, *28*(2), 117-132. https://doi.org/10.1080/08941920.2014.945062

Tate, W. L., Ellram, L. M., & Kirchoff, J. F. (2010). Corporate social responsibility reports: A thematic analysis related to supply chain management. *Journal of Supply Chain Management, 46*(1), 19-44.

Tschannen-Moran, M. (2001). Collaboration and the need fortrust. *Journal of Educational Administration, 39*(4), 308-331. https://doi.org/10.1108/EUM0000000005493

United Nations Educational, Scientific, and Cultural Organization. (2021). *Biosphere Reserves*. https://en.unesco.org/biosphere

United States Biosphere Network. (2022). https://www.nps.gov/subjects/connectedconservation/us-biosphere-network.htm

Von der Porten, S., de Loe, R., & Plummer, R. (2015). Collaborative environmental governance and Indigenous Peoples: Recommendations for practice. *Environmental Practice, 17*, 134-144. https://doi.org/10.1017/S146604661500006X

Waizenegger L., McKenna, B., Cai, W., & Bendz, T. (2020) An affordance perspective of team collaboration and enforced working from home during COVID-19, *European Journal of Information Systems, 29*(4), 429-442. https://doi.org/10.1080/0960085X.2020.1800417

Williams, M. (2007). Building genuine trust through interpersonal emotion management: A threat regulation model of trust and collaboration across boundaries. T*he Academy of Management Review*, 32(2), 595-621.

World Wildlife Fund. (2000)
https://d2ouvy59p0dg6k.cloudfront.net/downloads/collaboration.pdf

Zbyranyk, O. (2012). *Collaboration between researchers and biosphere reserve practitioners: A case study of Redberry Lake Biosphere Reserve, Canada*. [Unpublished master's thesis]. University of Saskatchewan.

Chapter 5: Conclusions

Local versus National Collaboration: Perspectives from the Canadian Biosphere Region Network

Study Comparison

This discussion draws on findings from the two preceding Chapters on collaboration within the Beaver Hills Biosphere (BHB) (Chapter 3) and collaboration between Canadian Biosphere Regions/Reserves (BRs) (Chapter 4). This study consisted of semi-structured interviews with two groups of individuals: representatives of environmental education or heritage interpretation in the BHB (local collaboration) and Canadian BR managers and directors (national collaboration between BRs). For both studies combined, the average length of interview was 33 minutes and 11 seconds. Interviews were then thematically analyzed using NVivo12 software and coded separately for local vs national collaboration. These codes were then compared using comparison analytics and interpreted by the PI. For a more detailed understanding of these studies and methods used for this research, please refer to Chapter 3 and Chapter 4 of this thesis.

While local collaborations within individual BRs are ubiquitous, collaboration across BRs is not as common (CBRA, 2021). Despite collaboration being a widely studied concept across disciplines, few have compared the intricacies of collaboration on different geographic scales (Galaso & Kovarik, 2020). Local geographic networks have been applauded for their ability to empower communities and build capacity (Annis, 2006). This geographic proximity can enable more opportunities for knowledge sharing, but limits who is able to access this knowledge (D'Amore et al., 2013). In contrast, global collaboration is more recognized for its

novel, innovative, and adaptive nature (MacCormack et al., 2007; Bodyslav, 2011). Although the increased geographic distance was previously considered a major barrier to collaboration, current advancements in technology make collaboration accessible remotely. However, cultural differences that affect collaborations continue to exist and must be considered (D'Amore et al., 2013).

The diversity of actors has also been explored as a property of collaboration dependent on spatial proximity. Local collaboration often has more dense and homogeneous networks of people, whereas global collaboration often has more dispersed and diverse social networks (Partiquin, 2013; Lin, 2001; D'Amore et al., 2013). These differences can present opportunities for inclusivity and extensive knowledge sharing.

Granted the scale of collaboration within the context of UNESCO BRs is relatively understudied, this research provides a foundation for this comparison. There are many overarching similarities found between local and national collaborations throughout this study, yet there are several nuances where they differ. Some of the key differences between local collaboration and national collaboration discussed in this chapter are found in Table 5.1.

Table 5.1
Similarities and differences of local vs. national collaboration from research findings. Numbers represent the contents of each row for ease of reference during discussion

Local Collaboration (Interagency collaboration between environmental education organizations within the BHB)	**National Collaboration** (Collaboration between Canadian BRs)
[1] More unstructured collaboration: - More informal - On a more ad-hoc basis - More frequent opportunities - Undefined length	[1] More structured collaboration: - More formal - On a purposeful schedule - Less frequent opportunities - Defined length
[2] Higher awareness of opportunities	[2] Lower awareness of opportunities

[3] More outward focus	[3] More inward focus
[4] More specific common goals	[4] More broad common goals
[5] More interpersonal barriers	[5] More organizational barriers
[6] More homogeneous networks	[6] More heterogeneous networks
[7] Interpersonal trust (dispositional, rational, and affinitive trust)	[7] Organizational trust (procedural trust)
Similarities	
[8] Capacity is a predominant enabler/barrier	
[9] Importance of a backbone support agency	
[10] The development of subgroups for collaboration	
[11] Importance of inclusivity and representation in collaboration	

Firstly, the local and national collaboration explored throughout this study differed in their collaborative structures [1]. Collaborative structures refer to the different levels of formality, spontaneity, frequency, and length of collaboration. Existing local mechanisms of collaboration within the BHB were predominantly described as informal collaborations undertaken spontaneously. Because of the proximity and established interpersonal relationships, participants described more instances of collaborative opportunities but with less specificity on the length of collaboration. Several participants described the tendency of informal collaboration throughout their interviews: “I will sit down and have a chat just catch up for an hour or so we have started to do that on a more ad hoc basis.” (Participant D); “It's just really informal. That's it, we just call each other every couple weeks, have a chat, find out what's going on, find out how we can help each other, if there's some way we can and how we support others.” (Participant A); and “Very informal dialogue from meeting once a year or twice a year to a few years ago”

(Participant C). Contrarily, collaborations between Canadian BRs were described to be more formal because of the additional planning involved due to geographic distance and difference in time-zones. Collaborations were also discussed to occur less spontaneously and required more scheduling in advance. Bauer et al. (2020) discuss the formal mechanisms of collaboration and explore what factors affect an agency's decision to engage in formal or informal collaborations. They note that agencies with resource and capacity constraints often engage in formal collaborations for risk-mitigation and capacity redistribution reasons. They also found that capacity and the characteristics of organizational leaders are the main predictors of a collaboration's formality (Bauer et al., 2020). Canadian BRs explicitly identified capacity constraints as a main barrier to collaboration and the reliance on champions as an enabler. Because of geographic, temporal, and sociocultural differences, collaboration across BRs was discussed to be more scheduled and formal in nature. The most frequently mentioned inter-BR collaborations were those with a defined length and purpose (e.g., the Striking Balance docuseries, the Tree Project, the Amazing Places initiative, and CBRA's Indigenous Circle). These collaborations were praised for catalyzing collaboration and were all described to be formal in nature. Although projects like these were discussed within the BHB (e.g., the Snow Goose Festival), participants in the BHB study more frequently discussed informal collaborations that occurred consistently without very much structure.

Further, participants of the BHB study noted access to knowledge as a key enabler of collaboration [2]. Many recounted gaining knowledge of current events through these informal relationships. Because there are high levels of communication and interpersonal relationships formed beyond the organization, information about what opportunities for collaboration exist were more readily available. Additionally, geographic proximity can facilitate increased levels of

communication, which translates into increased opportunity for knowledge-sharing within tight-knit communities like the BHB (D'Amore et al., 2013). However, within the Canadian BR context, access to knowledge was perceived as a much larger constraint, partly because BRs themselves expressed a lack of confidence inviting other BRs to collaborate if not specifically and formally approached. BRs clearly identified concern for their own and others' capacities, thus were not so ambitious to pursue collaborations that were not formally structured, funded, and supported in fear of inefficiency. All participants in the Canadian BR study described the increased capacity (staff, time, resources, and funding) necessary to collaborate beyond their BR and the perceived threat of allocating this capacity outwardly [3]. BRs expressed how their inward focus could prevent them from engaging in collaborative opportunities. This is clearly illustrated by one manager's quote:

> The biggest thing, I think, would just be capacity, because who's going to participate? And it's one thing just to sit in on the meetings, but you also want to be able to contribute, for instance, if they have a project that they're trying to do collaboratively. And we have to go no, sorry. Because you know, our plate's just full with our own projects and work. (Participant 4)

Although this sentiment was somewhat shared by a couple participants in the BHB study, the majority of participants described more of an outward focus in their local collaborations. This may have been partly due to the increased overlap in specific goals [4]. Since participants in the BHB study were specifically associated with environmental education and heritage interpretation, their goal alignment went beyond synergies promoted by being part of the BHB.

This alignment can allow for more spontaneous collaboration because many organizations within the BHB are likely working on similar projects. The goals of Canadian BRs were not as specifically aligned since most of their collaborations relied on CBRA initiatives. The priorities of Canadian BRs can be so vastly different depending on environmental, social, and economic circumstances of place (Patriquin, 2014; Reed et al., 2014). BRs are connected through the larger, more broad goals of collaboration rather than the specific goals described throughout the BHB context. A similar trend was observed by Cheng and Daniel's (2005) analysis of the role of geographic scale in collaborative watershed planning. They observed a smaller, more locally-based collaborative watershed planning effort was strongly connected by group identification and goals framed as directly benefiting the connection between watershed health and community well-being. In contrast, the large-scale planning effort was based solely on organizational affiliation with no perceived direct link between watershed health and community wellbeing. A similar sentiment was expressed through national collaboration among Canadian BR participants as their collective identity relied more strongly on CBRA. These differences in individual versus agency goal alignment translated into interpersonal and organizational barriers [5]. BHB participants explained being more susceptible to barriers because of interpersonal relationships, whether that be a lack of trust, the exclusivity of opportunities, or key staff members turning over. Canadian BRs discussed barriers on a more organizational level as the vast differences in capacity and BR functions posed a threat to working in harmony with one another.

The variety of actors involved in collaborative networks structures across geographic scales was also different between local and national collaborations [6]. Environmental educators and heritage interpreters had a largely homogeneous network as participants expressed similarities in goals and interests within their network. Lambright et al. (2010) observed how

homogeneous groups can enable trust to be developed more readily, and more frequent and positive interactions to occur. There was more diversity in organizational and personal goals within the Canadian BR context. However, diversity in network structure can be better suited to address the community-level issues faced by BRs (Flora & Flora, 2013; Patriquin, 2014; Pretty & Smith, 2004). Patriquin (2014) further goes on to explain how "bridging the gap between diverse groups, particularly those that have not worked together in the past requires other factors to bring interested parties together, such as visionary leadership (Stephenson, 2011) or a common goal (Diekert, 2012)." (p.36). This is supported through my research as champions, and common goals were explicitly mentioned by participants as key enablers of inter-BR collaborations.

Indeed the differences in network composition also affected the types of trust associated with local versus national collaborations [7]. BHB participants expressed having high levels of dispositional, rational, and affinitive trust, while Canadian BR participants expressed having higher levels of procedural trust (Stern & Coleman, 2015). Galaso & Kovarik (2020) note local networks have stronger ties and facilitate increased levels of trust among actors. Yet, they also explain how, although non-local networks have weaker ties, they can provide access to novel and creative solutions beyond interpersonal relationships. Thus, this tendency for higher levels of interpersonal trust in local networks versus higher levels of procedural trust in the system in national collaboration can be expected.

Nonetheless, in both local and national collaborations, there were many similarities across scale. Capacity, a backbone support agency, and prioritizing inclusivity were consistent factors across collaborative scales. Both national and local collaboration studies supported the notion that capacity was an important, if not the most important, factor that determines an

agency's willingness to collaborate [8]. It is reasonable that capacity plays a critical role in an agency's operations and existence in general, thus it was expected to play a critical role in collaboration. The role of capacity also was the limiting factor for both scales in the context of CIT. Both local and national collaborations were found to have supporting elements to apply CIT efforts, yet neither set of findings was fully appropriate for CIT initiatives. However, the condition of a backbone support organization was found to be extremely important across scales as both sets of participants discussed the need for a connecting force to facilitate collaboration [9]. Moreover, within the discussion of backbone support organizations, participants identified the reliance on influential champions. This reliance can become a threat to operations and collaborations when champions move on from their roles. The possibility of this outcome was explored throughout both sets of interviews as participants appealed for organizational stability.

Another similarity observed throughout interviews was the creation of subgroups for collaborative processes [10]. A clear example identified in the BHB was the "Good Neighbours" group that was established to promote informal communication and facilitate interagency collaboration. Canadian BRs also identified various subgroups based on region. Many participants explained how they worked mostly with BRs in geographic proximity. These subgroups allowed participants to be more specific with their goals and relate to one another's contexts more thoroughly. Another key area of synergy for participants was the ambition of increasing inclusivity to collaborative opportunities [11]. Whether this be interagency collaboration or the more broad inter-BR collaborations, participants identified many missing perspectives in their partnerships and the threat that the lack of inclusivity has on the integrity of genuine collaboration. Local collaborations can be more susceptible to being exclusive because of the interpersonal relationships and complacency in affairs; yet national collaborations are

subject to decreased awareness of who all the actors are and how to get them involved (Canham & Bunescu, 2020).

The patterns of collaboration observed in this research can characterize important barriers between local and national collaborations. Although briefly discussed, both levels of collaboration also had many similar enablers and barriers that can be transferable across scales. The specificities of each factor are where local versus national collaborations differed; for example, both prioritized common goals and trust, but the specificity of goals and the type of trust differed across scale. Overall, the differences and similarities discussed between local and national collaborations can provide valuable understanding for collaborations within BRs as they move forward.

Research Limitations

Similar to most researchers across the globe, this research was significantly impacted by the COVID-19 pandemic. Shortly after the public health emergency was announced in Canada, this research quickly pivoted to occur completely remotely. The initial trajectory for this research was to complete two sets of interviews, one in the summer of 2020 and the next in the summer of 2021, after the BHB had implemented a new communications plan. However, most environmental education and heritage interpretation programming was halted or adapted, and many agencies were unable to do any programming in the summer of 2020. This project transformed into a more exploratory study analyzing the current mechanisms of collaboration and seeking information to enhance current collaborative efforts. Interviews that were originally planned to occur in person occurred remotely via telephone or video call. Although this posed several challenges for the PI and multiple reworkings of the research project, this also opened up

the opportunity for a new research avenue that had not previously been considered: interviewing across Canadian BRs. With virtual communications becoming commonplace, BRs from across Canada were invited to participate in the study, which provided valuable insights into interagency collaboration beyond the BHB. There are a few potential limitations to remote interviews. As the level of rapport decreases, there are reductions in social cues through body language, incongruous interview ambience, and technological shortcomings (Opdenakker, 2006). Fortunately, the researcher had pre-existing relationships and introductions with multiple participants, which increased levels of comfort and rapport. This means of communication had also become the norm for many during the pandemic and is a valuable alternative to in-person interviews in the future.

Each method of data collection has its advantages and disadvantages. On the one hand, the semi-structured interview approach allowed for rich, in-depth discussions. On the other hand, they also leave room for personal bias and lack of awareness (Patton, 2002). Additionally, there are potential limitations in regard to the skill of the interviewer. Misinterpretation, slow reactivity, and an absence of probes can hinder the data collected throughout the interview process (Patton, 2002). The interview process is susceptible to common cognitive biases such as availability heuristic, seeing patterns where they don't exist, normative biases, and preferences for stories over statistics (Stern, 2018). However, acknowledging these biases from a disposition of humility and idiosyncratic understanding can help offset their looming effect on social science research (Stern, 2018). Other limitations of qualitative research lie in its subjective nature, replicable difficulty, generalization, and lack of transparency (Cresswell, 2017).

Additionally, the number of interviews could pose a potential limitation in analytical capability. I conducted 39 interviews for this research, with the average length of interview being

33 minutes and 11 seconds. Because of the highly subjective nature of this research, the interviewer noted being short on time to discuss all of the topics on the interview guide in a nuanced fashion. With a concept as complex and comprehensive as collaboration, the specificity of the research itself can be a constraint. The limitation of focusing too broadly, especially within the Canadian BR context, may have restricted the PI's ability to see important details. There was also no other coder for this research which meant there was no opportunity for interrater reliability.

Despite having a relatively large sample size for a qualitative study at the master's level, several organizations did not participate in interviews, both within the BHB and across Canada. These participants likely had very valuable contributions to this study as they declined this opportunity to participate. BHB organizations and Canadian BRs that could not participate in the study likely did not have the capacity to participate, which is unfortunate because these agencies are likely the ones who could benefit most from collaborative opportunities. Likewise, interviews were only offered in English, which may have posed enough of a barrier to dissuade participation. Of the five BRs that did not participate, two are located in Quebec, one in the Northwest Territories, one in Manitoba, and one in Nova Scotia. Given that there are multiple other official languages within these provinces and territories, participants may have been discouraged by an interview only offered in English.

Additionally, the demographic of participants could be a limitation of these findings. Although there is a relatively equal distribution between males and females, the majority of participants were of European descent, which participants themselves identified as an important consideration across Canadian BRs. This homogeneity of actors should be considered to further understand the findings from this research. This research could greatly benefit from increased

perspectives from Indigenous Peoples, youth, and new Canadians as participants identified these groups as missing perspectives in current collaborations. Their unique perceived enablers and barriers to collaboration would likely differ significantly from these research findings and would provide valuable details into the prevalence of exclusion within these collaborations.

Also, responses from participants were directly tied to their position within the education organization or respective BR. Their role within the organization could have affected their response as they are all experiencing collaboration subjectively from that position. A further distinction between the participant speaking on behalf of the agency versus on behalf of themselves personally should have been considered further.

For more specific limitations of each study, see the limitations section of Chapters 2, 3, and 4.

Research Applications and Future Research

This research could be greatly supported by future research on collaboration processes in UNESCO BRs. A similar study could be conducted across sectors of operations within BRs to further understand commonalities of collaborative processes facilitated by BRs (e.g., operations, planning, governance, etc.). One specific discussion of interest participants engaged in was how to facilitate collaboration through Indigenous engagement. A specific study centered around Indigenous engagement within BRs and case studies of how BRs' facilitate these relationships could be valuable for UNESCO BRs in colonial states. Further, this study could be extended to include international collaborations amongst BRs. The CCUNESCO representative of this study noted current efforts to collaborate internationally at the upper-management level with other countries' BR commissions. They also explained how Canadian BRs are connected to a worldwide network called EuroMAB that connects individual BRs across Europe and North

America. Future research to complement these findings could include an international study to look at how other BRs facilitate collaboration in their respective countries, as well as across countries. The mechanisms of collaboration involved in international collaboration could then be compared with local and national collaborations in BRs. Additionally, the role of UNESCO in international collaborations could be analyzed (e.g., offering conferences, exchanges, resource sharing opportunities, etc.). As BRs are inherently interconnected systems, dynamic environmental, economic, and social contexts will influence the future validity of study results.

Additionally, similar studies focusing on factors such as BR maturity and size could be pursued to add context to the existing body of research on collaboration in BRs. Factors such as maturity, size, and capacity are likely related and since participants from this study deemed capacity one of the most important enablers of collaboration, a more quantitative study would be welcome. Albeit empirically challenging, an analysis of the levels of collaboration could also be valuable. Differentiating collaboration based on levels of innovation, distinguishing cooperation from collaboration, could show specific enablers to engaging in more fruitful collaborative experiences.

Future research should remain mindful of participants' capacity to engage in research processes. Hopefully, this research will contribute to capacity building for BRs and be made available through webinars, short articles, and conference presentations.

Conclusions

The purpose of this thesis was to explore the intricacies of collaboration in UNESCO BRs. This research strived to leverage the perspectives of practitioners within BRs and how they perceive collaborative processes. Through a set of interviews conducted with environmental

educators and heritage interpreters within the BHB, Chapter 2 explored the nuances of local collaboration and participant recommendations for future collaborations. Overall, participants expressed relative satisfaction with the current mechanisms of collaboration in place. This satisfaction should be carefully considered over time as it has the potential to transform into complacency that threatens the creativity and innovation of collaborative processes. Chapter 3 examined another set of interviews with representatives of Canadian BRs, exploring both interagency collaboration within the BR and more comprehensively, national collaboration between different Canadian BRs. Inter-BR collaborations were reported as fairly infrequent, predominantly because of capacity constraints. However, participants expressed that most of the past instances of inter-BR collaboration were facilitated by CBRA, and they detailed the value of this backbone support agency. Chapter 4 compared the previous two chapters, shedding light on some of the differences and similarities of collaboration between local versus national collaboration. Several important differences were observed through the two sets of interviews; yet, similarities such as the need for adequate capacity and a backbone support agency were noted. Further, both groups identified current gaps in inclusivity and expressed concern for improving inclusivity in future collaborative efforts. Throughout this thesis, CIT and Trust Theory were used to frame discussion around the enablers and barriers of collaboration within BRs. I concluded CIT to be only somewhat applicable to BR collaborations. Ambiguity in capacity threatens the application of CIT efforts, yet the five conditions of CIT were supported as enablers of collaboration to some extent throughout both sets of interviews. Stern and Coleman's (2015) trust typology was useful to uncover latent enablers of creating and sustaining trust. Dispositional, rational, and affinitive trust were observed primarily in local and interpersonal

collaborations; however, procedural trust was observed largely as an enabler of national inter-BR collaborations.

Findings from this research provide a foundation for comparing different scales of collaboration in UNESCO BRs. Both the BHB and CBRA can use this research as a baseline analysis of their role as a backbone support organization for catalyzing and sustaining collaborative processes. This research can also extend beyond Canadian BRs and provide valuable insights for UNESCO BRs worldwide. Collaboration has been clearly identified on the international, national, and local levels as a priority for UNESCO BRs. Understanding the specific barriers agencies face in collaborative pursuits can enhance the agency's ability to proactively offset them. By leveraging communities and empowering individuals, BRs are uniquely positioned to achieve collective action through collaboration.

References

Annis, R. (2006). *Regional round table overview: Community collaboration project: Empowering communities and building capacity*. Rural Development Institute, Brandon University.

Bauer, Z., AbouAssi, K., & Johnston, J. (2020). Cross-sector collaboration formality: The effects of institutions and organizational leaders. *Public Management Review, 24*(2), 159-181. https://doi.org/10.1080/14719037.2020.1798709

Bodyslav, A. (2011, April). *Knowledge and collaboration for global innovation*. [Paper]. Knowledge and Communication in the Globalization Era. https://www.researchgate.net/publication/230867933_Knowledge_and_collaboration_for_global_innovation

Canadian Biosphere Reserves Association. (2021). *Strategic Plan: 2020-2025.* United Nations Educational, Scientific, and Cultural Organization. https://static1.squarespace.com/static/5735fdc137013b8eeb217d63/t/5e986ffc9e859f2ac28149b0/1587048448464/CBRA+StrategicPlan+2020_2025.pdf

Canham, A. R., & Bunescu, L. (2020). Advancing inclusivity and citizenship: Adapting theory, changing practice. In E. Sengupta, P. Blessinger, & M. Makhanya (Eds.) *Developing and supporting multiculturalism and leadership development : international perspectives on humanizing higher education* (Vol. 30, pp.63-83). Emerald Publishing Limited. https://doi.org/10.1108/S2055-364120200000030006

Cheng, A. S., & Daniels, S. E. (2005). Getting to "we": Examining the relationship between geographic scale and ingroup emergence in collaborative watershed planning. *Society for Human Ecology, 12*(1), 30-43.

Creswell, J. W. (2007). *Qualitative inquiry and research design: choosing among five approaches* (2nd Ed). London: Sage Publications.

D'Amore, R., Iorio, R., Labory, S., & Stawinoga, A. (2013). Research collaboration networks in biotechnology: Exploring the trade-off between institutional and geographic distances. *Industry and Innovation, 20*(3), 261-276. https://doi.org/10.1080/13662716.2013.791127

Diekert, F. K. (2012). The tragedy of the commons from a game-theoretic perspective. *Sustainability, 4*, 1776-1786.

Flora C. B., & Flora J. L. (2013) *Rural communities: Legacy and change* (4th ed.). Philadelphia, PA, Westview Press.

Galaso, P., and Kovarik, J. (2020). Collaboration networks, geography and innovation: Local and national embeddedness. *Papers in Regional Science, 100*, 349-377

Lambright, K. T., Mischen, P. A., & Laramee, C. B. (2010). Building trust in public and nonprofit networks. *The American Review of Public Administration, 40*(1), 64-82.

Lin, N. (2001). *Social capital: A theory of social structure and action*. Cambridge University Press.

MacCormack, A., Forbath T., Brooks, P., & Kalaher P. (2007). *Innovation through global collaboration: A new source of competitive advantage.* (HBS Working Paper No. 07-079) Harvard Business School. https://www.hbs.edu/faculty/Pages/item.aspx?num=29905

Opdenakker, R. (2006). Advantages and disadvantages of four interview techniques in qualitative research. *Forum: Qualitative Social Research*, *7*(4).

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Patriquin, D. L. (2014). *Landscape of hope: The influence of place and social capital on collaborative action in sustainable management* (Publication No. 10100143) [Doctoral dissertation, University of Alberta]. ProQuest Dissertations Publishing.

Pretty J., & Smith, D. (2004). Social capital in biodiversity conservation and management. *Conservation Biology, 18*(3), 631-638.

Reed, M. G., Godmaire, H., Abernethy, P., & Guertin, M. (2014). Building a community of practice for sustainability: Strengthening learning and collective action of Canadian biosphere reserves through a national partnership. *Journal of Environmental Management, 145*, 230-239.

Stephenson, M.O. (2011). Considering the relationships among social conflict, social imaginaries, resilience and community-based organizational leadership. *Ecology and Society, 16*(1):34.

Stern, M. J. (2018). *Social science theory for environmental sustainability: A practical guide*. Oxford University Press.

Stern, M. J., & Coleman, K. J. (2015). The multidimensionality of trust: Applications in collaborative natural resource management. *Society & Natural Resources*, *28*(2), 117-132. https://doi.org/10.1080/08941920.2014.945062

Thesis Bibliography

Al-Busaidi, Z. Q. (2008). Qualitative research and its uses in health care. *Sultan Qaboos University Medical Journa*l, *8*(1), 11-19.

Anderson, T. (2015). *From competition to collaboration, what will it take?* [Master's thesis, Danube University Krems]. The Dragonfly Collective.

Annis, R. (2006). *Regional round table overview: Community collaboration project: Empowering communities and building capacity*. Rural Development Institute, Brandon University.

Bailey, J. (2008). First steps in qualitative data analysis: Transcribing. *Family Practice*, *25*(2), 127-131. https://doi.org/10.1093/fampra/cmn003

Batt, P. J., & Purchase, S. (2004). Managing collaboration within networks and relationships. *Industrial Marketing Management*, *33*(3), 169-174.

Bauer, Z., AbouAssi, K., & Johnston, J. (2020). Cross-sector collaboration formality: The effects of institutions and organizational leaders. *Public Management Review, 24*(2), 159-181. https://doi.org/10.1080/14719037.2020.1798709

Beaver Hills Biosphere. (2019). Vision and mission. Retrieved May 6, 2019 from: http://www.beaverhills.ca/about/vision-mission/

Beaver Hills Biosphere. (2022). *Resources*. https://www.beaverhills.ca/learn/resources

Beaver Hills Initiative. (2016). *Beaver Hills Initiative Strategic Plan (2016-2019)*.

Beaver Hills Initiative. (2015). *Beaver Hills Biosphere Reserve Nomination Application*.

Beckett, R. C. (2005). Collaboration now a strategic necessity. *Handbook of Business Strategy*, 327-332. https://doi.org/10.1108/08944310510558124

Beierle, T. C., & D. M. Konisky. (2000). Values, conflict, and trust in participatory environmental planning. *Journal of Policy Analysis and Management*. *19*(4), 587–602.

Bernard, H. R. (1988). *Research methods in cultural anthropology*. Sage Publications.

Bidault, F., & Castello, A. (2010). Why too much trust is death to innovation. *MITSloan Management Review, 51*(4), 33-39.

Blind, P. K. (2006). *Building trust in government in the twenty-first century: Review of literature and emerging issues*. [Paper presentation]. 7th Global Forum on Reinventing Government. Vienna, Austria.

Bodin, O., Baird, J., Schultz, L., & Armitage, D. (2020). The impacts of trust, cost and risk on collaboration in environmental governance. *People and Nature, 2*, 734-749.

Bodyslav, A. (2011, April). *Knowledge and collaboration for global innovation*. [Paper]. Knowledge and Communication in the Globalization Era.

https://www.researchgate.net/publication/230867933_Knowledge_and_collaboration_for_global_innovation

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101.

Braun, V., & Clarke, V. (2012). Thematic Analysis. In H. Cooper (Eds.), *APA Handbook of Research Methods in Psychology: Vol. 2. Research Design* (p.57-71). American Psychological Association.

Butler, W. H., Monroe, A., & McCaffrey, S. (2015). Collaborative implementation for ecological restoration on US public lands: Implications for legal context, accountability, and adaptive management. *Environmental Management*, *55*, 564-577. https://doi.org/10.1007/s00267-014-0430-8

Byrnes, K. G., Kiely, P. A., Dunne, C. P., McDermott, K. W., & Coffey, J. C. (2020). Communication, collaboration and contagion: "Virtualisation" of anatomy during COVID-19. *Clinical Anatomy*, *34*, 82-89.

Canadian Biosphere Reserves Association. (2012). *Canadian Biosphere Reserves Association Annual Report 2011-12*. https://www.biospherecanada.ca/annual-reports-rapports-annuels

Canadian Biosphere Reserves Association. (2019). *Vision*. Retrieved May 1, 2020 from: https://www.biospherecanada.ca/

Canadian Biosphere Reserves Association. (2019). *Working together to inspire a positive future: Best practices from Canada's UNESCO biosphere reserves.* https://static1.squarespace.com/static/5735fdc137013b8eeb217d63/

Canadian Biosphere Reserves Association. (2021). *Our Team / Notre Equipe*. Retrieved May 15, 2021 from https://www.biospherecanada.ca/team

Canadian Biosphere Reserves Association. (2021). *Strategic Plan: 2020-2025*. United Nations Educational, Scientific, and Cultural Organization. https://static1.squarespace.com/static/5735fdc137013b8eeb217d63/t/5e986ffc9e859f2ac28149b0/1587048448464/CBRA+StrategicPlan+2020_2025.pdf

Canadian Commission for United Nations Educational, Scientific, and Cultural Organization. (2014). *Strategic Plan 2014-2021*. https://en.ccunesco.ca/-/media/Files/Unesco/About/Governance/StrategicPlan2014-2021.pdf?la=en

Canadian Commission for United Nations Educational, Scientific, and Cultural Organization. (2022). *Action for the Future: 2021-2026 Strategic Plan*. https://en.ccunesco.ca/about-ccunesco/governance/strategic-plan

Canadian Commission for United Nations Educational, Scientific, and Cultural Organization. (2021). *Biosphere Reserves Network*. Canadian Commision for UNESCO. https://en.ccunesco.ca/networks/biosphere-reserves-network

Canham, A. R., & Bunescu, L. (2020). Advancing inclusivity and citizenship: Adapting theory, changing practice. In E. Sengupta, P. Blessinger, & M. Makhanya (Eds.) *Developing and supporting multiculturalism and leadership development : international perspectives on humanizing higher education* (Vol. 30, pp.63-83). Emerald Publishing Limited. https://doi.org/10.1108/S2055-364120200000030006

Caruso, H. M., Rogers, T., & Bazerman, M. H. (2009). Boundaries need not be barriers: Leading collaboration among groups in decentralized organizations. In T. L. Pittinsky (Eds.), *Crossing the Divide: Intergroup Leadership in a World of Difference* (pp. 113-126). Harvard Business Press.

Cheng, A. S., & Daniels, S. E. (2005). Getting to "we": Examining the relationship between geographic scale and ingroup emergence in collaborative watershed planning. *Society for Human Ecology, 12*(1), 30-43.

Chetty, S., & Michailova, S. (2011). Geographical proximity and inter-firm collaboration. *Journal of General Management*, *36*(4), 71-87.

Chiara, A. D. (2015). From stakeholder engagement to the collective impact approach for sustainability paths in complex problems. *Sinergie Italian Journal of Management*, *33*(96), 75-91.

Cohen, D., & Crabtree, B. (2008). *Qualitative research guidelines project: Semi-structured interviews*. Robert Wood Johnson Foundation. https://sswm.info/sites/default/files/reference_attachments/COHEN%202006%20Semistructured%20Interview.pdf

Conley A., & Moote, M. (2003). Evaluating collaborative natural resource management. *Society and Natural Resources, 16*(5), 371-386.

Cook, T. E., & Gronke, P. (2005). The skeptical american: Revisiting the meanings of trust in government and confidence in institutions. *The Journal of Politics*, *67*(3), 784-803.

Cornell, S., & Jorgensen, M. (2019). What are the limits of social inclusion? Indigenous Peoples and Indigneous Governance in Canada and the United States. *American Review of Canadian Studies, 49*(2), 283-300.

Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage.

Creswell, J. W. (2007). *Qualitative inquiry and research design: choosing among five approaches* (2nd Ed). London: Sage Publications.

Cuong, C. V., Dart P., & Hockings M. (2017). Biosphere reserves: Attributes for success. *Journal of Environmental Management*, *118*, 9-17.

Cygler, J., Sroka, W., Solesvik, M., & Debkowska, K. (2018). Benefits and drawbacks of coopetition: The roles of scope and durability in coopetitive relationships. *Sustainability, 10*(8), 2688. https://doi.org/10.3390/su10082688

D'Amore, R., Iorio, R., Labory, S., & Stawinoga, A. (2013). Research collaboration networks in biotechnology: Exploring the trade-off between institutional and geographic distances. *Industry and Innovation, 20*(3), 261-276. https://doi.org/10.1080/13662716.2013.791127

Daniel, J. R., Pinel, S. L., & Brooks, J. (2013). Overcoming barriers to collaborative transboundary water governance. *Mountain Research and Development, 33*(3), 215-224. https://doi.org/10.1659/MRD-JOURNAL-D-12-00121.1

Davenport, M. A., Leahy, J. E., Anderson, D. H., & Jakes, P. J. (2007). Building trust in natural resource management within local communities: A case study of the Midewin National Tallgrass Prairie. *Environmental Management, 39*, 353-368.

de Bruin, W. B., & Morgan, M. G. (2019). Reflections on an interdisciplinary collaboration to inform public understanding of climate change, mitigation, and impacts. *National Academy of Sciences, 116*(16), 7676-7683.

Dean, K. S. (2010). *Strategies and benefits of fostering intra-organizational collaboration* (Paper No. 15). College of Professional Studies Professional Projects.

DeFilippis, E., Impink, S. M., Singell, M., Polzer, J. T., & Sadun, R. (2020). *Collaborating during coronavirus: The impact of COVID-19 on the nature of work*. (NBER Working Paper No. 27612). National Bureau of Economic Research. https://doi.org/10.3386/w27612

Diekert, F. K. (2012). The tragedy of the commons from a game-theoretic perspective. *Sustainability, 4*, 1776-1786.

Duinker, P. N., Wiersma, Y. F., Haider, W., Hvenegaard, G. T., & Schmiegelow, F. K. A. (2010). Protected areas and sustainable forest management: What are we talking about? *The Forestry Chronicle*, *86*(2), 173-177.

Edge, S., & McAllister, M. L. (2009). Place-based local governance and sustainable communities: lessons from Canadian biosphere reserves. *Journal of Environmental Planning and Management, 52*(3), 279-295. https://doi.org/10.1080/09640560802703058

Flora C. B., & Flora J. L. (2013) *Rural communities: Legacy and change* (4th ed.). Philadelphia, PA, Westview Press.

Francis, J., Giles-Corti, B., Wood, L., & Knuiman, M. (2012). Creating sense of community: The role of public space. *Journal of Environmental Psychology, 32*(4), 401-409.

Freudenburg, W. R. (1993). Risk and recreancy: Weber, the division of labour, and the rationality of risk perceptions. *Social Forces, 71*(4), 909–932.

Frontenac Arch Biosphere. (2018). *Frontenac Arch Biosphere Network Strategic Plan 2018-2019*. https://www.frontenacarchbiosphere.ca/about

Frooman, J. (1999). Stakeholder influence strategies. *Academy of Management Review, 24*, 191–205.

Fugard, A. J. B., & Potts, H. W. W. (2014). Supporting thinking on sample sizes for thematic analyses: A quantitative tool. *International Journal of Social Research Methodology, 18*(6), 669-684.

Galaso, P., and Kovarik, J. (2020). Collaboration networks, geography and innovation: Local and national embeddedness. *Papers in Regional Science, 100*, 349-377.

Galbraith, J., Downey, D., & Kates, A. (2002). How networks undergrid the lateral capability of an organization: Where the real work gets done. *Journal of Organizational Excellence*, *21*(2), 67-78.

Glanville, J. L., & Bienenstock, J. (2009). A typology for understanding the connections among different forms of social capital. *American Behavioral Scientist, 52*(11), 1507-1530.

Glasbergen, P. (1998). *Cooperative environmental governance. Public-private agreements as a policy strategy*. Kluwer Academic Publishers.

Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information system research. *European Journal of Information Systems, 2*, 135-146.

Grant, H. M., Wilkinson, K., & Butts, M. (2020). Building capacity for sustained collaboration. *Stanford Social Innovation Review*. https://doi.org/10.48558/V5BG-2308

Grzanka, P. R. (2010). *White guilt: Race, gender, sexuality and emergent racisms in the contemporary United States* (3409581.) [Doctoral dissertation, University of Maryland]. ProQuest Dissertations Publishing.

Hahn, T., Olsson, P., Folke, C., & Johansson, K. (2006). Trust-building, knowledge generation and organizational innovations: The role of a bridging organization for adaptive comanagement of a wetland landscape around Kristianstad, Sweden. *Human Ecology, 34*, 573-592. https://doi.org/10.1007/s10745-006-9035-z

Ham, S. H. (1992). *Environmental interpretation: A practical guide for people with big ideas and small budgets*. North American Press.

Hancock, C., Storey, A., Downing, J., & Szewczak, S. M. (2001). Interagency resource teams: A model for collaborative approaches to environmental education. *Conservation Biology, 15*(3), 596-602.

Hanleybrown, F., Kania, J., & Kramer, M. (2012). Channeling change: Making collective impact work. *Stanford Social Innovation Review.* https://mappofskp.net/wp-content/uploads/2015/05/SSIR-Collective-Impact-2.pdf

Harris, J. K., Provan, K. G., Johnson, K. J., & Leischow, S. J. (2012). Drawbacks and benefits associated with inter-organizational collaboration along the discovery-development-delivery continuum: A cancer research network case study. *Implementation Science, 7*, 69.

Head, G. (2003). Effective collaboration: Deep collaboration as an essential element of the learning process. *Journal of Educational Enquiry, 4*(2), 47-62.

Hertzog, M. A. (2008). Considerations in determining sample size for pilot studies. *Research in Nursing & Health*, *31*, 180-191.

Howes, M., Tangney, P., Reis, K., Grant-Smith, D., Heazle, M., Bosomworth, K., & Burton, P. (2015). Towards networked governance: improving interagency communication and collaboration for disaster risk management and climate change adaptation in Australia. *Journal of Environmental Planning and Management*, 58(5), 757-776.

Husby, W., & Fast, S. E. (2004). *Heritage appreciation development plan for protected areas located within the Beaver Hills.* Parks and protected area, Alberta community development, ecoleaders interpretation and environmental education, Edmonton, AB.

Hunt, J., Smith, D., Garling, S., & Sanders, W. (2008). Between a rock and a hard place: Self-determination, mainstreaming and Indigenous Community governance. In L. Slater, (Eds.) *Contested governance: Cultural, power and institutions in Indigenous Australia* (pp.27-53). Australian National University Press.https://doi.org

Hurst, K., Stern, M. J., Hull, R. B., & Axsom, D. (2019). Addressing identity-related barriers to collaboration for conservation through self-affirmation theory and moral foundations theory. *Conservation Biology, 34*(3), 572-580. https://doi.org/10.1111/cobi.13428

International Union for Conservation of Nature. (2021). *Biosphere Reserves*. https://www.iucn.org/commissions/commission-ecosystem-management/our-work/cems-thematic-groups/biosphere-reserves

Ishwaran, N., Persic A., & Tri, N. H. (2008). Concept and practice: The case of UNESCO biosphere reserves. *International Journal of Environment and Sustainable Development*, *7*(2), 118-31.

Kambic, E. B., Herrin, D., & Crawford-Lackey, K. (2017). Fulfilling the promise: Improving collaboration between cultural resources and interpretation and education in the U.S. National Park Service. *George Wright Society*.

Kania, J., & Kramer, M. (2011). Collective impact. *Stanford Social Innovation Review*, 36-41.

Kania, J., & Kramer, M. (2011). Collective impact; Essentials of social innovation. *Stanford Social Innovation Review*. https://ssir.org/articles/entry/collective_impact

Kania, J., & Kramer, M. (2013) Embracing emergence: how collective impact addresses complexity. *Stanford Social Innovation Review.*

Kania, J., Hanleybrown, F., & Juster, J. S. (2014). Essential mindset shifts for collective impact. *Stanford Social Innovation Review*, 1-5.

King, C., & Cruickshank, M. (2012). Building capacity to engage: Community engagement or government engagement? *Community Development Journal, 47*(1), 5-28. https://doi.org/10.1093/cdj/bsq018

Kvale, S. (2006). Dominance through interviews and dialogues. *Qualitative Inquiry*, *12*(3), 480-500. https://doi.org/10.1177/1077800406286235

Lambright, K. T., Mischen, P. A., & Laramee, C. B. (2010). Building trust in public and nonprofit networks. *The American Review of Public Administration, 40*(1), 64-82.

Lane, M. B., & Hibbard, M. (2005). Doing it for themselves: Transformative planning by Indigenous Peoples. *Journal of Planning Education and Research, 25*(2):172–184.

Lin, N. (2001). *Social capital: A theory of social structure and action*. Cambridge University Press.

Lovrich, N. P., Gaffney, M. J., Weber, E. P., Bireley, R. M., Matthews, D. R., & Bjork, B. (2005). Interagency collaborative approaches to endangered species act compliance and salmon recovery in the Pacific Northwest. *International Journal of Organization Theory & Behavior*, *8*(2), 237-273.

Luna-Reyes, L. F., Black, L. J., Cresswell, A. M., Pardo, T. A. (2008). Knowledge sharing and trust in collaborative requirements analysis. *System Dynamics Review, 24*(3), 265-297. https:doi.org/10.1002/sdr.404

MacCormack, A., Forbath T., Brooks, P., & Kalaher P. (2007). *Innovation through global collaboration: A new source of competitive advantage.* (HBS Working Paper No. 07-079) Harvard Business School. https://www.hbs.edu/faculty/Pages/item.aspx?num=29905

Man and the Biosphere. (2015). *MAB Strategy 2015-2025.* https://www.mabr.ca/s/Final_Draft_MAB_Strategy_2015-2025.pdf

Markiewicz, A. (2005). 'A balancing act': Resolving multiple stakeholder interests in program evaluation. *Evaluation Journal of Australasia*, *4*(1-2), 13-21.

Marks, M., Chandler, L., & Baldwin, C. (2017). Environmental art as an innovative medium for environmental education in biosphere reserves. *Environmental Education Research*, *23*(9), 1307-1321.

Maryam, D. (2016). Establishing construct validity and reliability: Pilot testing of a qualitative interview for research in Takaful (Islamic Insurance). *Qualitative Report*, *21*(3), 521-528.

Mayan, M. J. (2009). Theory and method. In M. J. Mayan (Eds.), *Essentials of Qualitative Inquiry* (pp. 22-33). Routledge. https://doi.org/10.4324/9781315429250

Monroe, M. C., Andrews E., & Biedenweg K. (2008). A framework for environmental education strategies. *Applied Environmental Education and Communications*, *6*(3-4), 205-216.

Nabukenya, J., Van Bommel, P., Proper, H. A., & de Vreede, G. J. (2011). An evaluation instrument for collaborative processes: Application to organizational policy-making. *Group Decision and Negotiation, 20*(4), 465-488.

Neeson, T. M., Ferris, M. C., Diebel, M. W., Doran, P. J., O'Hanley, J. R., & McIntyre, P. B. (2015). Enhancing ecosystem restoration efficiency through spatial and temporal coordination. *Proceedings of the National Academy of Sciences*, *112*(19), 6236-6241.

Newing, H, Eagle, C. M., Puri R. K., & Watson C. W. (2011). *Conducting research in conservation: A social science perspective*. Routledge Taylor & Francis Group.

O'Leary, R., & Vij, N. (2012). Collaborative public management: Where have we been and where are we going? *American Review of Public Administration 42*(5), 507–522. https://doi.org/10.1177/ 0275074012445780

Opdenakker, R. (2006). Advantages and disadvantages of four interview techniques in qualitative research. *Forum: Qualitative Social Research*, *7*(4).

Ostrem, J. A., & Hvenegaard, G. H. (2020). Reaching common ground: The potential for interagency collaboration in UNESCO biosphere reserves. *International Journal of UNESCO Biosphere Reserves, 4*(1). https://doi.org/10.25316/IR-15211

Ostrom, E. (1998). A behavioral approach to the rational choice theory of collective action. *American Political Science Review, 92*, 1–22.

Oxford English Dictionary. (2000). *Collaboration*. Oxford University Press.

Parkhurst, M., & Preskill, H. (2014). Learning in action: Evaluating collective impact. *Stanford Social Innovation Review, 12*(4), 17-19.

Parkins, J. R., & Mitchell, R. E. (2005) Public participation as public debate: A deliberative turn in natural resource management. *Society and Natural Resources*, 18(6), 529-540. https://doi.org/10.1080/08941920590947977

Parung, J., & Bititci, U. S. (2008). A metric for collaborative networks. *Business Process Management Journal, 14*(5), 654-674.

Patriquin, D. L. (2014). *Landscape of hope: The influence of place and social capital on collaborative action in sustainable management* (Publication No. 10100143) [Doctoral dissertation, University of Alberta]. ProQuest Dissertations Publishing.

Patriquin, D. L., & E. A. Halpenny. (2017). Building consensus through place: Place-making as a driver for place-based collaboration. *Cogent Social Sciences, 3(1)*: 1300864. https://doi.org/10.1080/23311886.2017.1300864

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage Publications. CA: Sage Publications.

Plummer, R., Baird, J., Dzyundzyak, A., Armitage, D., Bodin, O., & Schultz, L. (2017). Is adaptive co-management delivering? Examining relationships between collaboration, learning and outcomes in UNESCO Biosphere Reserves. *Ecological Economics, 140,* 79-88.

Polivka, B. J. (1995). A conceptual model for community interagency collaboration. *Journal of Nursing Scholarship, 27*(2), 110-115.

Pollock, R. M. (2009). *The role of UNESCO Biosphere Reserves in governance for sustainability: Cases from Canada* (Publication No. NR68242) [Doctoral dissertation, Trent University]. ProQuest Dissertations Publishing.

Prange, K., Allen, J. A., & Reiter-Palmon, R. (2016). Collective impact versus collaboration: Sides of the same coin or different phenomenon? *Metropolitan Universities Journal, 27*, 86-96.

Pretty J., & Smith, D. (2004). Social capital in biodiversity conservation and management. *Conservation Biology, 18*(3), 631-638.

QSR International Party Ltd. (2018). *QRS International: NVivo* (Version 12). https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home

Quinn, M. S., & Alexander, S. M. (2011). Final survey report: Carnivores & communities in the Waterton Biosphere Reserve. *Miistakis Institute*. https://www.watertonbiosphere.com/uploads/biosphere-resources_18_3002098588.pdf

Ravindra, M. M. (2004). A road to tomorrow: Local organizing for a biosphere reserve. *Environments, 32*(3), 43-59.

Reed, M. G., & Price, M. F. (Ed.). (2020). *UNESCO Biosphere Reserves: Supporting biocultural diversity, sustainability and society*. Routledge: Earthscan, Routledge Taylor & Francis Group.

Reed, M. G., Godmaire, H., Abernethy, P., & Guertin, M. (2014). Building a community of practice for sustainability: Strengthening learning and collective action of Canadian biosphere reserves through a national partnership. *Journal of Environmental Management, 145*, 230-239.

Reinicke, M. (2016). Beaver Hills Biosphere interpretive plan design: Stakeholder engagement and interpretive summary report. *Beaver Hills Initiative*, 1-19.

Renn, O., Webler, T., & Wiedmann, P. (1995). The pursuit of fair and competent citizen participation. In O. Renn, T. Webler, & P. Wiedemann (Eds.), *Fairness and competence in citizen participation: Evaluating Models for Environmental Discourse* (pp.339-367). Kluwer Academic Publishers. https://doi.org/10.1007/978-94-011-0131-8

Reynolds, S. J., Schultz, F. C., & Hekman, D. R. (2006). Stakeholder theory and managerial decision-making: Constraints and implications of balancing stakeholder interests. *Journal of Business Ethics, 64*, 285-301.

Richards, K. A. R., & Hemphill, M. A. (2018). A practical guide to collaborative qualitative data analysis. *Journal of Teaching in Physical Education*, *37*(2), 225–231. https://doi.org/10.1123/jtpe.2017-0084

Rousseau, D. M., Burt, R. S., Sitkin, S., & Camerer, C. F. (1998). Not so different after all: A cross-discipline view of trust. *The Academy of Management Review, 23*(3), 393-404.

Rudd, L. F., Allred, S., Bright Ross, J. G., Hare, D., Nkomo, M. N., Shanker, K., Allen, T., Biggs, D., Dickman, A., Dunaway, M., Ghosh, R., Gonzalez, N. T., Kepe, T., Mbizah, M. M., Middleton, S. L., Oommen, M. A., Paudel, K., Sillero-Zubiri, C., & Davalos, A. (2021). Overcoming racism in the twin spheres of conservation science and practice. *Proceedings of the Royal Society B: Biological Sciences, 288* https://doi.org/10.1098/rspb.2021.1871

Saarikoski, H., Raitio, K., & Barry, J. (2013). Understanding 'successful' conflict resolution: Policy regime changes and new interactive arenas in the Great Bear Rainforest. *Land Use Policy, 32*, 271-280.

Sagrestano, L. M., Clay, J., & Finderman, R. (2018). Collective impact model implementation: promise and reality. *Journal of Health & Human Services Administration*, *41*(1), 87-123.

Sense of Community Partners. (2004). *Exploring sense of community: An annotated bibliography*.

Shane, S. A. (1994). Are champions different from non-champions? *Journal of Business Venturing*, *9*(5), 397-421.

Shultz, L., Duit, A., & Folke, C. (2011). Participation, adaptive co-management, and management performance in the world network of biosphere reserves. *World Development, 39*(4), 662-671.

Stachowiak, S., & Gase, L. (2018). Does collective impact really make an impact? *Stanford Social Innovation Review*. https://doi.org/10.48558/6GD9-MB47

Stephenson, M.O. (2011). Considering the relationships among social conflict, social imaginaries, resilience and community-based organizational leadership. *Ecology and Society, 16*(1):34.

Stern, M. J. (2018). *Social science theory for environmental sustainability: A practical guide*. Oxford University Press.

Stern, M. J., & Coleman, K. J. (2015). The multidimensionality of trust: Applications in collaborative natural resource management. *Society & Natural Resources*, *28*(2), 117-132. https://doi.org/10.1080/08941920.2014.945062

Stern, M. J., & Predmore, S. A. (2012). The importance of team functioning to natural resource planning outcomes. *Journal of Environmental Management, 106*, 30-39.

Stoll-Kleemann, S., & Welp, M. (2008). Participatory and integrated management of biosphere reserves: Lessons from case studies and a global survey. *Gaia, 17*, 161-168.

Suter, E., Arndt, J., Arthur, N., Parboosingh, J., Taylor, E. & Deutschlander, S. (2009). Role understanding and effective communication as core competencies for collaborative practice. *Journal of Interprofessional Care*, *23*(1), 41-51.

Swinnerton, G. S., & Otway, S. G. (2003, May). *Collaboration across boundaries - Research and practice: Elk Island National Park and the Beaver Hills, Alberta*. [Paper

presentation]. Fifth International Science and Management of Protected Areas Association Conference, Victoria, BC, Canada.

Taggart-Hodge, T. D., & Schoon, M. (2016). The challenges and opportunities of transboundary cooperation through the lens of the East Carpathians Biosphere Reserve. *Ecology and Society, 21*(4), 29. https://doi.org/10.5751/ES-08669-210429

Tanaka, T., & Wakamatsu, N. (2017). Analysis of the governance structures in Japan's biosphere reserves: Perspectives from bottom-up and multilevel characteristics. *Environmental Management*, *61*, 155-170.

Tate, W. L., Ellram, L. M., & Kirchoff, J. F. (2010). Corporate social responsibility reports: A thematic analysis related to supply chain management. *Journal of Supply Chain Management*, *46*(1), 19-44.

Thompson, L. (2008) *Making the team: A guide for managers* (3rd ed.). Pearson Prentice Hall.

Tschannen-Moran, M. (2001). Collaboration and the need fortrust. *Journal of Educational Administration, 39*(4), 308-331. https://doi.org/10.1108/EUM0000000005493

United Nations Educational, Scientific, and Cultural Organization. (1980). *Environmental education in the light of the Tbilisi Conference.*

United Nations Educational, Scientific, and Cultural Organization. (1996). *Biosphere reserves: The Seville strategy and the statutory framework of the world network.*

United Nations Educational, Scientific, and Cultural Organization. (2002). *Madrid action plan for biosphere reserves (2008-2013)*.

United Nations Educational, Scientific, and Cultural Organization. (2015). *MAB strategy (2015-2025).* Retrieved March 5, 2020, from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/MAB_Strategy_2015-2025_final_text.pdf

United Nations Educational, Scientific, and Cultural Organization. (2016). *Lima action plan for UNESCO's man and the biosphere (MAB) programme and its world network of biosphere reserves (2016-2025).* Retrieved March 20, 2020, from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/Lima_Action_Plan_en_final.pdf

United Nations Educational, Scientific, and Cultural Organization. (2017). *Main characteristics of biosphere reserves*. Retrieved March 22, 2020, from http://www.unesco.org/new/en/natural-sciences/environment/ecologicalsciences/biosphere reserves/main-characteristics/

United Nations Educational, Scientific, and Cultural Organization. (2021). *Man and the Biosphere (MAB) Programme*. Retrieved 12 Jan, 2021, from https://en.unesco.org/mab/strategy

United Nations Educational, Scientific, and Cultural Organization. (2019a). *UNESCO in brief – Mission and Mandate*. Retrieved May 1, 2020, from https://en.unesco.org/about-us/introducing-unesco

United Nations Educational, Scientific, and Cultural Organization. (2019b). *Biosphere reserves*. Retrieved May 1, 2020, from https://en.unesco.org/biosphere

United States Biosphere Network. (2022). https://www.nps.gov/subjects/connectedconservation/us-biosphere-network.htm

Vasileiou, K., Barnett, J., & Thorpe, S. (2018). Characterizing and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*, *18*, 148.

Vodosek, M. (2010). Relational models in cross-cultural collaboration. In Proceedings of the 3rd international conference on Intercultural collaboration, 279-282. https://dl.acm.org/doi/proceedings/10.1145/1841853

Von der Porten, S., de Loe, R., & Plummer, R. (2015). Collaborative environmental governance and Indigenous Peoples: Recommendations for practice. *Environmental Practice, 17*, 134-144. https://doi.org/10.1017/S146604661500006X

Vu. (2015). *Why communities of color are getting frustrated with collective impact.* Nonprofit AF. Retrieved January 4, 2022, from, https://nonprofitaf.com/2015/11/why-communities-of-color-are-getting-frustrated-with-collective-impact/

Waizenegger L., McKenna, B., Cai, W., & Bendz, T. (2020) An affordance perspective of team collaboration and enforced working from home during COVID-19, *European Journal of Information Systems, 29*(4), 429-442. https://doi.org/10.1080/0960085X.2020.1800417

Walker, G. B., & Daniels, S. E. (2019). Collaboration in environmental conflict management and decision-making: Comparing best practices with insights from collaborative learning work. *Frontiers in Communication, 4*, 2.

Watkins, T., Miller-Rushing, A. J., & Nelson, S. J. (2018). Science in places of grandeur: Communication and engagement in national parks. *Integrative and Comparative Biology*, *58*(1), 67-76. https://doi.org/10.1093/icb/icy025

Weaver, L. (2014). The promise and peril of collective impact. *The Philanthropist*, *26*(1), 11-19.

Williams, M. (2007). Building genuine trust through interpersonal emotion management: A threat regulation model of trust and collaboration across boundaries. T*he Academy of Management Review*, 32(2), 595-621.

Wolff, T. (2016). Ten places where collective impact gets it wrong. *Global Journal of Community Psychology Practice*, *7*(1), 1-11.

Wondolleck, J. M., & Yaffee, S. L. (2000). *Making collaboration work: Lessons from innovation in natural resource management.* Island Press.

World Wildlife Fund. (2000). https://d2ouvy59p0dg6k.cloudfront.net/downloads/collaboration.pdf

Zbyranyk, O. (2012). *Collaboration between researchers and biosphere reserve practitioners: A case study of Redberry Lake Biosphere Reserve, Canada*. [Unpublished master's thesis]. University of Saskatchewan.

Zietsma, C., Winn, M., Branzei, O., & Vertinsky, I. (2002). The war of the woods: Facilitators and impediments of organizational learning processes. *British Journal of Management,13*(2), 61-74.

Appendix 3.A - Interview Guide

Beaver Hills Biosphere

(To be said to biosphere representative): Thank you for agreeing to participate in this interview regarding collaboration in the Beaver Hills Biosphere. This study seeks to investigate the barriers and enablers of collaboration among environmental educators and heritage interpreters. Participation is voluntary. You do not need to respond to a question if you do not want to, you can choose to withdraw at any time, and your participation will remain confidential. This interview will be audio recorded to help the researcher best capture the discussion. Audio recordings will be transcribed and the original recordings will then be deleted.

Collaboration between environmental education agencies within the BHB

- Can you tell me about your role with *name of agency and how long have you been working with *name of agency?
  - What are some of the goals of environmental education and interpretation within your agency?
  - Has your agency previously collaborated with any other agencies in the development or delivery of any environmental education programs or heritage interpretation IN THE BHB?
    - [no] what has prevented you in collaborating with them?
  - Can you tell me a specific example of a time where your agency has previously engaged in collaborative work with a partner IN THE BHB?
    - [yes] did you have a pre-existing relationship with them?
    - Have you worked with them repeatedly?
    - What criteria do you use to select potential partners with whom to collaborate?
    - Did trust play a role in this collaboration?
  - How frequently does your agency partake in collaborative endeavors? Is it an ongoing thing or are there just rare times?
  - What are the potential benefits of collaboration for your agency?
  - From your perspective, what factors enable collaboration amongst agencies within the biosphere?
  - What are the potential barriers to collaboration for your agency?
    - [If COVID is brought up – were these barriers existing before COVID? Has COVID made them worse, etc.]
  - I am going to share a poll here with some common potential barriers to collaboration. Please rate each factor on how they act as a barrier in your organization, whether they are not a barrier, a low barrier, moderate barrier, or high barrier

Barrier	**To no extent**	**To a little extent**	**To a moderate extent**	**To a great extent**

Financial constraint	0	1	2	3
Time	0	1	2	3
Lack of cooperation from partnering agencies	0	1	2	3
Different visions and/or education goals	0	1	2	3
Competition	0	1	2	3
Difficulty Communicating	0	1	2	3
Low priority goal within your agency	0	1	2	3
Lack of trust between partnering agencies	0	1	2	3
Slow progress	0	1	2	3
Lack of staff / Staff turnover	0	1	2	3

THE BHBRA

- How often does your agency communicate with the Beaver Hills Biosphere Reserve Association?
    - Is this communication facilitated by anyone?
- Does the Beaver Hills Biosphere Reserve Association support your agency in any ways?
    - (e.g. financial support, resources, facilitating collaboration, providing feedback etc.)
    - In what ways would you *like* to see the BHBRA support your agency? (e.g. financial support, resources, facilitating collaboration, providing feedback etc.)

- What role does trust play in your relationship with the Beaver Hills Biosphere?
    - What has prompted you to trust (or distrust) the BHB?
    - Do you trust/distrust the BHB because of the process and the agency itself, or because of connections with individuals within the agency?
    - How important is it for you to trust the BHB?
    - Do you trust the BHBRA to make decisions without your agency's input?

- How involved is your organization in BHB decisions/operations?
    - No Involvement
    - Interested (e.g. newsletter, informed about opportunities to participate in events)
    - Supportive (e.g. attend community forums, answer surveys)
    - Involved (e.g. attend topic specific discussions or workshops)
    - Core (e.g. regular meetings, help develop sections of the plan)
- Which of the following statements best describes your **desired** level of involvement with BHB decisions/operations?
    - No Involvement
    - Interested (e.g. newsletter, informed about opportunities to participate in events)
    - Supportive (e.g. attend future community forums, answer surveys)
    - Involved (e.g. attend topic specific discussions or workshops)
    - Core (e.g. regular meetings, help develop sections of the plan)

- Is there anything else you'd like to add on the topic of collaboration to help me accurately understand you as a representative of <u>*name of agency</u>?

Demographic info

- What year were you born?
- What is your race?
- What gender do you identify as?

Thank you very much for your time and participation.

Appendix 3.B - Consent Form

Research Information Form (Beaver Hills Biosphere)

Study Title: Interagency Collaboration among Environmental Educators and Heritage Interpreters in the Beaver HIlls Biosphere

Principal Investigator:
Julie Ostrem
Faculty of Kinesiology, Sport, and Recreation
University of Alberta
University of Alberta
Edmonton, AB, Canada
Phone: 780-6679800
Email: ostrem@ualberta.ca

Co-investigator and Master's Supervisor
Glen Hvenegaard, PhD
Professor of Environmental Science and Geography
University of Alberta, Augustana Campus, Founders' Hall 3-08
4901-46 Avenue, Camrose, Alberta T4V2R3
780-679-1574
glen.hvenegaard@ualberta.ca

Research Sponsors: Beaver Hills Biosphere and Mitacs Accelerate

Invitation to Participate
You are invited to participate in this research study because of your experience working in the Beaver Hills Biosphere (BHB). Thank you for taking the time to learn more about the potential for interagency collaboration in biosphere reserves. This project is an initiative to enhance the BHB's understanding of past, current, and future collaboration opportunities and barriers.

This information letter is only part of the process of informed consent. It should give you a basic idea of what this research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully.

Purpose
This study is being conducted to improve understanding of how the Beaver Hills Biosphere Reserve Association facilitates collaboration among education agencies. We hope to understand the barriers and enablers of multiple stakeholder engagement, continuous communication, holistic representation and more.

Study Procedures
If you agree to participate in this study, you will be asked to participate in an interview process. Interviews will be conducted over the phone or through video calls. All interview responses will be digitally recorded. Interviews will take approximately 30 minutes. You will be asked questions about your engagement with your designated biosphere reserve, as well as your perspective on collaborative barriers and enablers.

Benefits
There are no direct personal benefits for participants. This research aims to enhance collaboration among educators and interpreters in the BHB and facilitate a forum for open dialogue and connection in the future.

Risk
There are no inherent risks to this study. If you feel uncomfortable at any point during the interview, you can request to skip a question or withdraw from the interview.

Voluntary Participation
You are under no obligation to participate in this study and if you choose to participate, you may refuse to answer questions that you do not want to answer. You are free to withdraw your consent and participation at any time during the interview. If you choose to stop participating in this research at any point in time you must simply notify the interviewer of your intent to do so prior to your completion of the survey and all of your information related to this study (data and personal information) will be destroyed and you will not be contacted further to participate in the study.

Confidentiality & Anonymity
The information that you will share will remain strictly confidential and will be used solely for the purposes of this research. The only people who will have access to the research data are Dr. Glen Hvenegaard and myself. Your answers to open-ended questions may be used verbatim in presentations and publications but neither you (nor you organization) will be identified. We will treat the information you provide confidentiality. If we use a direct quotation or cite an example from your discussion with us, we will identify the source in a non-specific manner (i.e., "*participant X stated"*).

Data Storage
Audio files and transcribed electronic copies will be encrypted and stored on a password protected computer in the department of Kinesiology, Sport, and Recreation at the University of Alberta. Your response will be stored for no more than 5 years, at which point they will be destroyed by deleting all electronic files.

Research Findings
The results of this study will be written into the Principal Investigator's Master's thesis. Study results may also be presented at academic conferences, and/or published in academic journals. The results of this study will be ready by June 2022 and will be available to the participant upon request.

Further Information

If you require further information, please do not hesitate to contact the local Case Study Lead, Julie Ostrem (ostrem@ualberta.ca).

The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have questions about your rights or how research should be conducted, you can call (780) 492-2615. This office is independent of the researchers.

Consent Statement

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form. I will receive a copy of this consent form after I sign it.

Participant's Name (printed) and Signature: _____
Date: _____
Name (printed) and Signature of Person Obtaining Consent: _____
Date: _____

Appendix 4.A - Interview Guide

Canadian Biosphere Reserves

(To be said to biosphere representative): Thank you for agreeing to participate in this interview regarding collaboration in UNESCO Biosphere Reserves. This study seeks to investigate the barriers and enablers of collaboration among biosphere reserves. Participation is voluntary. You do not need to respond to a question if you do not want to, you can choose to withdraw at any time, and your participation will remain confidential. This interview will be audio recorded to help the researcher best capture the discussion. Audio recordings will be transcribed and the original recordings will then be deleted.

- Can you tell me about your role with the biosphere and how long have you been working with _____ biosphere reserve?
    - What is your position title?
    - What is the structure of your biosphere reserve?
- Does your biosphere facilitate collaboration among the various agencies within?
    - In what ways? (e.g. shared training opportunities, continuous dialogue, etc.)
    - How often?
    - What is the process for joining the biosphere board - how do agencies become involved?
    - Formal vs informal collaboration
    - What are the perks of joining
    - What benefits does the biosphere get in return from agencies
- What criteria do you use to select potential partners to collaborate with?
    - Did the biosphere have a pre-existing relationship with them?
    - Have you worked with them repeatedly?

- How does trust influence your willingness to collaborate with agencies within the biosphere?
    - What prompts you to trust/distrust them?

- What barriers exist within your biosphere that prevent collaboration?
    - If COVIDis brought up… was this a pre-existing barrier or new one?
    - [pre-existing] – has COVID made it worse
    - [new] – leave it unless relevant

- What are some enabling factors of collaboration among agencies within the biosphere?
- What are some potential benefits of collaboration within your biosphere?

Collaboration Between Biosphere Reserves and CBRA

- Does CBRA facilitate collaboration in any way for your organization?
    - In what ways?
    - Are there networking opportunities?
    - Feedback from CBRA?
    - Does trust play a role?

- What role would you like CBRA to play within your biosphere?

Collaboration Between Biosphere Reserves

- How often, if ever, does your biosphere communicate with the other biospheres? (daily, weekly, monthly, annually, etc.)
    - Is this communication facilitated by anyone?
- Has your biosphere collaborated with other biosphere reserves in the past?
    - Any examples? Was it successful?
    - Do you think this would be a worthwhile endeavor, what kind of benefits could you foresee through collaborating with other BRs?
    - What was the main barrier to this form of collaboration?
    - Are there any enablers of inter-biosphere collaboration in your experience?
- Is there anything else you'd like to add on the topic of collaboration to help me accurately understand you as a representative of the __ Biosphere Reserve?

Demographic info

- What year were you born?
- What is your race?
- What gender do you identify as?

Thank you very much for your time and participation.

Appendix 4.B - Consent Form

Research Information Form (Canadian Biosphere Reserves)

Study Title: Collaboration among UNESCO biosphere reserves in Canada

Principal Investigator:
Julie Ostrem
Faculty of Kinesiology, Sport, and Recreation
University of Alberta
University of Alberta
Edmonton, AB, Canada
Phone: 780-6679800
Email: ostrem@ualberta.ca

Co-investigator and Master's Supervisor
Glen Hvenegaard, PhD
Professor of Environmental Science and Geography
University of Alberta, Augustana Campus, Founders' Hall 3-08
4901-46 Avenue, Camrose, Alberta T4V2R3
780-679-1574
glen.hvenegaard@ualberta.ca

Research Sponsors: Beaver Hills Biosphere and Mitacs Accelerate

Invitation to Participate
You are invited to participate in this research study because of your experience working in a UNESCO Biosphere Reserve. Thank you for taking the time to learn more about the potential for collaboration in biosphere reserves. This project is an initiative to enhance the biosphere's understanding of past, current, and future collaboration opportunities and barriers.

This information letter is only part of the process of informed consent. It should give you a basic idea of what this research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully.

Purpose
This study is being conducted to improve understanding of how the Canadian Biosphere Reserve Association facilitates collaboration among biosphere reserves. We hope to understand the barriers and enablers of multiple stakeholder engagement, continuous communication, holistic representation and more.

Study Procedures

If you agree to participate in this study, you will be asked to participate in an interview process. Interviews will be conducted over the phone or through video calls. All interview responses will be digitally recorded. Interviews will take approximately 30 minutes. You will be asked questions about your engagement with your designated biosphere reserve, as well as your perspective on collaborative barriers and enablers.

Benefits
There are no direct personal benefits for participants. This research aims to enhance collaboration among Canadian biosphere reserves and facilitate a forum for open dialogue and connection in the future.

Risk
There are no inherent risks to this study. If you feel uncomfortable at any point during the interview, you can request to skip a question or withdraw from the interview.

Voluntary Participation
You are under no obligation to participate in this study and if you choose to participate, you may refuse to answer questions that you do not want to answer. You are free to withdraw your consent and participation at any time during the interview. If you choose to stop participating in this research at any point in time you must simply notify the interviewer of your intent to do so prior to your completion of the survey and all of your information related to this study (data and personal information) will be destroyed and you will not be contacted further to participate in the study.

Confidentiality & Anonymity
The information that you will share will remain strictly confidential and will be used solely for the purposes of this research. The only people who will have access to the research data are Dr. Glen Hvenegaard and myself. Your answers to open-ended questions may be used verbatim in presentations and publications but neither you (nor you organization) will be identified. We will treat the information you provide confidentiality. If we use a direct quotation or cite an example from your discussion with us, we will identify the source in a non-specific manner (i.e. "*participant X stated"*).

Data Storage
Audio files and transcribed electronic copies will be encrypted and stored on a password protected computer in the department of Kinesiology, Sport, and Recreation at the University of Alberta. Your response will be stored for no more than 5 years, at which point they will be destroyed by deleting all electronic files.

Research Findings
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Further Information

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The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have questions about your rights or how research should be conducted, you can call (780) 492-2615. This office is independent of the researchers.

Consent Statement

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Participant's Name (printed) and Signature: _____
Date: _____
Name (printed) and Signature of Person Obtaining Consent: _____
Date: _____