

A New Age of Natural Resource Management
(Re)Envisioning the Role of the U.S. National Parks

Thesis

Presented in Partial Fulfillment of the Requirements for the Degree Master of Science in
the Graduate School of The Ohio State University

By

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2022

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Abstract

Western paradigms have long dominated natural resource management discourse. Since the advent of national parks in the United States (U.S.), the removal of Indigenous peoples from these spaces has led to a disregard of Indigenous Knowledge, lack of communication between Western and Indigenous stakeholders, and jurisdictional fragmentation of ecosystems. As other countries have welcomed and institutionalized the significance of Indigenous peoples and knowledge in natural resource management, it is unknown where the United States stands in attempts to reconcile Indigenous and Western ontologies. The purpose of this research, through boundary work theory and perspectives of collaborative management, is to examine the foundations of U.S. national parks' potential collaboration with Indigenous peoples using qualitative content analysis and multi value qualitative comparative analysis to code. Data originated from publicly available foundation documents, or general management plans published for the 2016 National Park Service Centennial. Though primarily informed by non-Indigenous perspectives, this research explores Western/Indigenous dichotomies, and, ultimately, how Indigenous interests can be better presented in U.S. natural resource management.

Dedication

To my family and friends who believed in me when I didn't believe in myself.

Acknowledgments

The primary research was conducted on the ancestral homelands of the Shawnee, Potawatomi, Delaware, Miami, Peoria, Seneca, Wyandotte, and Ojibwe peoples, though the foundation documents analyzed represent U.S. government presence and management on lands from many more peoples' homelands. Specifically, the primary researcher studied at The Ohio State University (OSU), which is located on lands ceded in the 1795 Treaty of Greeneville and the forced removal of Tribes through the Indian Removal Act of 1830.

Additionally, a special thank you to all who helped with the development of this thesis, including my advisor, Alia Dietsch, and research assistant, Chris Kalman, as well as the Ohio Parks and Recreation Foundation (OPRA) who provided funding for this research.

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Chapter 1. Introduction

Indigenous peoples¹ have altered the earth's landscapes for thousands of years (Berkes, 2021; Reid, 2012). Though the modern protected area² movement began with Yellowstone National Park in 1872, Indigenous natural resource management and conservation efforts existed long before western, colonialist intervention (Berkes, 2021). These coevolutionary histories have led to a reliance of the environment on people and people on the environment that can still be seen today (Kimmerer, 2013; Reid, 2012; Zedler, 2016). In fact, as of 2021, approximately 20 percent of lands globally were conserved by Indigenous and local communities (Jones, 2021c), and many areas conserved and managed by Indigenous and local communities have greater biodiversity and ecological resilience (Jones, 2021c; Santiago, 2021; Schuster et al., 2019).

However, from the modern protected area movement, western paradigms of colonialism, nativism, frontierism, and transcendentalism have dominated natural resource management and conservation discourse, undermining Indigenous land management techniques (Kimmerer, 2013; P. Robbins, 2012; Taylor, 2016). Similarly, western conceptualizations of a “pristine wilderness” threaten Indigenous worldviews by creating cultures of exclusion where Indigenous peoples have little say in management decisions, and further institutionalizing the separation of people and the environment (i.e., humans are but ‘visitors’ to protected areas) (Berkes, 1999; Bird, 1987; Freudenburg et al., 1995; Watson et al., 2014).

These exclusionary approaches, also known as the “Yellowstone Model”, have been more recently contested by management practices and protected area development in other countries (Berkes, 2021; Spence, 2000; Ungar & Strand, 2012). For example, Australia's Kakadu National

¹ This research predominantly uses the term ‘Indigenous’ as a comprehensive term for peoples also referred to as ‘Tribes’, ‘American Indians’, ‘Native’, and ‘Native Americans’, etc. However, the specific language or terms used by Indigenous scholars are prioritized when amplifying their voices. Please see *Section 1.5.1 Indigenous vs. Other Terms* for more details.

² The International Union for the Conservation of Nature (IUCN) defines a protected area as “...a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values” (Dudley, 2008, p. 8).

Park, established in 1979, is located on Aboriginal lands and managed through a joint agreement between Aboriginal peoples and the Australian government (DAWE, 2021). More recently, the International Union for Conservation of Nature's (IUCN) 'Other Effective Area-based Conservation Measures' offers guidelines for the in-situ management of spaces outside of existing protected area networks, recognizing and integrating the role of Indigenous and local communities in natural resource management (IUCN WCPA Task Force on OECMs, 2019). In the United States, the establishment of Waterton-Glacier International Peace Park, the first of its kind, in 1932 has evolved from an exclusionary national park landscape to a complex network of stakeholders and landholders, including Indigenous peoples, focused on integrating different perspectives in order to maintain and restore the landscape at the ecosystem, rather than park, level (*Roundtable on the Crown of the Continent*, 2020). These, and similar examples, acknowledge the limitations of past, exclusionary, efforts at natural resource management and aim to contribute to more inclusionary approaches.

1.1 (Re)Connecting Indigenous Peoples and the Environment

The legacies of Indigenous interactions with other beings (e.g. wildlife) and the landscape include Henson et al.'s (2021) paper, evaluating the convergence of grizzly bear DNA showing bear populations overlap with Indigenous language groups in Western Canada. Their findings indicate that landscape pressures (e.g., distribution of natural resources) contribute to the spatial distribution of both bears and humans. Though this research did not come to definite conclusions regarding the relationship between grizzly bears and Indigenous language groups, the work underscores how Indigenous languages hold knowledge of other beings that have been passed down through generations (Henson et al., 2021). This paper also exemplifies how academic researchers can collaborate with Indigenous stakeholders in both conducting of research and the writing process.

Gorenflo & Romaine (2021) also found a link between species ranges and Indigenous languages when examining 48 UNESCO Natural World Heritage Sites in sub-Saharan Africa. The authors claim that the protection of Indigenous languages is vital to positive biodiversity outcomes, as ecological knowledge passed through generations of oral histories can provide important management guidance (Gorenflo & Romaine, 2021). Thus, management frameworks

that are more inclusive in bridging scientific and Indigenous Knowledge can produce improved biodiversity outcomes.

Efforts to (re)connect Indigenous peoples and the environment has also been documented in the U.S. popular press. Ojibwe author David Treuer (2021) discusses in *The Atlantic* the traumatic histories of Indigenous removal for the creation of public lands in the United States. Treuer (2021) argues that Native peoples should regain control of these spaces as a form of reparation. He reasons that such land transfer back to Native peoples would elevate “new” ideas of conservation and land management, as well as “protect [the parks] from the partisan back-and-forth in Washington”, such as differing beliefs in what and how landscapes should be managed (e.g., Bears Ears National Monument, Arctic National Wildlife Refuge). Building on this, numerous popular press articles (e.g., Robbins, 2021; Treisman, 2022; U.S. Forest Service, 2018) explain where a transfer of lands back to Indigenous communities has already begun. Other popular press articles (e.g., Pinchin, 2021) emphasize the importance of Indigenous peoples in natural resource management, such as the ways in which knowledge passed down through generations can offer additional insight into ecological processes than does scientific knowledge alone.

These ideas are reflected by Cherokee scholar Carroll (2014), who states “...tribal initiatives to reclaim stolen lands are not solely political projects of regaining sovereign spaces, but means for healing intergenerational trauma that was caused by forced severance [of Native peoples] from the[ir] land” (p. 38). Dietsch et al. (2021), consistent with other scholars’ writings (e.g., Finney, 2014; hooks, 2008; Theriault & Mowatt, 2020), describe the processes by which minoritized peoples (e.g., Indigenous peoples, Black Americans) overcome historical and contemporary obstacles to engage with or reclaim natural spaces as a form of “transgression”. Specific examples of this (re)connection offered by Carroll (2014) include Ute Mountain Tribal Park (Colorado, U.S.), Frog Bay Tribal National Park (Wisconsin, U.S.), and Tia-o-qui-aht Tribal Parks (British Columbia, Canada). In addition to Tribal Parks (which are managed by sovereign Indigenous Nations) the creation and expansion of Bear’s Ears National Monument by U.S. Presidents Barack Obama and Joe Biden (Shivaram, 2021) demonstrates a willingness by the federal government to restore Indigenous presence and connections in natural resource

management contexts³. Though such connection of Indigenous peoples to their homelands as stakeholders, and in some cases as primary managers, is a step forward, the long-standing historic context of removing Native peoples from their lands (reducing trust and respect among stakeholders, as well as creating unequal power dynamics) complicates opportunities for collaboration.

1.2 The U.S. Federal Legislative Context

Federal legislative action in the United States concerning Indigenous peoples has been, at the very least, traumatizing and problematic for Indigenous communities (Kimmerer, 2013; Taylor, 2016). The systematic removal of Indigenous peoples from their ancestral homelands began with the arrival of colonists to New England in the 17th and 18th centuries (Taylor, 2016). During 1830, then U.S. President Andrew Jackson passed The Indian Removal Act, authorizing the removal of Native populations to U.S. territory west of the Mississippi River, resulting in what would later be known as the Trail of Tears and the deaths of thousands of Native people (Taylor, 2016; *The Indian Removal Act*, 1830). That same year, President Jackson also signed the Preemption Act of 1830, giving white people the right to purchase Indian lands from the U.S. federal government (Taylor, 2016). Indigenous ways of being were further undermined by the 1852 Appropriations Act, which created and formalized the Indian reservation system in the United States, as well as the Dawes Act of 1877 (also known as the General Allotment Act), which further divided Native lands and resulted in the loss of many of these lands as well (Native Voices, n.d.; Taylor, 2016).

These actions by the United States government not only physically removed Tribes from their ancestral homelands but also removed them from areas in which their cultural practices were embedded. Potawatomi scholar Whyte (2013), describes this sense of place as “situated knowledge” (p. 3), in which Indigenous culture is situated and practiced in the landscape. This situated knowledge is also referred to as Indigenous Knowledge. Potawatomi author Robin Wall Kimmerer, in her 2013 novel *Braiding Sweetgrass*, addresses the generational importance of Indigenous Knowledge to her people – and the devastation that the loss of such knowledge

³ In the U.S context, Tribal parks and Tribal national parks are sometimes, though not always, acquired and established through donations by non-profit organizations such as The Nature Conservancy (Brockington et al., 2008; Carroll, 2014; J. Robbins, 2021). Other driving factors in the creation of Tribal parks include grants and donations of private land, as in the case of Frog Bay Tribal National Park (see: <https://www.redcliff-nsn.gov/frogbay/index.php>). The processes through which this happens is discussed further by Carroll et al. (2014).

brings. Kimmerer (2013) describes hickory, black walnut, and butternut trees as a part of “our [Potawatomi] northern homelands...but those trees, like the homelands, were lost to many people” (p. 12). She continues this narrative by stating, “In the span of a single generation my ancestors were ‘removed’ three times... Did they touch the trees in remembrance as they became fewer and fewer, until there was only grass?” (p. 13). This poignant account of loss demonstrates the intergenerational trauma that persists because of The Indian Removal Act of 1830 and similar legislation.

Similarly, the removal of Native communities by the United States government to Indian reservations under the guise of conservation has perpetuated these traumatic legacies. In the U.S. National Park context, parks such as Yellowstone (on ancestral lands of the Lakota, Shoshone, Crow, Blackfeet, and many others), Glacier (on ancestral lands of the Blackfoot Nation), and Yosemite (on ancestral lands of the Ahwahneechee, Yosemite Indians, and others) have prominent histories of a White “discovery” and exercise jurisdictional control that intentionally excluded Indigenous peoples and voices from these contexts (Spence, 2000; Taylor, 2016).

In the past few decades, legislation aimed at protecting federally recognized Indigenous rights, knowledge, and culture within these spaces has increased. The American Indian Religious Freedom Act of 1978 (and its 1994 amendment) were passed to “protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions... including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites” (*Native American Religious Freedom Act*, 1994). The Native American Graves Protection and Repatriation Act of 1990 outlines the obligations and processes through which Native American human remains and funerary objects processed by the Federal government shall be transferred back to the appropriate descendants (*Native American Graves Protections and Repatriation Act*, 1990). Similarly, 1996 Executive Order 13007: “American Indian Sacred Sites” explicitly recognizes Indigenous sacred sites under federal law. Further institutionalizing this legislation at the federal level, government organizations such as the Udall Foundation, the Bureau of Indian Affairs, and the National Park Service (NPS) Office of Native American Affairs facilitate support (e.g., financial assistance) for federally recognized Tribal Nations.

Though attempts to acknowledge and protect Indigenous rights at the federal level have been institutionalized through these and similar legislation, over 400 Tribes remain unrecognized by

the U.S. federal government (GAO, 2012). Though some Indigenous groups may be recognized at the state level, federally unrecognized Tribes lack the resources and support provided to the country's 574 federally recognized Tribes (Bureau of Indian Affairs, 2019; *Federal Acknowledgement or Recognition*, n.d.; O'Neill, 2021).

These federally recognized tribes are seen as sovereign nations by the U.S. government, and are eligible to receive federal aid from the U.S. Bureau of Indian Affairs (Bureau of Indian Affairs, 2019; *Federal Acknowledgement or Recognition*, n.d.; O'Neill, 2021). Federal recognition requires meeting seven criteria outlined in Title 25 Code of Federal Regulations Part 83, including: (1) Indian entity identification, (2) distinct community, (3) political authority over Tribal members, (4) a governing document, (5) descent from a "historical Indian Tribe", (6) Unique membership to this Tribe (i.e., no other Tribal membership), and (7) no previous Congressional legislation preventing Tribal relationships with the federal government (*25 CFR Part 83 Subpart B*, 2022). As of April 8th, 2022, there were three ongoing petitions for federal recognition from the Schaghticoke Indian Tribe, Muscogee Nation of Florida, and Piro/Manso/Tiwa Indian Tribe of the Pueblo of San Juan Guadalupe (*Petitions in Process | Indian Affairs*, 2022). Some Tribes, such as the Ohlone in California, have been fighting for federal recognition since the late 20th century and are more recently tracking their genetic history to fulfill the criteria outlined above (Curry, 2022).

Other efforts at reconciliation in the natural resource management context include the Biden administration, who during 2021, appointed Deb Haaland, member of the Pueblo of Laguna, as the first Secretary of the Interior, and Charles F. "Chuck" Sams III, member of the Confederated Tribes of the Umatilla Reservation, as the first Director of the National Park Service – both the first in their position to be of known Indigenous lineage (Lakhani, 2020; *News Release*, 2021). President Joe Biden also released Executive Order 14008 (January 2021), which included Section 216 that seeks to protect 30 percent of U.S. land according to global protected area standards by 2030 (Jones, 2021b; Richards, 2018)⁴. This "30x30 initiative" has been praised by conservationists who advocate for increased environmental protection in an era of climate

⁴ As of the publication of this thesis, U.S. Congressional Research Service notes that federal agencies manage ~28% of land in the U.S. However, many of these lands allow extractive industries (e.g., gas and oil development), which precludes them from consideration as 'protected' by IUCN protected area guidelines (Dudley, 2008). In fact, according to these guidelines, only ~12% of the terrestrial U.S. is protected by federal, state, and local governments (Pike, 2021; Richards, 2018), which is below the global average of 15% of protected terrestrial areas reported by the World Database on Protected Areas (Jones, 2021b; Pike, 2021; UNEP-WCMC & IUCN, 2020).

change and widespread species extinctions, as well as the inclusion of historically underrepresented communities in this initiative (Biden, 2021; Jones, 2021b; Pike, 2021).

Though the executive order includes (but does not necessarily prioritize) Tribal nations in its protection plan, some conservationists, such as author Andy Kerr, are not satisfied with this announcement, claiming that it undermines natural resource management and conservation efforts by considering areas that have extractive activities (e.g., commercial logging, grazing, agriculture) as “protected” (Yu, 2021). According to Andy White of the Rights and Resources Initiative, Indigenous communities are also concerned that 30x30 will continue to promote exclusionary conservation of Indigenous and locally managed lands, as well as undermine the natural resource management work that Indigenous communities have engaged in for centuries, co-opting generations of Indigenous interaction with the landscape for the benefit of the government (Jones, 2021a).

Given such recent attempts to (re)integrate Indigenous peoples into U.S. national resource management efforts, there is a need to understand the ways in which these partnerships are identified and developed during planning efforts and when managing federal public lands, such as national parks, to ensure that such efforts are not performative and ultimately lead to lasting positive changes. This research seeks to fill this gap by providing a comprehensive review of Indigenous representation in U.S. national park management to establish a baseline for further research.

1.3 Research Significance & Questions

The U.S. National Park Service (NPS) celebrated its centennial birthday on August 25th, 2016. As part of the centennial celebration, NPS units published foundation documents, guiding the agency into a second century of public land management. These foundation documents, or general management plans, are intended to be used as decision making tools, consolidating and formalizing key components of each park unit, including purpose statements, partnerships, and core park values. Through a review of national park foundation documents, this research aims to evaluate the extent to which federally recognized Indigenous peoples in the U.S. are included in key management decisions and planning, contributing to a body of research often understudied in natural resource management contexts. Results will assist academics and land managers in

recognizing opportunities for collaboration between Indigenous communities and the U.S. national parks into the next century.

To achieve this goal of understanding collaborative opportunities with Indigenous peoples in a park context, this research draws on concepts from two academic areas: (1) *boundary work theory*, examining the creation and maintenance of social boundaries and the separation of “science” from “non-science” (Fisher, 1988), and (2) *collaborative management*, or the “sharing of power and responsibility between the government and local resource users”, including historic populations, such as Indigenous peoples, who may no longer be geographically “local” (Berkes, 2009, p. 1692). Drawing upon these approaches, this thesis provides a multi-dimensional assessment of NPS foundation documents using content analysis and qualitative comparative analysis. Content analysis is a qualitative analytical approach using a pre-defined codebook to assign theory- and data-driven themes (or codes) to the text, where qualitative comparative analysis determines the specific conditions (inputs) necessary for a desired outcome related to content (i.e., data coded by themes, not numbers).

Specifically, this research aims to address two questions:

- (1) How do U.S. national park units frame the opportunity for collaboration with federally recognized Indigenous peoples in their foundation documents? (Chapter II)
- (2) What factors, or combinations of factors, affect U.S. national park collaboration with federally recognized Indigenous peoples as written into park foundation documents? (Chapter III)

To address the primary research questions, five main objectives of this research have been identified:

- (1) Develop a reliable and valid qualitative codebook representing major management themes in U.S national park foundation documents for use by any researcher. (Chapter II)
- (2) Determine the extent to which Indigenous peoples are represented across different management themes within the text of U.S. national park foundation documents through qualitative content analysis using MAXQDA software. (Chapter II)
- (3) Categorize U.S. national parks according to the potential for collaboration with federally recognized Indigenous peoples, informed by MAXQDA qualitative content analysis. (Chapter III)

- (4) Identify factors, or input variables, that could impact U.S. national park collaboration with federally recognized Indigenous peoples. (Chapter III)
- (5) Examine the factors, or combination of factors, that lead to more, or less, Indigenous inclusive outcome in U.S. national park management through multi-value qualitative comparative analysis (mvQCA). (Chapter III)

1.4 Positionality

I am a White, non-Indigenous (i.e., not descended from or identify with any Indigenous population), privileged graduate student from Alexandria, Virginia, U.S., which is the ancestral lands of many federally recognized Tribes, including Pamunkey, Chickahominy, Chickahominy Eastern Division, Upper Mattaponi, Rappahannock Monacan, and Nansemond (*Indigenous Peoples, Virginia Indians, and Alexandria*, 2022). My public high school and university educations emphasized White colonist and capitalist histories, which shaped the ways in which I view and interact with the world around me. My graduate institution is The Ohio State University (OSU) in Columbus, Ohio (named after explorer Christopher Columbus), a land grant institution situated on the lands of the Shawnee, Potawatomi, Delaware, Miami, Peoria, Seneca, Wyandotte, and Ojibwe peoples ceded through the 1795 Treaty of Greenville and the Indian Removal Act of 1830 (*Land Acknowledgment*, 2019). Additionally, the state of Ohio is not presently home to any federal or state recognized Tribes, though organizations such as the Newark Earthworks Center at OSU, the Native American Indian Center of Central Ohio, and the Greater Cincinnati Native American Coalition, among others, offer opportunities for Indigenous peoples throughout the state, recognizing persistent connections among Indigenous peoples to Ohio landscapes.

As a result, the overall approach of this research attempts to contribute to the academic and practitioner literature in a way that is not extractive and does not contribute to further marginalization of Indigenous peoples in the U.S. I also recognize that land acknowledgment statements naming specific Tribes can often be performative when (1) only considering Indigenous populations as a relic of the past without identifying future opportunities and (2) excluding Indigenous voices in their creation. Overall, this research is not an attempt to amplify my voice above Indigenous voices, nor am I claiming myself an expert in presenting the perspective of Indigenous peoples (as a non-Indigenous researcher that would be unethical). This

research considers the potential for cross-cultural collaboration, as well as the ways in which non-Indigenous organizations can recognize inherent biases and move towards more equitable, inclusive, productive, and lasting partnerships with Indigenous peoples who may be open to such opportunities.

1.5 Important Terms and Concepts

For clarity and consistency, this section identifies and defines frequently used terms according to theoretical perspectives and relevant literature.

Indigenous vs. Other Terms

There are many ways in which Indigenous peoples are referred, including Indigenous, Native American, American Indian, Aboriginal, and First Nation (Ross et al., 2011). This research predominantly uses the term ‘Indigenous’ to refer to what Ross et. al. defines as “peoples [that] are ‘native’ to a particular place, original to their lands rather than having migrated from elsewhere” (p. 21), though it is important to note that all the above terms are used interchangeably throughout the national park foundation documents. Though the use of a multitude of terms in multi-sited research may be necessary, this research uses the term ‘Indigenous’ in recognition that the origins of ‘American Indian’ and ‘Native American’ reflect settler colonial histories in the U.S. (Pauls, 2008; Ross et al., 2011). For example, the term ‘Indian’ derives from Christopher Columbus’s (incorrect) belief he had landed in the West Indies. Similarly, the concept of ‘America’ was used by colonizers to describe the same landscape beginning in the 16th century (Pauls, 2008). To remain consistent, this research predominantly uses the term ‘Indigenous’ in an effort to be more comprehensive. However, respecting and using the language of Indigenous peoples when collaborating or partnering with them is paramount; thus, this research sometimes uses ‘Indigenous’, ‘Tribe’, ‘American Indian’, ‘Native’, and ‘Native American’ interchangeably throughout the text, particularly when external sources or Indigenous groups use those terms.

‘Indigenous’ and other terms will also be capitalized throughout this research, acknowledging that Indigenous peoples and Nations are as valid and meaningful as country names that are capitalized (Ross et al., 2011). Lastly, this research only considers federally recognized Indigenous peoples in the U.S. though many Indigenous-identifying groups are not

recognized at the federal level. This consideration, though limiting the overall scope of collaboration potential, seemed necessary because the data source for this research are management documents produced by the U.S. government and address partnerships potential with sovereign nations that the U.S. government recognizes (O'Neill, 2021; *Petitions in Process* | *Indian Affairs*, 2022).

1.5.2 Indigenous Knowledge (IK)

This research uses 'Indigenous Knowledge' (IK) to refer to what Berkes (2000, p. 1252) defines as, "...a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and their environment", emphasizing the importance of practice in creating and maintaining IK. For example, Potawatomi botanist and author, Robin Wall Kimmerer discusses the role of language in understanding and making sense of the world in her book, *Braiding Sweetgrass* (2013). The idea of IK was reflected by case studies in Western Canada (Henson et al., 2021) and sub-Saharan Africa (Gorenflo & Romaine, 2021) where Indigenous language groups overlapped with species ranges. Therefore, the knowledge contained in Indigenous languages (some of which are endangered) are vital to the conservation of biodiversity.

However, ideas of IK are conceptualized and defined in many ways. This lack of consensus and application among scholars has made it difficult to discuss these concepts universally. For example, Whyte (2013) uses the term 'Traditional Ecological Knowledge', while also using the term 'Indigenous knowledges' in another context(Whyte, 2017). Other commonly used terms include 'traditional knowledge', 'Indigenous knowledge of the environment', and 'Native science' (Whyte, 2017). The use of 'Indigenous Knowledge' is more inclusive of ways of knowing outside an 'ecological' context. Additionally, terms such as 'Traditional Ecological Knowledge' can refer to non-Indigenous peoples who may have gained ecological knowledge through long land tenures despite being settlers; and 'traditional' also alludes to the past, when many of these knowledge systems are firmly rooted in the present (Ross et al., 2011; Whyte, 2013).

1.5.3 Management in the National Park Context

This research refers to ‘natural resource management’ as an all-encompassing term that includes (but is not exclusive to) all management actions carried out by U.S. national parks, including the management or maintenance of natural and cultural landscapes to ensure that those landscapes can provide for future generations (NPS, 2020; Watson et al., 2014)⁵. In the context of this research, the ‘management or maintenance’ is being done by NPS through the Department of the Interior (DOI) and/or by Indigenous peoples through Tribal governments. ‘Natural’ refers to non-human environments and landscapes (e.g., flora & fauna, physical features of the landscape, and wilderness value), whereas ‘cultural’ refers to spaces with cultural, historic, and ethnographic values (Birnbaum, 1994). Additionally, ‘future generations’ refers specifically to individuals who have a stake in national park landscapes, including Indigenous peoples, local communities, and park visitors, even when not necessarily currently connected to these places. Lastly, these concepts are not mutually exclusive (e.g., a site can be considered both ‘natural’ and ‘cultural’) and they reflect the language used by the national park foundation documents.

1.6 Thesis Overview

In the remainder of this thesis, Chapters II and III aim to fill the identified gaps through a selected sample of national park foundation documents. Specifically, Chapter II addresses the ways in which U.S. national parks frame relationship to federally recognized Indigenous peoples through qualitative content analysis of park foundation documents. This chapter establishes a baseline of knowledge regarding the representation of Indigenous peoples in U.S. national foundation documents which could underscore or serve as the basis for collaboration with Indigenous partnerships across park management efforts. Chapter III explores factors shaping different categories of collaborative management between Indigenous peoples and NPS, utilizing multi value qualitative comparative analysis. Lastly, Chapter IV will provide an overarching discussion on results, limitations, final conclusions, and recommendations from this work.

⁵ This language draws upon the mission statement of the NPS, which states the agency “...preserves unimpaired the natural and cultural resources and values of the national parks system, for the enjoyment, education, and inspiration of this and future generations. The NPS cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world” (CANY 2013, p. 3).

Chapter II: Indigenous Representation in Protected Area Management

The global protected area movement has been largely driven by exclusionary management practices, where ideas of a “pristine” wilderness have undermined historic human interactions with place (Berkes, 1999; Brockington & Igoe, 2006; West et al., 2006). In particular, divisions between social contexts and the physical environment have resulted in the widespread relocation of Indigenous peoples for the creation of protected areas (Brockington & Igoe, 2006; Reid, 2012; Taylor, 2016). As a result, not only have Indigenous peoples been physically removed from their ancestral homelands, but Indigenous Knowledge connected with these lands has been degraded and even outright lost (Kimmerer, 2013; Whyte, 2013). In the last few decades, researchers and policy makers have realized that such exclusionary practices are not only morally unjust, but may also have negative consequences for biodiversity and conservation outcomes (Enkerlin-Hoeflich et al., 2015; Hay-Edie et al., 2011; Mauerhofer et al., 2018; Nursey-Bray & Hill, 2010).

The push to (re)integrate people and protected areas, more broadly, began with the environmental movement of the late 20th century (Catton & Dunlap, 1978). Recent academic literature has outlined the ways in which Indigenous peoples are linked to natural landscapes and can lead to better management outcomes. For example, Pinchin (2021) discusses the ways in which Indigenous Knowledge can address gaps in scientific data collection, such as through Indigenous oral histories about fish species that span decades. Similarly, a 2021 United Nations Report found that Latin American forests managed by local communities had lower rates of deforestation and, therefore, an increased capacity for carbon sequestration (FAO, 2021; Santiago, 2021). Gorenflo & Romaine (2021) examine species ranges and Indigenous languages in African Natural World Heritage Sites, finding links between the two, and concluding that Indigenous integration into natural resource management is integral in recognizing Indigenous connections to the land, and because Indigenous oral histories and ecological knowledge can provide information essential to the preservation of such spaces. This push for integration has

also been reflected in global management efforts, including frameworks of community-based conservation and adaptive management (Berkes, 2021), Indigenous and community conserved areas (Jonas et al., 2017), Indigenous Guardians (Reed et al., 2020), and community clusters (Dowsley, 2009). Though somewhat different in their approaches (e.g., protected area vs. community-led management), each framework explicitly recognizes the value of local and/or Indigenous knowledge and cooperation, something that has not been as consistent in the U.S.

The rise of Indigenous Knowledge (IK) in academic literature has not necessarily led to the term (or related terms, like Traditional Ecological Knowledge) being uniformly understood or referenced (Berkes, 2021; Whyte, 2013). Definitions range from IK as a stockpile for local knowledges (exclusionary of Indigenous peoples) to IK as a dynamic, collaborative, and complex process focused on participation (inclusionary of Indigenous peoples) (Whyte, 2013). Berkes et al. (2000) defines IK as “...a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and their environment” (p. 1252). This definition highlights complex contemporary and historic relationships between all living beings and characterizes these relationships as being indivisible from embedded cultural practices and beliefs (Berkes et al., 2000, p. 200; Whyte, 2013). A universal definition of IK (i.e., Berkes et al., 2000), especially in the context of this research, is important in identifying the ways in which IK impact natural resource management and in what aspects of natural resource management IK is most needed. Understanding ideas of collaboration between Indigenous peoples and protected areas, and what may inhibit collaboration, particularly in a country such as the U.S. that has historically influenced the protected area movement, offers insight into the ways that collaborative frameworks can be applied in a global context.

2.1 Theoretical Perspectives

This research is informed by two primary perspectives: (1) *boundary work theory* and (2) *collaborative management*. The integration of these perspectives seeks to provide a multi-dimensional perspective of natural resource management, as well as to situate these theories in the context of Indigenous Knowledge and U.S. national parks.

2.1.1 Boundary Work

Boundary work theory refers to the creation of social boundaries, such as the separation of Western conceptualizations of science (i.e., a purported objective, systematic way of generating knowledge) from Indigenous Knowledge (Fisher, 1988). Fisher (1988) claims that the classification of knowledge in these ways leads to unequal distributions of power in that “consent is won and shaped so that the power of the ruling class appears both natural and legitimate” (Fisher, 1988, p. 168). Fisher (1988), Gieryn (1983), and Ross et al. (2011) demonstrate how this power/knowledge dichotomy has evolved, beginning with the dominance of certain religious ideologies before giving way to a new “ruling class” of Western conceptualizations of science (e.g., the scientific method) representing the “truth”. However, Gieryn (1983) argues that conceptualizations of Western science can be as varied as Indigenous Knowledge, and such variation undermines the assumption of Western science as an ultimate “truth”, and raises questions as to how such authority was acquired (Gieryn, 1983).

Boundaries in Natural Resource Management

Bridging IK and Western scientific knowledge in natural resource management and other conservation contexts is slowly becoming more salient in academic scholarship and the popular press (Berkes, 2021). For example, the Leech Lake Band of Ojibwe and Chippewa National Forest (administered by the U.S. government) in Minnesota, whose physical boundaries overlap, have partnered to improve the management of their shared lands (USDA, 2019). However, the concept of bridging knowledge systems is often overshadowed by misconceptions that IK can be borrowed without benefit to Indigenous communities (Berkes, 2021; Whyte, 2013). Berkes (2021) claims these perspectives can (and do) decouple IK from the social contexts in which the knowledge was generated, perpetuating the colonialist histories of Western science. Likewise, Indigenous scholar Whyte (2013) frames Traditional Ecological Knowledge (TEK) as a “collaborative concept” (p. 2) based on “situated knowledge” (p. 3), arguing that IK isn’t merely an “archive” (p. 3) to be used by scientists, but rather a dynamic sociocultural relationship with the environment. Potawatomi botanist and author Robin Wall Kimmerer emphasizes that IK is not a replacement for, but rather a complementary extension of Western science.

The Three Sisters offer us a new metaphor for an emerging relationship between Indigenous knowledge and Western science, both of which are rooted in the earth. I think of the corn as traditional ecological knowledge, the physical and spiritual framework

that can guide the curious bean of science, which twines like a double helix. The squash creates the ethical habitat for coexistence and mutual flourishing. I envision a time when the intellectual monoculture of science will be replaced with a polyculture of complementary knowledge. And so all may be fed.

-Excerpt from Braiding Sweetgrass (2013, p. 139)

In the context of this research, exclusionary modes of conservation represent this “monoculture of science” (Berkes, 2021; Kimmerer, 2013; Ungar & Strand, 2012; Watson et al., 2014). However, recent editorials, such as David Treuer’s (2021) *Return the National Parks to the Tribes*, represent a shift towards a “polyculture of complementary knowledge”, in which multiple types of knowledge (e.g., Western scientific knowledge and IK) complement other ways of knowing to improve the ways in which humans interact with the environment (Kimmerer, 2013, p. 139).

Boundary Work in Practice: Two-Eyed Seeing

The integration of Indigenous Knowledge and Western scientific knowledge outlined by Kimmerer (2013) can be viewed as a form of ‘Two-Eyed Seeing’, where oft siloed western scientific research is complimented by Indigenous ways of seeing the environment (Bartlett et al., 2012; Peltier, 2018; Rapp, 2020). Introduced by Mi’kmaw elder Albert Marshall in 2004, Two-Eyed Seeing was coined in order to better integrate IK in modern educational curricula (Bartlett et al., 2012). Elder Marshall, as he is referred to by Bartlett et al. (2012), suggests that the guidance of Two-Eyed Seeing is a “gift of multiple perspective”, allowing one to see the strengths of both IK and Western scientific knowledge, as well as acknowledging each as a “...distinct and whole knowledge system...” (Bartlett et al., 2012, p. 355). A later paper from Elder Marshall & Bartlett (2018) conceptualize Two-Eyed Seeing as a “wholistic” (aka holistic), fluid process that includes cross-cultural learning, evaluation, and validation of all knowledge systems, and a vision for community participation and growth. Similarly, Anishinaabek scholar Peltier (2018) argues that qualitative, participatory approaches used in conjunction with Indigenous methodologies are an example of Two-Eyed Seeing because such approaches “...can still honor and can flow from Indigenous paradigms” (p. 4).

In boundary work theory, Two-Eyed Seeing can be situated in discussions focused on the separation and reconciliation of Indigenous people and the environment (Bartlett et al., 2012). However, the ability to ‘see through both eyes’ is determined by lived experience rather than

Indigenous ancestry (Bartlett et al., 2012; Reid, 2020). Reid (2020) discusses his positionality as a “settler with mixed English/Mi’kmaw ancestry” (p. 3). Despite meeting the “‘criteria’ to be enrolled as a status-Indian” (p. 3) in Canada through a distant marriage, Reid (2020) does not share the lived experiences of Mi’kmaw communities and therefore maintains the identity of a non-Indigenous scholar. Such acknowledgment is supported by the Berkes’ (2000) definition of Indigenous Knowledge, in which Indigenous ways of knowing are “...handed down through generations by cultural transmission...” (p. 1252).

2.1.2 Collaborative Management

Complementing boundary work, perspectives of collaborative natural resource management consist of a “sharing of power and responsibility between the government and local resource users” (Berkes, 2009, p. 1692). Such an approach recognizes that many ecological systems are too complex to be governed by one (or even few) user(s) or stakeholder(s) and that populations affected by management decisions should contribute to their development and maintenance (Berkes, 2009). However, what remains unclear is what form of collaboration is best and for whom or what.

Overall, collaborative natural resource management encompasses a variety of processes that claim collaboration between stakeholders can lead to better ecological outcomes (Enkerlin-Hoeflich et al., 2015; Hay-Edie et al., 2011; Kimmerer, 2013; Mauerhofer et al., 2018; Nursey-Bray & Hill, 2010; Watson et al., 2014). For example, Dowsley (2009) describe how community clusters provides the opportunity for Indigenous peoples in Nunavut Canada to engage in the management of polar bears through the integration and institutionalization of Indigenous Knowledge. Such processes provide a framework through which socially constructed boundaries between knowledge systems and worldviews can be bridged.

Despite a need to understand variations of collaboration, the academic literature does not appear to settle on a universal or “right” way to categorize different levels of collaboration (Berkes, 2009; Plummer & Fennell, 2007; Plummer & Fitzgibbon, 2004; Premauer & Berkes, 2015; Tipa & Welch, 2006). Ideas of collaboration are apparent in complementary approaches such as Liu et al.’s (2007) coupled human-natural systems (CHANS), Ostrom’s (2009) socio-ecological systems (SES) frameworks, McGinnis & Ostrom’s (2014) institutional analysis and development (IAD) framework, adaptive co-management (Berkes, 2021; Zedler, 2016),

cooperative management (Berkes, 2021), and community based management (Berkes, 2021), among others.

When examining the inclusion of Indigenous peoples in natural resource management, there are some things that can limit collaboration, often informed by boundary work theory. For example, IK may be seen as a relic of the past (instead of a multi-generational process), while Western science viewed as the only valid form of knowledge. This research seeks to examine the ways in which this, and similar, examples regarding what kinds of knowledge and partnerships are accepted and manifested in a U.S. natural resource management context.

2.2 Case Study: U.S. National Park Foundation Documents

The national park movement in the U.S. began with the establishment of Yellowstone in 1872, the first globally recognized national park (NPS, 2018). This “Yellowstone Model” of conservation began with the intention to set aside land of scenic value, free from human influence (Taylor, 2016). In 1906, the Antiquities Act was signed by Theodore Roosevelt, giving the President the power to declare federally controlled lands as national monuments and allowing for the quick preservation of places with historic, cultural, and/or scientific value (Taylor, 2016). Roosevelt used this authority to declare 18 sites as national monuments (e.g., Petrified Forest, Grand Canyon, Pinnacles, Lassen Peak), though such establishment did not necessarily lead to adequate funding for management of the site as a monument. National monuments can become parks (or other public lands) only upon Congressional approval. Approximately 45 years after the establishment of Yellowstone and the subsequent establishment of multiple additional parks and other public lands (e.g., wildlife refuges, national forests), the National Park Service (NPS) was established under the direction of the Department of the Interior (DOI) by the 1916 Organic Act with the mission to preserve “unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations” (NPS, 2020).

Presently, there are hundreds of public landscapes in addition to national parks managed by NPS as ‘park units’, including national monuments, national seashores and lakeshores, historic sites, national battlefields, and preserves (NPS, 2018). Park units also have specific guidelines for resource use and extraction. For example, the National Park Service prohibits defacing public landscapes, the removal of natural and cultural artifacts, and close interactions

with wildlife (36 CFR Part 2, 1983). Not only do park units preserve natural and cultural resources through such regulations, but tourism and visitor spending in areas around parks contribute billions of dollars to the national economy (\$28.6 billion in 2020 alone) and supports thousands of jobs in the tourism industry (approximately 234,000 jobs in 2020) (NPS Office of Communications, 2021).

The establishment of parks in the late 19th century reinforced ideas of the U.S. settler state, in which colonizers remain dominant and maintain power over minoritized groups (i.e., Indigenous peoples), and the primary authority for natural resource management on public lands (Taylor, 2016). Widely recognized models of exclusion, such as the Yellowstone Model, were perpetuated by a movement that adopted ideas of nativism (the organized exclusion of particular groups because of their ethnicity or race), frontierism (derived from European influence and related to manifest destiny), and transcendentalism (a spiritual relationship with nature), the convergence of which created a movement that was inherently white, male, and elitist (Berkes, 2021; Spence, 2000; Taylor, 2016; Ungar & Strand, 2012; Watson et al., 2014). Characterized as spaces of “pristine wilderness”, the national park movement in the United States normalized the removal of Indigenous communities from their ancestral homelands to reservations through widespread eviction – physically, economically, and culturally (Berkes, 1999; Lele et al., 2010; Ross et al., 2011). More recently, collaboration among U.S. and Canadian national governments, private landholders, local communities, and Indigenous peoples in the Crown of the Continent ecosystem shows efforts to manage landscapes at the ecosystem level (i.e., bridging physical boundaries), while also integrating the perspectives and interests of many stakeholders by bridging social boundaries (*Roundtable on the Crown of the Continent*, 2020).

During 2016, the NPS celebrated 100 years since its establishment. Despite setting the precedent for national parks in the early 20th century, it is unknown where the U.S. national parks currently stand in its efforts to institutionalize the significance of Indigenous peoples and IK into planning and management efforts. Drawing upon boundary work theory and perspectives from collaborative management, this research seeks to provide a comprehensive review of Indigenous representation in U.S. national park visioning efforts. To do so, this research examined national park foundation documents, which are general management plans written and published around the time of the 2016 National Park Service Centennial, through qualitative content analysis, asking: ***How do U.S. national parks frame the opportunity for collaboration with federally***

recognized Indigenous peoples in their foundation documents? Driven by this question and a need to better understand Indigenous representation in national park foundation documents, two main objectives were identified:

- (1) Develop a reliable qualitative codebook representing major management themes in U.S. national park foundation documents.
- (2) Determine the extent to which Indigenous peoples are represented in U.S. national park foundation documents through qualitative content analysis using MAXQDA software.

This study seeks to develop and test a methodology that can be used to understand the degree to which public land managers, such as those employed by NPS, frame the role of Indigenous peoples in their planning and management approaches. Understanding these current approaches can help with evaluating the steps necessary to improve collaboration with Indigenous peoples during the next century of NPS management.

2.3 Methods

2.3.1 Data

The data for this research were primarily extracted from national park foundation documents. These documents are guiding management plans created to promote a “shared understanding of what is most important about [a] park” (BRCA, 2014, p. 1). National Park foundation documents provide the structure necessary to develop more comprehensive plans related to specific aspects of park management, including infrastructure development and maintenance, visitor use management, and species control/conservation, among other topics informed by these foundational values. Though publicly available, the foundation documents were not intended for public use, but rather to outline the current state of a park’s management of natural, cultural, and visitor landscapes, as well as identify opportunities for future park management.

Each document has four main components:

- (1) **Core components**, which outline the history of the park, as well as the park’s purpose statement, significance, interpretive themes, and other important resources and values. These sections discuss resources important to the park, as well as the “key stories or concepts a visitor should understand after visiting a park” (CAVE, p. 9).

- (2) **Dynamic Components**, which include a description of special mandates and administrative commitments unique to the park and an analysis of planning and data needs.
- (3) **Meeting Attendees, Preparers, and Consultants**, which includes the names of people involved in the preparation and publication of the foundation document, and
- (4) **Appendixes**, which includes important supplementary information including park enabling legislation, other legislative acts, and formal partnerships.

Listed contributors of the documents range from park superintendents to NPS regional directors. When the NPS developed these documents, the public had opportunities to comment through parkplanning.nps.gov, as required by the Administrative Procedure Act. The planning website is reasonably easy to navigate and clearly displays projects that are open for comment; however, who commented, why they commented, and/or what they commented with regard to each project is unclear.

This research assumes that the foundation documents are comparable to each other given that all foundation documents of interest were created with the same purpose and template despite different publication dates. The documents are also particularly useful sources of data when considering feasibility (they are publicly available or available upon request) and ethics (the methods to gather the data for this research specifically are not additively extractive or transactional from the population of interest).

Of the 63 established national parks in the United States as of 2021, 45 foundation (representing the contiguous 48 states) documents were investigated. National parks in Hawai'i, Alaska, and U.S. territories (e.g., Samoa, Virgin Islands) were excluded due to vastly differing cultural and Indigenous histories. Four national parks (White Sands, New River Gorge, Gateway Arch, and Indiana Dunes) were established after the 2016 NPS Centennial and were excluded. Hot Springs National Park did not have a fully developed foundation document, and was therefore excluded. Publication dates of the documents examined ranged from April 2010 (Grand Canyon) to August 2018 (Biscayne) and varied in length from 27 pages (Joshua Tree) to 108 pages (Grand Teton).

Lastly, NPS park abbreviations were used to denote each document. Abbreviations consist of four letters representing either the first four letters of a park name if the park is one

word or the first two letters of the first two words of the park name if it has more than one word. For example, the abbreviation for Zion National Park is ZION, where the abbreviation for Grand Canyon National Park is GRCA. A list of all national parks in the sample and their abbreviations can be found in Appendix A.

2.3.2 Codebook Development

Data were coded in MAXQDA qualitative coding software. The overarching analytical approach of this research was qualitative content analysis, a form of text analysis that utilizes pre-defined codes (Benoit, 2019). To execute this, a master coding handbook was developed to assign systematic meaning to the text of the foundation documents in a hybrid approach, containing both theory-driven (deductive) and data-driven (inductive) codes (Benoit, 2019; Boyatzis, 1998).

The master coding handbook was developed over the course of eleven months from March 2021 through February 2022, including creating and consolidating codes, drafting a codebook, and intercoder reliability testing (Campbell et al., 2013; DeCuir-Gunby et al., 2011). Theory-driven codes were determined through a review of relevant collaborative natural resource management literature, aimed at operationalizing common characteristics of collaboration. Journal articles, books, and other literature related to the research questions were found through searches on Google Scholar, Web of Science, and The Ohio State University Libraries website. From each source, characteristics of co-management (e.g., joint deliberations, shared dialogue) were recorded until a point of saturation was reached (i.e., no new information). These characteristics were then organized into overarching themes, or categories (e.g., partnerships, knowledge), that served as the scaffolding of the initial codebook.

Data-driven codes were derived from each foundation document's 'Fundamental Resources and Values' section to capture the resources deemed most important to each park. For example, fundamental resources and values identified by Pinnacles National Park (PINN) include geologic landforms, scenic views and wild character, Talus caves, scientific research and study, and ecology. Including data-driven codes made the codebook more comprehensive and tailored to the management style of the U.S. federal government, and specifically to the NPS. Initial drafts of the codebook included broad thematic categories such as 'context', 'park characteristics', 'main themes', 'partnerships & stakeholders', 'knowledge', 'goals & objectives', and 'culture'. As

code development progressed, further iterations of the codebook were organized by management types (e.g., natural, cultural, visitor), rather than the common structural components of each document, creating a more direct connection to the overarching research questions.

An initial test of the codebook was carried out by the primary researcher on foundation documents not included in the research sample, including documents from national monuments (e.g., Little Bighorn National Monument) and excluded national parks (e.g., Hawaii Volcano). Subsequent code revision and consolidation was conducted in preparation for reliability testing with a hired, independent research assistant.

To calculate reliability, the primary researcher (myself) and an independent researcher (a hired research assistant) separately coded five documents (approximately 11 percent of the total sample) that were randomly selected using the `sample()` function in RStudio⁶. Each park document was assigned a number (1-45) based on the alphabetical order of park names, and five of these numbers (without replacement) were randomly selected through these methods. Each round of reliability testing utilized five different park documents.

Inter-coder reliability was determined through coding consistency and overlap using the 'Intercoder Reliability' feature of MAXQDA (if done by hand: $\text{reliability} = (\# \text{ of agreements}) / (\text{total } \# \text{ of agreements} + \text{disagreements})$ after merging the independently coded documents into one workspace. Once completed, codes – or sections of documents with low reliability – were evaluated by both coders and the codebook was revised accordingly. This process was repeated until the desired level of reliability of no less than 80 percent was reached (Campbell et al., 2013; DeCuir-Gunby et al., 2011; MacQueen et al., 1998).

In addition to proportional calculations, there are many statistical methods of determining reliability utilized by researchers, such as Spearman's rank, Pearson product-moment correlation coefficient, Krippendorff's Alpha coefficient, and Cohen's Kappa statistic (Brennan & Prediger, 1981; Campbell et al., 2013; Cohen, 1960; DeCuir-Gunby et al., 2011). Unlike proportional calculations of code agreement, these statistical methods account for the chance overlap of codes (Brennan & Prediger, 1981; Campbell et al., 2013; Cohen, 1960). Like proportional calculations, literature describing the use of these statistical approaches outline accepted ranges for reliability (Artstein & Poesio, 2008; Landis & Koch, 1977). MAXQDA, the qualitative coding software

⁶ For testing reliability, test samples should be 10 to 20 percent of the total sample ($n = 45$); thus, five documents were chosen (Campbell et al., 2013; MacQueen et al., 1998).

used for this research, reports both the proportional agreement and Kappa values for inter-coder reliability; therefore, both are reported in this thesis. The range of acceptable Kappa values in intercoder reliability calculations are poor (<0.00), slight (0.00-0.20), fair (0.21-0.40), moderate (0.41-0.60), substantial (0.61-0.80), and almost perfect (0.81-1.00) (Landis & Koch, 1977).

Overall, five intercoder reliability tests were conducted from January through February 2022. Foundation documents in the first four reliability tests were saved in a PDF format. Foundation documents in the fifth reliability test were converted to Word documents with the enabling legislation of the park coded as a separate PDF file to allow for a more detailed analysis. Though coded using the same guidelines, the formatting of text in the documents was changed as a result of the conversion (e.g., unclear paragraph spacing was reduced, deleted punctuation) for intercoder reliability test five.

Calculated reliability of the codebook as applied to the text of the national park foundation documents in MAXQDA in the fifth round of testing was 79.97% code agreement and a Kappa value of 0.79 at 90 percent code overlap and 80.64% code agreement and a Kappa value of 0.80 at 80 percent code overlap (Appendix B).⁷ Additionally, three codes from the codebook (*formal partnerships*, *enabling legislation*, and *ambiguous*), were excluded from reliability testing: (1) *Formal partnerships* (FPART) and *enabling legislation* (CPEL) were evaluated for presence/absence yet were not used in this analysis, and (2) *Ambiguous* (AMBIG), which sought to capture ‘ambiguous’ mentions of Indigenous peoples, was not used in analysis due to inconsistencies in coding.

With these reported values, the codebook meets the minimum reliability threshold of 80 percent proportional agreement, while also meeting the reliability guidelines for the Kappa statistic. While on the low end of the threshold, reliability was considered adequate because many disagreements between the two coders were attributed to the different ways MAXQDA displays PDF and Word documents that were not anticipated prior to the fifth round of coding. For example, PDF documents in MAXQDA are organized by page, whereas Word documents are organized by paragraph. Additionally, once the PDF was converted to a Word document, the

⁷ Adjusting the code overlap when calculating intercoder reliability in MAXQDA allows for included/excluded punctuation, spaces, and other variations in coding that have no impact on analysis, to be accounted for. For more information visit: <https://www.maxqda.com/help-mx20/teamwork/problem-intercoder-agreement-qualitative-research>

extent of the text in the MAXQDA document browser often altered the paragraph spacing, introducing differences in how much text was coded in a specific section, impacting reliability. Additionally, in sections of the documents, punctuation was eliminated due to document conversion, resulting in a difference in coding segments (i.e., one sentence vs. two sentences coded at once). Inconsistencies such as these (e.g., too much or too little white space coded) were mitigated while coding the full sample by referencing the original PDF formatting of each foundation document while coding.

The final codebook (Appendix C) contained 20 codes across five broad thematic categories. These categories, which included ‘partial codebook’, ‘natural landscapes’, ‘cultural landscapes’, ‘visitorship & public involvement’, and ‘communication and legislative processes’, were determined by what management themes, as stated by the foundation documents, were considered important to each park. Of the 20 codes applied to the foundations documents, *park specific enabling legislation* (CPEL), *formal partnerships* (FPART) and *ambiguous* (AMBIG) were dropped, leaving 17 codes explicitly considered in this study. Overall, this codebook was within the maximum threshold of 30-40 codes suggested by Macqueen et. al. (1998). The unit of analysis varied across the codebook, with three codes (TRGEN, TRSPEC, FPART) coded as a term or phrase, one code (PPURP) coded as an entire paragraph, and all other codes coded at the sentence level. Multiple codes could be applied to the same block of text (whether phrase, sentence, or paragraph), and often were, though the formatting and code definitions of the final codebook were specific enough that it was rare to apply more than three or four codes to a single sentence (one exception was the *park purpose statements* or PPURP). Consideration of code overlap was important in the development of the codebook because the combination of certain codes could indicate specific patterns in the data.

2.3.3 Coding Process, Steps, & Guidelines

Instead of coding all text in each foundation document, totaling over 3,000 pages, specific guidelines were developed to target areas of interest within the documents. Guidelines for coding the national park foundation documents consisted of three primary components: (1) coding steps, (2) important terms regarding formatting, and (3) additional notes for coding consistency. Coding steps for the final codebook are listed below (the full coding guidelines, including terminology and notes on coding consistency can be found in Appendix D).

1. Read through the text of the document(s) and code, all *general* (TRGEN) and *specific* (TRSPEC) mentions of Indigenous peoples according to the smallest unit possible (e.g., phrase vs. sentence). The park purpose statement should be coded for further reference. And all identified Indigenous formal partnerships should be coded as *formal partnerships* (FPART).
2. Read through the corresponding enabling legislation for each park and code according to the 'partial codebook'.⁸
3. Code the text of the document(s) using the full codebook. For each park purpose statement identified, code each sentence individually. For each use of the 'Indigenous' code (TRGEN, TRSPEC), code the surrounding paragraph in which the code is used, coding each sentence individually.

Upon completion of codebook development and intercoder reliability testing, the final version of the master codebook was formatted and distributed to the research assistant. Foundation documents, including those that were coded in the first four rounds of reliability testing were re-coded over the course of three weeks in March 2022 using the approved codebook. Documents coded in the last round of reliability testing (n=5) were not re-coded. Foundation documents were split between the primary researcher and the research assistant by randomly selecting half of the remaining documents (n=20) using the `sample()` function in RStudio.

2.3.4 Interpreting Results

Interpreting the result of the coding process included a few different considerations including code frequency, code coverage, and code overlap. Figure 2.1 shows a selected section of coded text from Glacier National Park (GLAC) to illustrate these considerations.

⁸ Data gathered during this step were not used in the analysis of this study; however, this step was included here to further illustrate the coding process.

Figure 2.1: Glacier National Park (GLAC), Selected Coded Text


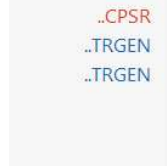
	45	Glacier National Park's resources and landscapes have drawn people to the region for 10,000 years. The 338 archeological sites and 397 historic properties document the physical evidence of human activity and the importance of the area to American Indians, First Nations, explorers, homesteaders, entrepreneurs, visitors, and scientists.
	46	Today, the park attracts more than two million visitors a year from all over the world. Visitors are able to enjoy the park in their own vehicles or board an iconic red bus to ascend the Going- to-the-Sun Road to Logan Pass and cross the Continental Divide. Boundless opportunities exist to experience solitude and truly dark night skies in the backcountry of Glacier National Park. Approximately 735 miles of horse and foot trails interweave almost all sections of the park and allow visitors opportunities to experience the many facets of Glacier National Park.

Figure 2.1 shows that paragraph 45 of the Glacier National Park foundation document was coded using the full codebook⁹. The coded sections contain two sentences and seven total codes. Two of those codes represent the *general Indigenous code* (TRGEN), indicating that the whole paragraph should be coded. There are two codes applied to the first sentence, *physical features* (NLPF) and *historic aspects* (CLHA), referring to “resources and landscapes” and “drawn people to the region for 10,000 years”, respectively. The second sentence in the paragraph has three primary codes applied, *scientific research* (CPSR), *cultural connections* (CLCC), and *non-Indigenous* (CLNI), referring to “scientists”, “importance of the area”, and “homesteaders”, respectively.

Code frequency in this section is determined through a comparison of code use to total number of codes. For examples, *general Indigenous mentions* (TRGEN) has a code frequency of 28.57 percent (2 out of 7 total codes) and all other codes have a frequency of approximately 14.28 percent (1 out of 7 total codes). Code coverage is calculated in MAXQDA by the total amount of characters (e.g., letters, spaces, punctuation) covered by a particular code. Though TRGEN has the highest frequency of this section, it has the lowest code coverage of approximately 8.63 percent of coded text (characters of coded TRGEN divided total number of characters in section), whereas *cultural connections* (CLCC) covers approximately 70.83 percent of the coded text. Unlike code frequency, calculation of code coverage does not add up to 100 percent due to overlapping of codes in a single sentence (i.e., *cultural connections* and *scientific research* both cover 70.83 percent of text).

Lastly, code overlap is considered to gauge the contexts in which certain codes are used. For example, the overlap of *physical features* (NLPF) and *historic aspects* (CLHA) in the first

⁹ In contrast, paragraph 46 was not coded because there was no mention of Indigenous peoples (TRGEN, TRSPEC, according to the coding steps.

sentence of paragraph 45 in Figure 2.1 describes an instance in which historic populations interacted with the physical landscape. The overlap of *Indigenous codes* (TRGEN) with *cultural connections* (CLCC), *scientific research* (CPSR), and *non-Indigenous* (CLNI) highlight the important of archaeological and historical sites to these groups.

2.4 Results

Forty-five national park foundation documents were coded, and these documents and their respective park enabling legislation yielded 5,135 total coded segments across the twenty codes. This research explains results from the coded segments in relation to three primary areas: (1) park purpose statements, (2) code occurrence and coverage, and (3) code overlap.

2.4.1 National Park Purpose Statements

Park purpose statements, similar to an organizational mission statement, are specific to each park and describe the reason for its establishment, guiding the rest of the foundation document. Drawing from enabling legislation and park history, these statements were typically a single sentence and captured many themes in the codebook.

Across the 45 units in the sample, only two parks, Death Valley (DEVA) and Badlands (BADL) included a direct mention of Indigenous peoples in their respective park purpose statements. Both Death Valley and Badlands used specific names (e.g., Timbisha Shoshone) rather than general terms (e.g., Native American) to refer to the populations of interest in this research. No other parks referred to Indigenous peoples, with either general or specific terms, in their park purpose statements. An example of a park purpose statement referring to Indigenous peoples is shown below:

“The purpose of Death Valley National Park, homeland of the Timbisha Shoshone, is to preserve natural and cultural resources, exceptional wilderness, scenery, and learning experiences within the nation’s largest conserved desert landscape and some of the most extreme climate and topographic conditions on the planet.” (DEVA 2017, p. 4)

Of the 215 codes applied to park purpose statements across the 45 cases, *natural landscapes - physical features* (NLPF) was the most frequently applied management code (21.9 percent). In contrast, *tribe - general* (TRGEN), *cultural landscapes - museum collections* (CLMC), *visitorship & public involvement - infrastructure* (VPINF), *communication &*

legislative processes - Indigenous Knowledge (CPTEK), *communication & legislative processes - park recognized affiliations* (CPPRA), and *communication & legislative processes - legislative history* (CPLH) were not applied at all, Table 2.1. National parks most often emphasized themes of natural landscapes (NLFF, NLPF, NLWV) and recreation (VPREC) compared to all code frequency Cultural landscape codes (CLHA, CLCC, CLMC) constituted 18.6 percent of total codes applied. Similarly, themes of communication and legislative processes (CPTEK, CPSR, CPPRA, CPLH) represented approximately 10.23 percent of codes applied, with *scientific research* (CPSR) the only code from this group applied.

Table 2.1: Comparison of code frequencies (percent occurrence in coded segments) between park purpose statements (PPURP) and coded text across the entire foundation document, and code coverage of all coded text.¹

Codes			Code Frequency (%)		Code Coverage (%)
			PPURP	Entire Document	
Theme	Subcode	Description	n = 215	n = 4,809	n = 269,496
Indigenous Codes	TRGEN	Tribe, general	0	19.1	4
	TRSPEC	Tribe, specific	1.4	14.4	6
Natural Landscapes	NLFF	Flora & Fauna	6.9	2.8	9
	NLPF	Physical Features	21.9	9.6	32
	NLWV	Wilderness Value	13	1.6	5
Cultural Landscapes	CLHA	Historic Aspects	11.6	13.6	43
	CLCC	Cultural Connections	6.1	8	26
	CLMC	Museum Collections	0	0.7	3
	CLNI	Non-Indigenous	0.9	4.2	14
Visitorship & Public Involvement	VPEDU	Education	9.8	1.3	4
	VPINF	Infrastructure	0	1	3
	VPREC	Recreation	18.1	2.3	7
Communication & Legislative Processes	CPTEK	Indigenous Knowledge	0	1.6	6
	CPSR	Scientific Research	10.2	1.7	5
	CPPRA	Park Recognized Affiliations	0	11.6	24
	CPLH	Legislative History	0	6.3	12
TOTAL			100	100	203

¹ Percent code coverage across all coded text is equal to greater than 100 percent due to code overlap. n= 269,496 refers to total number of characters coded as recognized by the MAXQDA software.

The majority of cultural landscape codes applied referred to Indigenous connections in past contexts (11.6 percent), rather than highlighting contemporary connections to park lands (6.1 percent).

2.4.2 Code Occurrence and Coverage Across the Foundation Documents

Of the 5,135 codes applied across all national park foundation documents and enabling legislation, 4,809 codes were applied to the main text of the foundation documents (excluding statement codes, enabling legislation, and formal partnerships). Overall, 920 *general Indigenous* (TRGEN) and 691 *specific Indigenous* (TRSPEC) codes were applied, representing approximately 19.1 and 14.4 percent of codes applied to the main text, respectively (Table 2.1). Thirty-eight park foundation documents mentioned Indigenous peoples both *generally* (TRGEN) and *specifically* (TRSPEC), whereas only six park foundation documents (Biscayne [BISC], Black Canyon of the Gunnison [BLCA], Canyonlands [CANY], Mammoth Cave [MACA], North Cascades [NOCA], and Shenandoah [SHEN]) mentioned Tribes *generally* (TRGEN). Grand Canyon (GRCA) contained the most *general mentions of Indigenous peoples* (54) and Petrified Forest (PEFO) contained the most *specific mentions of Indigenous peoples* (50). Glacier (GLAC) had the most *total mentions of general Indigenous* (TRGEN) and *specific Indigenous* (TRSPEC) (94), with Dry Tortugas (DRTO) having the fewest (0). There were no documents containing only *specific* (TRSPEC) mentions of Indigenous peoples.

Physical features (NLPF) also had relatively large occurrence (9.6 percent) and coverage (32 percent) values, likely because the code was applied in a variety of ways, including reference to park boundaries and acknowledgment of past (CLHA) Indigenous interaction with the natural landscape. *Museum collections* (CLMC) and *infrastructure* (CLINF) had the lowest code occurrence and coverage across the coded text. *Cultural connections* (CLCC) represented a midrange, indicating that cultural connections were prominent, but did not dominate the coded text.

Coverage of applied codes (i.e., sections mentioning Indigenous peoples *generally* and/or *specifically*) compared to all foundation document text was relatively low with maximum coverage of 11 percent (Redwoods [REDW]) and 10 percent (Grand Canyon [GRCA], Olympic [OLYM], Wind Cave [WICA]). Two documents (Black Canyon of the Gunnison [BLCA], Dry Tortugas [DRTO]) contained less than 1 percent coded text, with four additional parks having 1 percent code coverage (Arches [ARCH], Biscayne [BISC], Canyonlands [CANY], North Cascades [NOCA]). A breakdown of code coverage across all text (i.e., the entire document) and the coded text in the foundation document can be found in Appendix E and Appendix F, respectively.

Contrary to the park purpose statements (where natural landscapes were a dominant theme), code frequency and coverage results showed that sections of the foundation documents containing mentions of Indigenous peoples predominantly mentioned these populations in cultural contexts. Though *physical features* (NLPF) coverage is represented in 32 percent of the total coded text (and 9.6 percent code occurrence), coupled with Indigenous mentions and *historic aspects* (CLHA), this code did not always directly refer to the management of natural landscapes in the national parks' context. Code overlaps, such as this, and examples from the text can be analyzed further across all parks considered in the sample to gain better insight into the nuances of these codes.

2.4.3 Code Overlap Across National Park Foundation Documents

Table 2.2 illustrates the ways in which Indigenous peoples mentioned in the foundation document text overlap with both Indigenous terms and different codes in the coded sections of the text. An analysis of code overlap can offer greater detail to the ways in which Indigenous peoples are represented throughout the foundation documents.

Of the overlaps identified in the table, there are five that stand out through their frequency across the coded text. Overlaps of TRGEN/TRSPEC and *physical features* (NLPF) typically indicate park acknowledgement of Indigenous presence on the landscape. Overlap of TRGEN/TRSPEC with *historic aspects* (CLHA) and *cultural connections* (CLCC) was common throughout all the foundation documents examined, acknowledging the historic and contemporary presence of Indigenous cultural practices in a park. Both *Tribe general* (TRGEN) and *Tribe specific* (TRSPEC) codes also have considerable overlap with *park recognized affiliations* (CPPRA), indicating an informal acknowledgement of Indigenous affiliation with a particular park. TRSPEC overlap with this code was also evident in parks that included a section entitled 'Traditionally Affiliated Tribes', naming all Indigenous peoples with historic and contemporary connections to the landscape. Due to the defined unit of analysis for TRSPEC (term), each Tribe was coded individually. Lastly, there was considerable overlap between TRGEN and *legislative history* (CPLH) in many park documents, due to the presence of federal legislation regarding Indigenous peoples and park management.

Table 2.2: Overlap Across Codes

Codes	Tribal Terms		Natural Landscape			Cultural Landscape				Visitorship			Communication & Legislation				SUM
	TRGEN	TRSPEC	NLFF	NLPF	NLWV	CLHA	CLCC	CLMC	CLNI	VPEDU	VPINF	VPREC	CPTEK	CPSR	CPPRA	CPLH	
TRGEN	0	1	48	140	15	241	247	10	112	24	9	26	49	43	302	278	1545
TRSPEC	1	0	22	151	11	193	131	2	46	3	3	28	45	21	336	50	1043
NLFF	48	22	0	53	8	40	33	2	12	2	0	9	22	13	11	2	277
NLPF	140	151	53	0	26	244	80	5	66	11	13	41	19	15	41	22	927
NLWV	15	11	8	26	0	28	16	0	4	3	7	12	2	3	7	8	150
CLHA	241	193	40	244	28	0	106	15	150	11	10	44	14	9	23	7	1135
CLCC	247	131	33	80	16	106	0	6	35	20	2	23	50	22	78	10	859
CLMC	10	2	2	5	0	15	6	0	5	1	2	0	1	2	4	0	55
CLNI	112	46	12	66	4	150	35	5	0	5	2	26	4	10	24	2	503
VPEDU	24	3	2	11	3	11	20	1	5	0	3	8	6	15	12	2	126
VPINF	9	3	0	13	7	10	2	2	2	3	0	7	0	1	6	1	66
VPREC	26	28	9	41	12	44	23	0	26	8	7	0	5	6	7	0	242
CPTEK	49	45	22	19	2	14	50	1	4	6	0	5	0	3	15	4	239
CPSR	43	21	13	15	3	9	22	2	10	15	1	6	3	0	21	0	184
CPPRA	302	336	11	41	7	23	78	4	24	12	6	7	15	21	0	19	906
CPLH	278	50	2	22	8	7	10	0	2	2	1	0	4	0	19	0	405
SUM	1545	1043	277	927	150	1135	859	55	503	126	66	242	239	184	906	405	8662 ¹

¹ Sum of code overlap totals to more than the number of codes applied because a single sentence could have multiple codes applied, resulting in multiple overlaps in one segment of text.

The overlap of other codes offered insight into the quality of park relationships with Indigenous peoples as expressed by the foundation documents. The most frequently occurring overlap was *historic aspects* (CLHA) and *physical features* (NLPF). The presence of both these codes typically indicated the ways in which park cultural history was intertwined with physical aspects of the park, including park borders, glaciation, water resources, and prominent features of the landscape (e.g., Guadalupe Mountain, the namesake of Guadalupe Mountain National Park). Similarly, *historical aspects* (CLHA) also had considerable overlap with *non-Indigenous* (CLNI), showing that coded sections mentioning Indigenous peoples and park cultural history were also frequently tied to non-Indigenous cultural aspects, including fur trappers, the Civilian Conservation Corp, and settlers.

Park cultural history and *historic aspects* (CLHA) was also frequently associated with contemporary *cultural connections* to parks (CLCC). Sections in which these two codes overlapped typically acknowledged the ways in which past connections to a park have persisted to the present day. Key terms across the documents that highlighted this association include “continuum of human use” (Capitol Reef [CARE], p. 8), “continuous home” (Death Valley [DEVA], p. 88), and “past and present lifeways” (Everglades [EVER], p. 10). Lastly, the overlap of *cultural connections* (CLCC) with *physical features* (NLPF) offered insight into the ways in which contemporary cultural connections, management, and cultural landscapes more generally relate to the physical features of a park. In the coded sections of text, this often indicated an integration of cultural and natural processes, as evident in the example from Isle Royale (ISRO) displayed in Table 2.3.

Across the most frequently occurring code overlaps discussed in this section, it is apparent that most of these overlaps concerned cultural landscapes (e.g., *historic aspects* & *cultural connections*). Though this finding is contrary to the patterns found in the park purpose statements (which emphasized *physical features* [NLPF]), it is consistent with the percent code coverage (Table 2.3) in which cultural landscape codes (CLHA, CLCC) consisted of the majority of code coverage across all coded segments. This is likely because park purpose statements provide a foundational purpose for each park, whereas the coded sections throughout the text of the foundation documents are focused on how parks framed Indigenous peoples.

Table 2.3: Quote Matrix of Code Overlaps

Code Overlap ¹		Example from Coded Text
<i>Code 1</i>	<i>Code 2</i>	
General Mention (TRGEN)	Physical Features	"Traditional spring management plan in coordination with tribes (in progress)." (DEVA, p. 73)
Specific Mention (TRSPEC)	Historic Aspects	"In the early 1600s to 1800s, Paiute Indians lived and thrived in the area." (CARE, p. 4)
TRGEN/TRSPEC	Cultural Connections	"The Cherokee and other American Indian tribes maintain close ties to the land." (GRSM, p. 65)
TRGEN/TRSPEC	Park Recognized Affiliations	"The National Park Service and California Department of Parks and Recreation interact with the tribes on a government-to-government level and have made some strides in recent years with the Yurok Tribe and its members in the negotiation of cooperative agreements for cultural practices and ceremonies." (REDW, p. 13)
TRGEN	Legislative History	"American Indian Religious Freedom Act of 1978" (ZION, p. 29)
Historic Aspects	Physical Features	"Mammoth Cave National Park contains well-preserved cultural resources, both in the caves and above ground, spanning the last 12,000 years." (MACA, p. 7)
Historic Aspects	Non-Indigenous	"One of the last Ghost Dances occurred on Stronghold Table and precipitated the 1890 Wounded Knee Massacre, the last battle between American Indians and Europeans." (BADL, p. 9)
Historic Aspects	Cultural Connections	"Petrified Forest National Park contains a complex array of archeological resources that illustrate a continuum of more than 10,000 years of human land use. Regional patterns of settlement, trade, and migration create a diversity of nationally significant cultural sites and features that are still important to modern American Indians." (PEFO, p. 7)
Cultural Connections	Physical Features	"Traditional environmental knowledge passed down through generations range from detailed information concerning island fish types, populations, locations, and uses to landscapes, places, and stories associated with traditional Anishinaabeg (Ojibwe) beliefs and represent some of the intangible values associated with human interactions on this island." (ISRO, p. 8)

¹ Each example may have more codes applied than the identified overlapping codes listed.

2.5 Discussion & Conclusion

This study sought to examine the ways in which Indigenous peoples were represented in U.S. national park foundation documents through qualitative content analysis to connect to boundary work theory and collaborative management, and, subsequently, the global protected area movement. Boundary work theory argues that the separation of Western conceptualizations of “science” from “non-science” occurs through the creation of social boundaries, which can lead to unequal distributions of knowledge and power among groups of people (Fisher, 1988). In the context of natural resource management, these divisions commonly manifest between the management of protected areas informed by Western scientific pathways and management of spaces through Indigenous Knowledge.

Globally, management techniques relying upon Western science are employed against the backdrop of problematic histories of Indigenous disenfranchisement and removal from ancestral landscapes (Ross et al., 2011). National parks in the United States, the first of their kind, established a precedent of exclusionary conservation, in which Indigenous peoples (as well as many local communities) were forcefully removed from their ancestral homelands to create “pristine” spaces for conservation and recreation (Berkes, 1999; Taylor, 2016). As a result, Indigenous Knowledge was also removed from these landscapes, undermining the role of Indigenous peoples in management efforts (Whyte, 2013). In recent decades, global efforts to reconcile the role of Indigenous peoples, and local communities, in natural resource management (and resisting the Yellowstone Model) include alternative approaches such as community based conservation and adaptive management (Berkes, 2021), Indigenous and community conserved areas (Jonas et al., 2017), Indigenous Guardians (Reed et al., 2020), and community clusters (Dowsley, 2009), among others.

Additionally, examples of integrating both ways of knowing indicate opportunities for success in the United States. For example, the Leech Lake Band of Ojibwe and Chippewa National Forest in Minnesota, whose boundaries overlap, have partnered to improve the management of their shared lands (USDA, 2019). Similarly, the Crown of the Continent ecosystem and Waterton-Glacier International Peace Park demonstrates the ability of U.S. national parks to be a partner in larger collaborative networks, particularly those including private landowners and Indigenous peoples (i.e., Blackfeet Nation).

Despite these, and similar, efforts, the results of this study show that though park purpose statements emphasize the management of natural landscapes and visitor related activities (i.e., recreation), the sections of the park foundation documents that were coded (i.e., paragraphs mentioning Indigenous peoples generally and/or specifically) had an overall greater code frequency and coverage of cultural landscape codes (i.e., *historic aspects*, *cultural connections*, *museum collections*, *non-Indigenous*). This contrast indicates that though parks may consider Indigenous peoples in some aspects of park management, this consideration is predominantly in the management of cultural landscapes.

Additionally, the foundation documents showed that Indigenous peoples were predominantly considered a relic of the past (e.g., past connections to the physical landscape of the park) rather than maintaining contemporary connections to all aspects of park landscapes. More specifically, this study examined the *quantity* (code frequency) and *quality* (code coverage & overlap) of ways in which Indigenous peoples were mentioned in the foundation documents. Though a park(s) could have many mentions (high frequency) of Indigenous peoples, it may only be only *generally* mentioned and/or mentioned as a relic of the past. This viewing of Indigenous peoples is problematic because Indigenous Knowledge, as defined by Berkes (1999), is an intergenerational *process*, connecting past knowledge and experience to present contexts. Merely acknowledging Indigenous peoples as a relic of the past undermines the practice of Indigenous Knowledge on contemporary landscapes and reaffirms socially constructed boundaries between Western scientific knowledge and Indigenous Knowledge. For example, recent efforts by institutions to produce land acknowledgement statements (including the one at the beginning of this thesis) may identify specific Indigenous peoples and even historic laws and policies that severed those peoples from the land, though in many cases opportunities for future engagement with Indigenous peoples remains vague.

Studying these divisions, particularly through the lens of boundary work theory, can demonstrate the ways in which Indigenous peoples are presently excluded from protected area management (Berkes, 2021; Ross et al., 2011). As demonstrated by the above examples of Chippewa National Forest and the Crown of the Continent Ecosystem, there are opportunities to bridge such boundaries through collaborative natural resource management, showing that more proactive approaches to integrating Indigenous peoples into multiple aspects of national park management need to be considered (Berkes, 2021). However, for many parks, these

opportunities are expressed most frequently in the context of cultural connections, rather than the management of natural landscapes (e.g., *flora & fauna*, *physical features*, *wilderness value*) and recreation opportunities.

Understanding the complexities and limitations of park and natural resource management, as shown through the results of this study in the U.S. context, can provide a foundation for more integrative natural resource management, especially since the U.S. set the precedent for national parks in the late 19th century. Additionally, if U.S. national parks and other protected areas can bridge boundaries between Western scientific knowledge and Indigenous Knowledge by acknowledging, respecting, and integrating more diverse perspectives into the management of the spaces, then such frameworks can lead to positive biodiversity outcomes in the face of widespread ecological degradation and extinction. For example, Native American controlled burns increased the health and resilience of plants integral to cultural practices (*Indigenous Fire Practices Shape Our Land*, 2022; Roos et al., 2021). Additionally, pyrophytic plants (those that need fire to reproduce), such as the longleaf pine and the giant sequoia have been threatened by ecological “underuse” through fire suppression (Farmer, 2020; *Giant Sequoias and Fire*, 2022; Mauerhofer et al., 2018). Globally, the inclusion of Indigenous peoples in forest governance in Latin America shows that these areas had lower rates of deforestation and, therefore, an increased capacity for carbon sequestration (FAO, 2021; Santiago, 2021). With these examples in mind, it becomes apparent that management efforts need to better align with existing Indigenous Knowledge on these topics.

The codebook development and content analysis methodologies employed here can help land managers and academics to evaluate a variety of management documents to determine if park purpose(s) align with current and future management, as well as the ways in which Indigenous peoples are represented in different aspects of park management. The primary purpose of examining national park foundation documents over more targeted management plans was because these documents were published as a part of the 2016 National Park Service centennial and are intended to inform the second century of national park management.

Further research using content analysis could examine the code frequency and coverage of different aspects of park management across all parts (rather than a subset of) U.S. national park foundation documents, including documents related to natural monuments, seashores and lakeshores, battlefields, etc., rather than the 45 documents within the contiguous 48 states that

were examined here. For example, researchers more familiar with the context and histories of Indigenous peoples in Alaska, Hawai'i, and U.S. territories could modify the codebook to parks located in these contexts, as necessary, to gain greater insight into boundary work and collaboration in those spaces. Additionally, examining the ways in which park factors can contribute to different levels of collaborative management with Indigenous peoples is important in determining areas of improvement.

This study demonstrated the continuing presence of social boundaries in U.S. national park management through park foundation documents. As the U.S. continues into its second century of public lands management, more research needs to be done to address the ways in which collaboration, or potential for collaboration, with Indigenous peoples can bridge boundaries between Western science and Indigenous Knowledge. Efforts to understand and address these gaps can give the U.S. another opportunity to lead global efforts in natural resource management and conservation, while setting a precedent of inclusionary approaches that benefit biodiversity and people.

III: Intersections of Collaborative Management with Indigenous peoples

The idea of a “pristine” wilderness, or natural spaces devoid of humans where people simply visit for purposes of spiritual restoration and physical recreation, has had profound impacts on the ways in which natural resource management occurs with parks and protected areas globally (Berkes, 1999; Coffman, 2007; Watson et al., 2014). Management practices rooted in this idea of nature devoid of human settlements and influence have historically disregarded the role of Indigenous peoples in maintaining the very lands with which they have co-evolved (Kimmerer, 2013; West et al., 2006; Whyte, 2013). Conventional models of natural resource management became prominent with the establishment of Yellowstone National Park in 1872. Referred to as the ‘Yellowstone Model’, this framework institutionalized and normalized global management techniques emphasizing the natural and historic values of parks and other protected spaces, as well as the perceived importance of scientifically generated knowledge in these contexts (Reid, 2012; Ungar & Strand, 2012). As a result, some natural resource management practices today still reflect these exclusionary frameworks.

For example, Tanzania’s system of protected areas, beginning in the mid to late 20th century, has largely excluded pastoral Maasai communities (Reid, 2012). Ngorongoro Conservation Area, established in 1959 by the British colonial government of Tanganyika, was an attempt at creating an area in which Maasai communities could continue to interact with the natural landscape in their traditional ways. However, the park quickly began to prohibit Maasai residence within park borders, while simultaneously appropriating Maasai culture to appeal to tourists not from the African continent (Reid, 2012). Similarly, colonialization by settlers of European descent and the establishment of protected areas in Australia resulted in violence against and displacement of Aboriginal peoples and degraded the land rights of these communities (Poirier & Ostergren, 2002).

Despite such tumultuous examples of land seizures and displacement of Indigenous peoples worldwide, there are many cases in which the continued presence of Indigenous communities on Native lands improve social and ecological outcomes (Lele et al., 2010; Mauerhofer et al., 2018; West et al., 2006). In Latin America, for example, a 2021 report from the United Nations found that forests managed by Indigenous communities experience less deforestation, attributing traditional knowledge and collective management of forest resources as two main drivers (FAO, 2021; Santiago, 2021). Additionally, Nightingale (2006) discusses how different scales of forest management strategies in Nepal (e.g., state, community) can impact the autonomy of local populations. Specifically, the authors note that state-controlled management systems have historically undermined local management practices and contributed to widespread forest degradation, whereas maintaining Indigenous ties to forest resources reduced degradation and increased local autonomy.

Many researchers have promoted and captured the ways in which collaborative natural resource management can improve social and ecological outcomes. Collaborative natural resource management is a process through which multiple, diverse stakeholders work together to jointly manage a landscape and resolve conflicts (Davies & White, 2012; Lele et al., 2010; Mauerhofer et al., 2018; West et al., 2006). In contrast to conventional natural resource management techniques, which emphasize exclusionary techniques that retain power in the hands of ‘experts’ versed in western scientific practices, collaborative natural resource management aims to include, work with, and empower all stakeholders, particularly local communities (Davies & White, 2012). Collaboration with local communities can lead to more successful management outcomes through improved trust between stakeholders and the development of social norms (Dietsch et al., 2021; Ross et al., 2011; Tipa & Welch, 2006). Though local communities may have knowledge important to natural resource management, situated knowledge related to Indigenous experiences should be considered separately since not all local knowledge is Indigenous.

A subset of the literature on collaborative natural resource management focuses on the importance of Indigenous communities and Indigenous Knowledge (IK) in managing landscapes. IK, also referred to as Traditional Ecological Knowledge (TEK), is defined by Berkes (2000, p. 1252) as, “...a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship

of living beings (including humans) with one another and their environment”. This understanding of IK illustrates the ongoing (historic and contemporary) ties of Indigenous peoples to place, and the lifeways and beings sustained in those places. However, the creation of social boundaries separating the scientific generation of knowledge (i.e., conventional natural resource management) and the social generation of knowledge (i.e., IK), as explained in boundary work theory, creates a classification in which some worldviews¹⁰ are seen as less valid than others (Fisher, 1988; Gieryn, 1983). As a result, this research seeks to explore the ways in which collaborative natural resource management can influence socially constructed knowledge boundaries.

3.1 Collaborative Management

Bridging boundaries between knowledge systems and worldviews, particularly through partnerships with local and Indigenous communities, can prompt more proactive and long-term management techniques that benefit communities and the environment (Berkes, 2021). For example, Armitage et al. (2011) discuss the bridging of knowledge in a series of semi-structured interviews with Inuit communities, government officials, and community members in the Canadian Arctic, concerning the management of narwhal, beluga, and Dolly Varden char. The authors ultimately show that collaborative management, and the co-production of knowledge, are important channels through which collaborative arrangements can adapt to environmental change. However, in recent decades, collaborative natural resource management, particularly management with Indigenous communities, has been conceptualized in many ways, leading to discussions about how best to categorize different types of collaboration.

3.1.1 Categories of Collaboration

Collaboration, or the act of working with another individual and/or group(s), can manifest in many ways, including collaborative natural resource management. Manifestations of these ‘categories of collaboration’ often build on Arnstein’s Ladder of Citizen Participation, a

¹⁰ A worldview, unique to every person and culture, is defined by Grey (2011) as “...a collection of attitudes, values, stories, and expectation about the world around us, which inform our every thought and action” (p. 58). This can include religion, science, ethics, and other perceptions of the world. In this research, the scientific generation of knowledge and the social generation of knowledge are seen as different worldviews, where IK is one example of the social generation of knowledge.

conceptualization that generalizes the process of collaboration and participation in a variety of contexts, including segregated housing, healthcare, and Model Cities (Arnstein, 1969). In natural resource management, however, the terminology to categorize levels of collaboration seems to differ depending on the case study.

For example, Tipa & Welch (2006), through a case study of Maori (New Zealand) knowledge of freshwater resources, offer a circular model in which ‘co-management’¹¹ is categorized as community-based management (little to no emphasis on Indigenous peoples with focus on local communities), collaborative management (collaboration and consultation with Indigenous peoples), and cooperative management (partnership of equals with Indigenous peoples). This classification is similarly expressed by Ross et al. (2011) who outline an “Indigenous Stewardship Model” (pp. 244-259), containing four categories: ‘Active indigenous stewardship on tribally controlled lands’, ‘Community outreach to support indigenous stewardship’, ‘Co-management: Advocating for indigenous stewardship on land where indigenous authority is shared with western managers or is absent’, and ‘Consensus building and conflict management’. Both models range from the exclusion of Indigenous peoples in natural resource management to shared management and partnerships with Indigenous peoples.

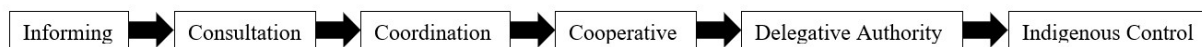
However, not all categorizations of collaboration explicitly consider engagement of Indigenous communities. Tipa & Welch (2006) argue that many frameworks merely focus on government-community relationships with little consideration of Indigenous peoples outside these government-community interactions. This is reflected through ‘community-based management’ in which the government engages in what is perceived to be a homogenous community with little emphasis (or acknowledgement) of IK (Tipa & Welch, 2006). Similarly, Premauer & Berkes (2015) claim that engagement with Indigenous peoples should not be conflated with ideas of community and community based conservation, but that Indigenous peoples should be considered as a separate stakeholder altogether.

As a result of the wide range of conceptualizations of collaboration in the literature, this study proposes a revised set of categories aimed at explicitly acknowledging interactions

¹¹ Throughout the literature there are many different meanings of ‘co-management’, including community-based management, cooperative management, and collaborative management (Tipa & Welch, 2006). Sometimes these terms are used interchangeably as ‘co-management’ where the meaning of co-management is not adequately defined. As a result, this research utilizes the term ‘collaboration’ and the phrase ‘collaborative natural resource management’ to remain consistent throughout the text and refer to collaboration with all types of partners, while only using the term ‘co-management’ in reference to the original language used by the author(s) cited.

between governments, non-Indigenous communities, and Indigenous peoples in natural resource management, arguing that Indigenous peoples are a vital part of maintaining complex, dynamic socio-ecological systems. From a review of collaborative natural resource management literature, six categories were identified ranging from the least engagement with Indigenous peoples to full Indigenous control of the resource(s) or place(s) to be managed (Figure 3.1).

Figure 3.1: Proposed Categories of Collaboration



Similar to the categories from Tipa & Welch (2006) and Ross et al. (2011), the categorization proposed explicitly considers Indigenous peoples, as well as IK, throughout. As discussed by Premauer & Berkes (2015), this categorization also considers government, non-Indigenous communities, and Indigenous peoples separately in order to clearly illustrate that a natural resource management can appear collaborative, while still excluding Indigenous peoples and knowledge.

Below are the key characteristics of these six categories:

1. *Informing*. The governing authority with power informs stakeholders with the intention of one-way communication (top-to-bottom). Overall minimal exchange of information between stakeholders; government is the main information gathering, research, and decision-making body with little outside input. Only scientific knowledge is valid. (Arnstein, 1969; Davies & White, 2012; Ross et al., 2011).
2. *Consultation*. Invitations by governing authority of external input with no guarantee that such input will be incorporated into planning/management. Some incorporation of non-Indigenous partners and exchange of information in the decision-making process, while still excluding input from Indigenous communities. Government maintains enforcement of power. Other forms of knowledge (e.g., IK) are not acknowledged or incorporated. Consultation is ad hoc and benefits government. (Arnstein, 1969; Buzinde et al., 2020; Carlsson & Berkes, 2005; Davies & White, 2012; Ross et al., 2011).

3. *Coordination*. The governing authority is the primary decision maker, though non-Indigenous stakeholder & partner interests appear and impact management plans. Joint actions are informed by multiple partners. Beginning of two-way information exchange appears collaborative. Indigenous culture/experience is considered but still largely excluded in favor of scientific knowledge. (Arnstein, 1969; Buzinde et al., 2020; Carlsson & Berkes, 2005; Ross et al., 2011; Tipa & Welch, 2006; Zurba et al., 2012).
4. *Cooperative*. The governing authority is still the primary decision maker. Joint actions are informed by the *appearance* of common objectives and goals of multiple partners, including Indigenous peoples, though such goals and objectives may be assumed. Other forms of knowledge are referenced, and Indigenous peoples are acknowledged in management plans. External input is negotiated and incorporated into the decision-making process. (Buzinde et al., 2020; Carlsson & Berkes, 2005; Ross et al., 2011; Tipa & Welch, 2006; Zurba et al., 2012).
5. *Delegative Authority*. Long-term presence of resident, primarily Indigenous, power in the decision-making process through inclusion in a formal capacity (advisory committees, contributors, partnerships, etc.). Residents, especially Indigenous stakeholders, can function as the primary decision-maker(s) and advise government authorities who maintain authority. Strong Indigenous presence in all aspects of management. Different ways of knowing are acknowledged in management and planning approaches. (Arnstein, 1969; Carlsson & Berkes, 2005; Tipa & Welch, 2006; Zurba et al., 2012).
6. *Indigenous Control*. An Indigenous governing authority controls decision-making and enforcing processes and informs other governments about planning and management decisions. Functions as an Indigenous driven system, allowing historically disenfranchised Indigenous stakeholders to be the primary decision maker(s). May lead to and/or incorporate ideas of environmental governance (i.e., collaboration between the federal government and sovereign Indigenous Nations), which considers decision-making primarily at the institutional level (Arnstein, 1969; Bennett & Satterfield, 2018; Ross et al., 2011).

Of the categories outlined above, the ‘cooperative’ category encompasses what many consider to be the beginning of collaborative natural resource management, because this approach begins to include both local communities and Indigenous peoples in meaningful way. However, there are many additional considerations to fully understand how collaborative natural resource management can truly embrace Indigenous perspectives wholly, rather than being performative invitations and acknowledgements.

3.1.2 Dimensions of Collaboration in Natural Resource Management

Within each of the identified categories of collaboration, there are multiple elements that can help to identify what level of collaboration is occurring. Literature at the nexus of collaboration and natural resource management tends to be separated into four recurring thematic elements: (1) culture, (2) partnerships, (3) knowledge, and (4) shared goals & objectives. The presence or absence of these elements as they pertain to Indigenous peoples (rather than non-Indigenous communities) within each category of collaboration is displayed in Table 3.1.

Culture. Culture, or the rules, behavior, values, and beliefs that one is socialized into, can impact the ways in which communities engage in decision-making processes (Arnstein, 1969). For example, the U.S. environmental movement of the late 20th century prompted a cultural shift in the U.S. towards more intentional consideration of human-environment interactions (Catton & Dunlap, 1978). Similarly, in recent decades, academics have emphasized the inclusion of Indigenous peoples and culture in natural resource management, encouraging a cultural shift in what counts as knowledge and who gets heard (Bengston et al., 1999; Gavin et al., 2015; Ross et al., 2011; West et al., 2006). Despite this progression, ideas of cultural inferiority and the “benevolent west” (p. 97) undermine the ability of contemporary Indigenous peoples to interact with places important to their respective cultures (Ross et al., 2011). In the natural resource management context, this may include only considering Indigenous peoples as a ‘relic of the past’ in archaeological sites and museum collections, rather than acknowledging contemporary cultural connections to such spaces (e.g., sacred sites, botanical knowledge). To combat these legacies, Cherokee scholar Clint Carroll (2014) discusses the importance of reclamation through Indigenous sovereignty and stewardship, stating “tribal initiatives to reclaim stolen lands are not solely political projects of regaining sovereign space, but a means for healing intergenerational

trauma that was caused by forced severance from the land” (p. 38); thus the reclamation of these landscapes help to acknowledge and restore cultural processes closely tied to the Earth.

Partnerships. Partnerships, particularly formal partnerships and informally recognized affiliations, between individuals and organizations can be important precursors to collaboration (Conley & Moote, 2003; Plummer & Fitzgibbon, 2004). Forming and maintaining partnerships as part of a robust social network transcending scales (i.e., national, state, regional, local) and sectors (i.e., government, non-profit, private) can produce shared goals, objectives, and responsibility that lead to the collaborative management of natural resources (Armitage et al., 2020; Berkes, 2021; Davies & White, 2012; Guerrero et al., 2015). For example, Buzinde et al. (2020) discuss the importance of boundary organizations, typically non-profits, in bridging socially constructed gaps between scientific researchers and Indigenous communities, which can lead to more diverse partnerships and encourage the integration of more diverse perspectives. However, histories of exclusionary and top-down natural resource management have sometimes undermined attempts at creating such networks and fortified power imbalances (Berkes, 2009, 2021; Plummer & FitzGibbon, 2006). Dietsch et al. (2021) underscore a need to (re)integrate power by ensuring all partners can contribute through their own means; in the context of Indigenous peoples, their power may include discursive legitimacy rather than the typical resource-based power of governing authorities.

Knowledge. Scholars such as Plummer & Fitzgibbon (2004) and Noble (2000) discuss the ways in which the inclusion of multiple knowledge systems and/or worldviews are important to the decision-making process. For example, fire management techniques by U.S. Indigenous peoples over centuries has promoted plant growth, increased biodiversity, and ecosystem integrity, as well as reduced the likelihood of larger, and more destructive, wildfires (Mauerhofer et al., 2018; Roos et al., 2021). More specifically, there is a body of work dedicated to understanding the role of IK in natural resource management. As defined by Berkes (2000), IK is rooted in dynamic, multidimensional processes, emphasizing “the relationship of living beings (including humans) with one another and their environment” (p. 1252). The depth of these relationships is reflected in Indigenous creation stories. One such story¹², describes a woman

¹² In her book *Braiding Sweetgrass*, Potawatomi author Robin Wall Kimmerer adapts the story of Skywoman from oral tradition and Shenandoah & George (1988). The full retelling of this story by Robin Wall Kimmerer can be found on pages 3-5 of *Braiding Sweetgrass* (2013).

who fell from a hole in the Sky to a world filled with water (Kimmerer, 2013). Understanding that the woman needed dry land to survive, Turtle¹³ offered his back for her to rest. The others, including Loon, Otter, Beaver, and Sturgeon, dove to the bottom of the water to get mud for the woman, but were unsuccessful (Kimmerer, 2013). Eventually Muskrat retrieved mud from the depths and placed it on Turtle's back to create the first land. Skywoman, who had brought "fruits, seeds, and all kinds of plants...scattered [them] onto the new ground and carefully tended each one until the world turned from brown to green... Wild grasses, flowers, trees, and medicines spread everywhere. And...many came to live with her on Turtle Island" (Kimmerer, 2013, pp. 4–5).

Despite the ways in which this creation story emphasizes the inherent interconnectedness of nature and people, Potawatomi scholar Whyte (2013) claims that the perception of IK as a body of knowledge "waiting to be picked up" by science (p. 3) decontextualizes IK from the contexts in which the knowledge was generated. Whyte (2013) also questions the extent to which IK can be integrated into policy when Indigenous communities do not participate in or have not been invited into such conversations. However, improved social and ecological outcomes can occur when Indigenous knowledge is respectfully integrated into management frameworks. For example, Pinchin (2021) discusses the ways in which Indigenous peoples can work with scientists to provide important longitudinal information about species that have been understudied in western scientific practices, creating collaborative management plans that support the long-term conservation of these species for both scientific study and Indigenous connections.

Shared Goals & Objectives. Lastly, shared goals and objectives among stakeholders at multiple levels often arise when each of the previous dimensions (culture, partnerships, and knowledge) are integrated, prompting longer-term capacity to manage a system (Armitage et al., 2020; Nel et al., 2016). In the natural resource management context, shared goals and objectives can manifest as agreements on how to manage different aspects of the landscape, such as natural and/or recreational (or visitor) landscapes. Related to ideas of boundary work theory, divisions between conventional natural resource management and Indigenous goals can contribute to

¹³ Terms, such as 'Turtle', 'Loon', and 'Otter' are capitalized here to reflect the notation used by Kimmerer in *Braiding Sweetgrass* and to respect what Kimmerer refers to as the "animacy of the world", in which she also claims that "When we tell them [toddlers] that the tree is not a *who* [sic], but an *it* [sic], we make the maple an object; we put a barrier between us, absolving ourselves of mora responsibility and opening a door to exploitation" (p. 57).

ideologies in which Indigenous peoples are excluded from planning because their lived experiences and interests are not seen as relevant to processes historically informed by Western science.

Combating these exclusionary beliefs include efforts to represent Indigenous peoples more adequately and justly in the planning process. For example, a redwood forest in Northern California purchased by the Save the Redwoods League, a non-profit organization, was recently transferred to the Inter-Tribal Sinkyone Wilderness Council, an partnership of Northern Californian Tribes focused on environmental and cultural protection (Treisman, 2022). The purchase of the forest, which will be redesignated as a Tribal protected area named Tc'ih-Léh-Dûñ (“fish run place”), was funded by a utility company under guidance from the U.S. Fish and Wildlife Service in order to mitigate the company’s environmental impact (Treisman, 2022). The Save the Redwoods League and the InterTribal Sinkyone Wilderness Council seek to bridge Indigenous Knowledge and western scientific knowledge in the management of Tc'ih-Léh-Dûñ to meet shared goals such as climate and fire resiliency of the landscape, while also reducing habitat loss and development (Treisman, 2022). Overall, this case study exhibits Indigenous peoples shared goals and objectives of different stakeholders, respectful of IK as well, in ways that aim to enhance outcomes of natural resource management. Similarly, the Bears Ears Inter-Tribal Coalition, formed in 2015 representing the Hopi Tribe, Navajo Nation, Ute Mountain Ute Tribe, Pueblo of Zuni and the Ute Indian Tribe, collaborated with the Obama administration to establish Bears Ears National Monument¹⁴. According to Douglas & Brewer (2021) of the *High County News*, this arrangement “demonstrated an unprecedented reliance on tribal consultation for the federal government” and created a framework through which Tribes can begin to reclaim stewardship of their ancestral lands through shared objectives with other stakeholders.

¹⁴ In the Native languages of member Tribes of Inter-Tribal Coalition, the area known as Bears Ears National Monument is also referred to as Hoon'Naqvut, Shash Jáa, Kwiyaqatu Nukavachi, and Ansh An Lashokdiwe, meaning ‘Bears Ears’

Table 3.1: Categories of Collaboration and the Presence of Thematic Elements as Related to Indigenous Inclusion

Category		Thematic Elements			
<i>Name</i>	<i>Summary</i>	<i>Culture</i>	<i>Partnerships</i>	<i>Knowledge</i>	<i>Shared Goals & Objectives</i>
Informing	Government engages in one-way communication	-	-	-	-
Consultation	Ad hoc; benefits to government	✓	-	-	-
Coordination	May appear to be, but is not quite collaborative	✓	✓	-	-
Cooperation	Beginnings of collaborative management	✓	✓	✓	-
Delegative Authority	Indigenous power in decision-making	✓	✓	✓	✓
Indigenous Control	Indigenous control over decisions	✓	✓	✓	✓

3.2 Case Study: U.S. National Parks Foundation Documents

Building from an understanding of the histories of protected areas more broadly, this study connects theories of boundary work and ideas of collaborative natural resource management to the ways in which Indigenous peoples are represented in park management at the federal level within the United States (U.S.). Typically referred to as ‘America’s Best Idea’, the U.S. set an international precedent with the Yellowstone Model, based off of the country’s first national park (Berkes, 2021; NPS, 2018; Ungar & Strand, 2012). Additionally, the Antiquities Act of 1906 gave the U.S. President the right to declare parcels of land as national monuments to protect ‘antiquities’ akin to natural cathedral or places of cultural value.

However, the U.S. national parks system relied upon exclusionary management through the creation of national parks and monuments as a way to conserve ‘pristine’ landscapes and minimize the perception of human influence on those places (Lele et al., 2010; Ross et al., 2011;

Taylor, 2016). The Wilderness Act (1964) provided guidelines for designating and managing areas considered wilderness by congress, including areas with little human influence, primitive recreation, area of at least five thousand acres, and other historic, scenic, scientific, and/or natural value. Perspectives institutionalized by the Wilderness Act reinforced Euro-centric colonial ideals of nature as “wild” and separate from humans (Lele et al., 2010; Taylor, 2016; Ungar & Strand, 2012). The historic separation of people from the environment, also seen in a global context, has undermined Indigenous Knowledge and created a sharp division between socially generated and scientifically generated knowledge sets (Bird, 1987; Fisher, 1988; Gieryn, 1983).

In recent decades, the U.S. has sought to reverse its long history of exclusion and improve relationships among the government and Indigenous peoples. For example, the U.S. passed numerous pieces of legislation, such as the Native American Religious Freedom Act (1978) and the Native American Graves Repatriation and Protection Act (1990), and sought to (re)integrate federally recognized Indigenous involvement in natural resource management by (re)instating basic rights (e.g., Treisman, 2022). Other initiatives, such as President Joe Biden’s 30x30 initiative (Executive Order 14008, Section 216), explicitly acknowledge Indigenous populations in efforts to protect U.S. landscapes (Biden, 2021) and greater Indigenous representation at the federal level (i.e., Deb Haaland and Chuck Sams), have contributed to bridging boundaries between Nations. Additionally, land transfers between organizations (e.g., the Nature Conservancy) and Tribes have facilitated the creation of Tribal National Parks, beginning with Frog Bay Tribal National Park in 2012 (Carroll, 2014).

To examine the ways in which U.S. national parks envision opportunities to collaborate with federally recognized Indigenous peoples, this study employs a content analysis of national park foundation documents. The foundation documents are a general management plan published by each park unit as part of the 2016 National Park Service Centennial and give insight into the core components and drivers of U.S. national park management. An investigation of these documents can also identify whether parks consider collaboration with Indigenous peoples foundational to park operations and the ways in which Indigenous peoples are represented in different aspects of park management. Therefore, this research primarily asks: **What factors, or combinations of factors, affect U.S. national park collaboration with federally recognized Indigenous peoples as written into park foundation documents?** This work specifically focuses on the

574 federally recognized Indigenous Tribes in the United States. However, many Indigenous Tribes are not federally recognized due to strict guidelines from the U.S. government and/or erasure of Native culture due to colonialism (25 *CFR Part 83 Subpart B*, 2022; *Petitions in Process* | *Indian Affairs*, 2022; Bureau of Indian Affairs, 2019; Curry, 2022).

Driven by a need to better understand the opportunities for collaborative management between federally recognized Indigenous peoples and the U.S. government in national parks, this research also has three main objectives:

- (1) Categorize U.S. national parks according to the degree of collaboration with federally recognized Indigenous peoples, as discovered through a content analysis of foundation documents.
- (2) Identify factors, or input variables, that could potentially impact park collaboration between national parks in the U.S. and federally recognized Indigenous peoples.
- (3) Examine the factors, or input variables, that shape Indigenous inclusive outcomes in U.S. national park management through multi-value qualitative comparative analysis (mvQCA).

This study seeks to inform both land managers and academics on emerging perspectives of collaboration between park managers and federally recognized tribes in the U.S. Findings could also inform natural resource management efforts worldwide given the influence of the U.S. National Park Service on parks and protected areas globally.

3.3 Methods

3.3.1 Qualitative Comparative Analysis

The analytical approach for this study was multi-value Qualitative Comparative Analysis (mvQCA), a qualitative methodology that examines relationships between variables and the configurations of variables that lead to defined outcomes (Grofman & Schneider, 2009). This analytical approach was chosen instead quantitative statistical approaches (e.g., binary logistic regression) because QCA considers the interactions, or combinations of all input variables, on a defined outcome, rather than just the relationship and strength of a single input variable on a defined outcome (Grofman & Schneider, 2009). Therefore, answering the research question

through mvQCA allows for greater insight into how the absence of some variables can be mitigated by the presence of others.

A subset of crisp set QCA (csQCA; which only considers dichotomous input variables), mvQCA can consider both dichotomous and categorical input variables (Duşa, 2018). In the context of this research, categorical (and dichotomous) variables can indicate conditions important to producing different kinds of collaborative outcomes. Using Boolean algebra to express different configurations of variables, mvQCA, and QCA more generally, is comprised of three distinct parts: (1) data upload and calibration, (2) the truth table, and (3) minimization (Duşa, 2018; Rihoux & Ragin, 2009).

First, an input table, or ‘variable matrix’, based on the desired data must be created (Duşa, 2018). This matrix includes cases, input variables, and the determined outcome (as a variable). The identified input variables and the determined outcome are coded for each case. In this study, the outcome variable denoted whether a park was considered collaborative with Indigenous peoples (1) or not collaborative with Indigenous peoples (0), based on the categorization of park foundation documents from data gathered through qualitative content analysis. Input variables were either dichotomous or categorical, and encompassed a variety of park characteristics (see Section 3.4.2).

The variable matrix is uploaded into a QCA software, such as the QCA package in RStudio, to create a truth table that clarifies the relationship between the identified cases, each input variable, and the defined outcome variable(s) (Duşa, 2018; Grofman & Schneider, 2009). Unlike the variable matrix, the truth table may have fewer rows than there are cases, indicating that some (overlapping) cases have the same configuration of input variables when explaining the defined outcome.

The truth table is vital for logical minimization, one of the final steps of QCA and has four primary components (Duşa, 2018):

- (1) **The output value (OUT)** shows whether a particular combination of input variables produced a positive outcome (1).
- (2) **The number of cases in a particular configuration of input codes (n)** shows the number of cases that have the same combination of input values.
- (3) **The sufficiency inclusion score (incl)** shows the proportion of cases for a particular combination of input variables that have a positive outcome (1), and

(4) **The proportional reduction in inconsistency (PRI)**, at least in mvQCA, also shows the proportion of cases for a particular combination of input variables that have a positive outcome (1), which is the same as the sufficiency inclusion score. Consideration of this value is more important in other types of QCA (i.e., fuzzy) (Duşa, 2018; Greckhamer et al., 2018).

Lastly, through the QCA package in R Studio, the Quine-McCluskey minimization (named after the individuals who developed this algorithm) uses the truth table to determine the simplest combinations of input variables leading to the defined output without any contradictions (Duşa, 2018). In this research, the input variables were related to park characteristics and the output variable was collaboration (as determined through qualitative content analysis). The R code generated through this analytical approach is in Appendix G.

3.3.2 Data

The data for this study came from a variety of sources. The primary data source was national park foundation documents created for the 2016 National Park Service Centennial to promote a “shared understanding of what is most important about the park” (BRCA, 2014, p. 1). These documents provide the foundation necessary to develop more targeted park management plans, such as a visitor use visitor use plan, in the second century of National Park Service Management. Though publicly available, the foundation documents were not intended for public use, but rather to outline the current state of a park’s management of natural, cultural, and visitor landscapes, as well as identify opportunities for future park management. Each foundation document contains four main components:

- (1) **Core Components** outlines the history of each national park, including park significance, purpose statement, primary interpretive themes, and important resources and values. These sections discuss resources important to the park, as well as the “key stories or concepts a visitor should understand after visiting a park” (CAVE, p. 9).
- (2) **Dynamic Components**, including special mandates and administrative commitments maintained by the park and an analysis of planning and data needs.
- (3) **Meeting Attendees, Preparers, and Consultants**, which includes the names and affiliations of people involved in the planning, preparation, and publications of the foundation document, and

(4) **Appendixes** that included important supplementary information including national park enabling legislation, national monument enabling legislation (if applicable), other legislative acts, and formal partnerships.

Publication dates of the documents range from April 2010 (Grand Canyon) to August 2018 (Biscayne). Documents also vary in length, ranging from 27 pages (Joshua Tree) to 108 pages (Grand Teton). National park foundation documents from the contiguous 48 states were investigated, ultimately representing 46 parks across 45 documents (Appendix A). Foundation documents from national parks in Alaska, Hawai'i, and U.S. territories (e.g., Virgin Islands National Park) were excluded, as well as four national parks established after the 2016 National Park Service Centennial (White Sands, New River Gorge, Gateway Arch, and Indiana Dunes).

Data from national park foundation documents was consolidated through qualitative content analysis in MAXQDA¹⁵. Using a predefined codebook (Appendix C), sections of the identified 45 park documents were coded according to general (e.g., Native American) and/or specific (e.g., Ojibwe) mentions of Indigenous peoples in the text and primary management themes, such as natural landscapes, cultural landscapes, and visitorship & public involvement (Chapter II). Coded sections of the text (i.e., paragraphs that mentioned Indigenous peoples) were then analyzed according to code frequency (how many times the code was used), code coverage (percent of characters and spaces out of all those coded), and code overlap (Chapter II).

Lastly, standardized NPS park abbreviations were used to code and reference each national park in the final sample. Each abbreviation consists of four letters representing either the first four letters of a park name, if the name is one word (excluding 'national park'), or the first two letters of the first two words in the park name (Appendix A). For example, the abbreviation for Canyonlands National Park is CANY, where the abbreviation for Grand Teton National Park is GRTE.

Output Variable – Coding of collaboration between Indigenous peoples and National Parks

This research examined different characteristics of collaborative natural resource management according to four primary thematic elements identified in the literature: 1) culture,

¹⁵ Though the features of MAXQDA are only available via paid license, other open-source coding tools, such as NVivo, can be utilized by land managers and academics alike to code management documents. Additionally, the overall design of the QCA graphical user interface, as well as the public availability of RStudio and resources related to the QCA package, make these methodologies attainable to a variety of interested parties.

2) partnerships, 3) knowledge, and 4) shared goals & objectives. The presence and/or absence of these elements (Table 3.1) were used to assign each national park, though their foundation documents (excluding the coding of the *park purpose statement*), a category of collaboration in relation to Indigenous peoples. Parks falling within the first three categories of collaboration—informing, consultation, and coordination—were coded as ‘not collaborative’ because all categories were missing *at least* two thematic elements (i.e., knowledge & shared goals and objectives). The second three categories—cooperation, delegative authority, and Indigenous control—were coded as ‘collaborative’ because all categories contained *at least* three thematic elements (culture, partnerships, and knowledge specific to Indigenous peoples). For the analytical approach of this research (mvQCA), parks were coded 1 if collaborative with Indigenous peoples or 0 if not collaborative with Indigenous peoples.

The final codebook operationalized the different thematic elements of collaboration and were coded as follows¹⁶:

1. **Culture** considered *historic aspects* (CLHA), *cultural connections* (CLCC), and *museum collections* (CLMC). This element was considered present (1) when at least one of these codes overlapped with a general (e.g., Native American) or specific (e.g., Hopi) mention of Indigenous peoples in a sentence.
2. **Partnerships** considered both *formal partnerships* (FPART) with Indigenous peoples held by a park (mentioned in the administrative commitments section of the foundation documents), as well as *park recognized affiliations* (CPPRA) with Indigenous peoples mentioned throughout the text of each foundation document. This element was considered present (1) when a park was coded as having both formal partnerships *and* affiliations with Indigenous peoples (general or specific mention).
3. **Knowledge** was considered present (1) if reference to *Indigenous Knowledge* (CPTEK) occurred anywhere in a park foundation document. In this research, a foundation document referred to IK when mentioning ‘Indigenous Knowledge’, ‘Traditional Ecological Knowledge’, ‘traditional (use)’, ‘traditional cultural places’, ‘ways of life’, and/or ‘lifeways’. Considerations of overlap with Indigenous codes

¹⁶ Not all codes in the final codebook from Chapter II were considered in the development of this metric as not all codes in the codebook were directly related to the categories of collaboration as described by this research.

(general or specific) was not necessary as this code was only utilized in reference to Indigenous peoples (rather than all local and community knowledge).

4. **Shared Goals & Objectives** encompassed all remaining management codes in the codebook, including natural landscapes (*flora & fauna, physical features, wilderness value*) and visitorship & public involvement (*education, infrastructure, recreation*). This thematic category was considered present (1) when at least one natural landscapes code *and* at least one visitorship code overlapped with a general (e.g., Native American) or specific (e.g., Hopi) mention of Indigenous peoples in a sentence.

Input Variables – Coding characteristics that could lead to collaboration

Input variables across the cases were determined through a careful examination of the characteristics of each national park in the sample. For example, park foundation documents frequently mentioned other (i.e., previous and current) designations of the landscapes, such as whether the park had status as a national monument prior to becoming a park or whether the park encompasses any lands under the authority of the Wilderness Act. Overall, this research considered the following input variables (Table 3.2):

Adjacent to other federally managed lands (ADJFED). Park adjacency to other federally managed public lands, particularly those in different departments (e.g., Department of Agriculture), may encourage different forms of collaboration among federal agencies that could prompt the inclusion of other stakeholders, such as Indigenous peoples, bridging knowledge boundaries and forming more robust partnership networks.

Data of national park polygon locations was sourced from ESRI Living Atlas database user ESRI_landscape2's layer titled 'USA Federal Lands'. This layer was added to an ArcGIS Pro workspace. Data were selected in ArcGIS Pro to create a shapefile (.shp) containing only the national parks in the sample (n=45). Data regarding adjacency to other federally managed lands were also sourced from the ESRI Living Atlas database user ESRI_landscape2's layer titled 'USA Federal Lands' which displayed the spatial distribution of lands from the Bureau of Land Management (BLM), the Bureau of Reclamation (BR), the Department of Defense (DoD), the Fish and Wildlife Service (FWS), the Forest Service (FS), and all National Park Service (NPS) units (i.e., national parks, national monuments, national historic sites, etc.). Furthermore, a 'select by attribute' query was conducted to remove all national parks from the NPS layer,

leaving all other NPS managed units (otherwise all national parks in the identified sample would be considered adjacent when compared to themselves). To determine adjacency a ‘select by location’ was conducted where the input feature was the national park polygon shapefile. National parks selected through the query were coded as not sharing a border with any federally managed lands (0), sharing a border with only lands managed by the Department of the Interior (BLM, BR, FWS, NPS) (1), or sharing a border with federally managed land in another department, such as the DoD or Department of Agriculture (FS) (2). Any national park adjacent to multiple lands managed by different departments (e.g., NPS & FS) was coded as a (2) because at least one unit was external to the Department of the Interior.

Adjacent to federally recognized Indigenous reservations (ADJRES). This variable identified the national parks that share a border with federally recognized Indigenous reservations. Such geographic proximity may improve collaboration, or potential for collaboration, with Indigenous peoples through the recognition of both physical boundaries, and socially constructed boundaries created through histories of separation of Indigenous peoples and the environment.

Spatial data for federal Native American reservations were source from the ESRI Living Atlas database user Esri_US_federal_data’s layer titled ‘Federal American Indian Reservations’. This layer was added to an ArcGIS Pro workspace, along with the above-described national park polygon shapefile containing the sample. To determine adjacency, a ‘select by location’ was conducted where the input feature was the national park polygon shapefile, the relationship was ‘intersect’, and the selecting feature was the ‘Federal American Indian Reservations’ shapefile. Parks were then coded as not sharing a border (0) or sharing a border (1).

*Cultural connections mentioned in park purpose statement (CCxPPURP)*¹⁷. This variable captured whether a park’s purpose statement mentioned cultural connections of any sort (CLCC), regardless of mention of Indigenous peoples. Acknowledgement of cultural landscapes more generally, and contemporary connections to national park landscapes may guide parks to be more conscious of such themes throughout the foundation documents. For example, the purpose of Great Sand Dunes National Park is as follows,

¹⁷ The coding of the *park purpose statement* (PPURP) was not included in the coding of collaboration and/or categories of collaboration, which are the outcomes of this analytical approach.

From the crest of the Sangre de Cristo Range to the floor of the San Luis Valley, Great Sand Dunes National Park and Preserve provides long-term stewardship of the tallest dunes system in North America and its supportive ecosystems. The park and preserve provides exceptional opportunities to experience, understand, and study the rare convergence of natural processes, associated natural and cultural resources, scenery, and designated wilderness (GRSA, p. 5).

This park purpose statement contains mention of *cultural connections* (CLCC), as defined by the final codebook, because it mentions “cultural resources”. Across all national parks in the sample, data were coded as mention of cultural connections in the park purpose statement (1) or no mention (0).

Park budget per capita (PERCAP). This variable assesses a park’s final 2016 annual budget divided by the total annual visitation to that park during 2016. Examining park budgets in conjunction with visitation can show the capacity of a park to collaborate with and acknowledge Indigenous peoples among all their park duties. Thus, a ratio of budget per (visitor) capita was calculated to facilitate comparability across other parks, acknowledging that parks with more funds per visitor may be at an advantage for engaging in additional partnerships whereas parks with fewer funds may be at a disadvantage. As an illustration of how visitation and budgets are related, a park ranger from Acadia National Park (during a separate research study conducted there during summer 2021) described how increased visitation in the park forced them to reduce the size and content of their visitor center museum to increase indoor space for visitors. Thus, those funds originally allocated for interpretative materials would instead be used to manage increasing visitor numbers, which may (seemingly) detract from the ability to spend those same funds engaged in partnerships and/or acknowledgement with Indigenous peoples.

Visitation numbers for 2016 (the year of the NPS Centennial) were gathered from the NPS Visitor Use Statistics website. Final budgets from 2016 (NPS Centennial) were recorded from the Department of the Interior Fiscal Year 2018 Budget Justifications. This ratio was then coded as below at least one standard deviation of the mean (0), within one standard deviation of the mean (1), and above at least one standard deviation of the mean (2). Two parks were excluded when calculating the mean due to extremely high budgets per capita; however, these parks were included in further analyses and received a 2 for this variable.

National monument status prior to park establishment (NM). This variable captured whether a national park was publicly managed as a national monument before being established as a national park. National monuments, enabled through the Antiquities Act of 1906, were designated to primarily protect cultural landscapes and artifacts, and the presence of this designation in a park's history could lead to more consideration for cultural history and connections in national park management. Data for this variable were source from the foundation documents and park enabling legislation. In the analysis, this variable was coded as managed previously as a national monument (1) or not (0).

Wilderness designation within park boundaries (WILD). This variable accounted for whether a national park had any amount of its acreage designated as "wilderness" under the Wilderness Act of 1964, which included considerations of landscapes of a certain size, and having little human influence, only primitive recreation, and/or other scientific and cultural value. Similar to national monument status prior to park establishment, despite "wilderness" being a largely Western concept, a wilderness designation could provide the framework for a park to recognize the continuing influence of Indigenous peoples on the landscape. Data for this variable was sourced from the foundation documents and coded as having a wilderness designation (1) or not (0).

Table 3.2: Overview of QCA Input Variables

Input	Summary	Source
ADJFED	Does a park share a boundary with other federally managed land? (0 “no”, 1 “adjacent to DOI managed lands”, and 2 “adjacent to lands managed by other and/or more than one department”)	ESRI Living Atlas (user: Esri_US_federal_data)
ADJRES	Does the park share a boundary with a federally recognized Tribal reservation? (1 “yes”, 0 “no”)	ESRI Living Atlas (user: Esri_US_federal_data)
CCxPPURP	Are cultural connections mentioned in park purpose statements? (1 “yes”, 0 “no”)	Foundation Documents
PERCAP	Ratio expressing total annual park budget for 2016 divided by number of park visitors in 2016 (0 “below one standard deviation of the mean”, “1” within one standard deviation, and 2 “above one standard deviation”)	DOI Fiscal Year 2018 Budget Justifications; NPS Visitor Use Statistics
NM	Was the park previously a national monument? (1 “yes”, 0 “no”)	Foundation Documents
WILD	Does the park contain federally designated wilderness within its boundaries? (1 “yes”, 0 “no”)	Foundation Documents

3.4 Results

Forty-five foundation documents were examined in relationship to the potential for collaboration with Indigenous peoples (Table 3.3)¹⁸. Overall, two national parks were *informing* due to no clear collaboration with Indigenous peoples (absence of all thematic elements) and four parks were placed in the *consultation* category¹⁹. Twenty-six parks, approximately 58 percent of the sample, were in the *coordination* category, indicating the overlap of the ‘culture’ and ‘partnerships’ thematic elements. Thirteen parks were considered *collaborative* with federally recognized Indigenous peoples and eleven parks were coded as *delegative authority*. No parks

¹⁸ Collaboration with non-Indigenous communities was not considered as the coding guidelines (Chapter II) only consider portions of the foundation document text that mentioned Indigenous peoples. As a result, this research could not make claims regarding overall collaboration of national parks, but rather made claims about national park collaboration with Indigenous peoples in the context of these categories and thematic elements.

¹⁹ Parks that had a recorded presence of culture (e.g., cultural landscapes) and shared goals & objectives (e.g., natural landscapes, visitorship & public involvement) were considered ‘consultation’ due to the absence of all other thematic elements (partnerships & knowledge). This is because code overlap, as determined by Chapter II, showed frequent overlaps between cultural landscape codes and natural landscapes codes often indicating historic interaction with the natural landscape, rather than collaboration as it has been defined by this research.

were coded as *Indigenous control* due to the U.S. government, administered by the National Park Service, still maintaining authority over final decision-making.

Thirteen parks were coded as having the potential to be ‘collaborative with Indigenous peoples’ according to their foundation documents due to having at least three of the four elements (i.e., culture, partnerships, knowledge, shared goals & objectives), whereas 32 parks had two or fewer of these elements and were not considered to be collaborative. All parks coded as collaborative represented Indigenous peoples in the context of *historic aspects*, *cultural connections*, *formal partnerships*, *park recognized affiliations*, *Indigenous knowledge*, and *physical features* (Table 3.3). However, some subcategories received fewer numbers of Indigenous mentions, including *flora and fauna* (11), *recreation* (9), *wilderness value* (6), *museum collections* (5), *education* (4), and *infrastructure* (4).

Table 3.3: Parks Categorized by Thematic Elements in Terms of Collaboration with Indigenous Peoples

	<i>Category</i>	<i>Culture</i>	<i>Partnerships</i>	<i>Knowledge</i>	<i>Shared Goals & Objectives</i>	<i>Parks in Category</i>
Not Collaborative (0)	Informing	-	-	-	-	BLCA, DRTO
	Consultation	✓	-	-	-	BISC, NOCA, SHEN, ZION
	Coordination	✓	✓	-	-	ACAD, ARCH, BIBE, CANY, CARE, CAVE, CHIS, CONG, CUVA, EVER, GRSM, GRTE, GUMO, JOTR, LAVO, MACA, MORA, PEFO, PINN, REDW, ROMO, SEKI, VOYA, WICA, YELL, YOSE
Collaborative (1)	Cooperation	✓	✓	✓	-	CRLA, GRBA
	Delegative Authority	✓	✓	✓	✓	BADL, BRCA, DEVA, GLAC, GRCA, GRSA, ISRO, MEVE, OLYM, SAGU, THRO
	Indigenous Control	✓	✓	✓	✓	

Table 3.4: National Park Collaboration with Indigenous Peoples, Coded

UNIT ¹	Culture ²			Partnerships ³		Knowledge ⁴	Shared Goals & Objectives ⁵						Outcome
	CLHA	CLCC	CLMC	FPART	CPPRA	CPTEK	NLFF	NLPF	NLWV	VPEDU	VPINF	VPREC	Collaboration
ACAD	1	1	1	1	1	0	0	1	0	0	1	0	0
ARCH	1	0	0	0	1	0	0	0	0	0	0	0	0
BADL	1	1	0	1	1	1	1	1	0	0	1	1	1
BIBE	1	1	0	0	1	0	0	1	0	0	0	0	0
BISC	1	0	0	0	0	0	1	1	0	0	0	0	0
BLCA	0	0	0	0	1	0	0	0	0	0	0	0	0
BRCA	1	1	1	1	1	1	1	1	1	1	0	1	1
CANY	1	0	0	0	1	0	0	0	0	0	0	0	0
CARE	1	1	0	0	1	0	0	1	0	0	0	0	0
CAVE	1	1	1	0	1	1	0	1	0	0	0	1	0
CHIS	1	1	1	0	1	0	0	1	0	0	0	0	0
CONG	1	1	0	0	1	0	1	1	0	0	0	0	0
CRLA	1	1	0	1	1	1	1	1	0	0	0	0	1
CUVA	1	1	0	1	1	0	0	1	0	0	0	1	0
DEVA	1	1	0	1	1	1	1	1	1	0	1	1	1
DRTO	0	0	0	0	0	0	0	0	0	0	0	0	0
EVER	1	1	0	0	1	1	1	1	0	1	0	0	0
GLAC	1	1	0	1	1	1	1	1	0	0	0	1	1
GRBA	1	1	0	1	1	1	0	1	0	0	0	0	1
GRCA	1	1	1	1	1	1	0	1	1	0	1	1	1
GRSA	1	1	0	1	1	1	1	1	0	1	0	0	1
GRSM	1	1	0	0	1	1	1	0	1	1	0	0	0
GRTE	1	1	1	0	1	0	0	1	0	1	0	1	0
GUMO	1	1	0	0	1	1	0	1	0	0	0	0	0
ISRO	1	1	0	1	1	1	1	1	1	0	0	1	1
JOTR	1	1	0	1	1	0	0	1	0	0	0	0	0
LAVO	1	1	0	1	0	1	0	1	0	1	0	0	0
MACA	1	1	0	0	1	0	1	1	0	0	0	1	0

Table 3.4, *continued*: National Park Collaboration (COLLAB) with Indigenous Peoples, Coded

	Culture ²			Partnerships ³		Knowledge ⁴	Shared Goals & Objectives ⁵						Outcome
UNIT ¹	CLHA	CLCC	CLMC	FPART	CPPRA	CPTEK	NLFF	NLPF	NLWV	VPEDU	VPINF	VPREC	Collaboration
MEVE	1	1	1	1	1	1	1	1	0	0	1	1	1
MORA	1	1	0	0	1	1	1	1	0	0	0	1	0
NOCA	1	0	0	0	0	0	0	0	0	0	1	1	0
OLYM	1	1	1	1	1	1	1	1	1	1	0	1	1
PEFO	1	1	0	0	1	0	0	1	0	0	0	0	0
PINN	1	1	0	0	1	1	1	1	0	0	0	0	0
REDW	1	1	1	0	1	1	1	1	0	1	0	1	0
ROMO	1	1	0	0	1	0	0	1	1	0	0	1	0
SAGU	1	1	0	1	1	1	1	1	1	1	0	0	1
SEKI	1	1	0	0	1	0	0	1	1	1	1	0	0
SHEN	1	0	0	0	0	0	1	0	0	0	0	0	0
THRO	1	1	1	1	1	1	1	1	0	0	0	1	1
VOYA	1	1	0	1	1	0	1	1	1	0	0	1	0
WICA	1	1	0	0	1	1	1	1	0	0	0	1	0
YELL	1	1	0	1	1	0	0	1	0	0	0	0	0
YOSE	1	1	0	0	1	1	0	1	1	1	0	1	0
ZION	1	1	0	0	0	1	0	1	1	0	0	1	0

¹Entries that are **bolded** are parks coded as collaborative with Indigenous peoples (1).

²Culture: *historic aspects* (CLHA), *cultural connections* (CLCC), *museum collections* (CLMC)

³Partnerships: *formal partnerships* (FPART), *park recognized affiliations* (CPPRA)

⁴Knowledge: *Indigenous Knowledge* (CPTEK)

⁵Shared Goals & Objectives: *flora & fauna* (NLFF), *physical features* (NLPF), *wilderness value* (NLWV), *education* (VPEDU), *infrastructure* (VPINF), *recreation* (VPREC)

3.4.1 Qualitative Comparative Analysis

The Truth Table

The truth table generated had 31 different combinations of input variables (i.e., rows) that appeared across the 45 park units (Table 3.5). Across all the park units in the sample, there were eight combinations representing nine parks that were explained by the model (i.e., a particular combination of input variables led to collaboration with Indigenous peoples). There was one additional combination representing two parks that had an inclusion score and PRI of 0.5, which indicated that half the parks in that combination were coded as (1) collaborative with Indigenous peoples and half were not. Additionally, three combinations had an inclusion score and PRI of 0.33, which indicated that one-third of the parks in that combination were coded as collaborative according to their foundation documents. As a result, the outcome (OUT) in the truth table is zero because, according to the inclusion threshold of one (i.e., all parks in grouping must be collaborative), these groupings of cases were overall not collaborative with Indigenous peoples (0), representing a contradiction to the defined outcome criteria (Duşa, 2018). Of the identified contradictions (combinations 99, 105, 106, and 108 in Table 3.5), all non-collaborative parks (Capitol Reef [CARE], Carlsbad Caverns [CAVE], Lassen Volcanic [LAVO], Sequoia & Kings Canyon [SEKI], Wind Cave [WICA], Yellowstone [YELL]) sharing input variable combinations with collaborative parks (Bryce Canyon [BRCA], Crater Lake [CRLA], Saguaro [SAGU], Theodore Roosevelt [THRO]) fell in the ‘coordination’ category. All other combinations of input variables yielded non-collaborative outcomes (0).

Table 3.5: The Truth Table, Ordered by Inclusion Values¹

Combo #	ADJFED	ADJRES	CCxPPURP	PERCAP	NM	WILD	OUT	n	incl	PRI	Cases
18	0	0	0	2	0	1	1	1	1	1	ISRO
62	1	1	0	1	0	1	1	1	1	1	MEVE
67	1	0	0	2	1	0	1	1	1	1	GRBA
110	2	1	0	1	0	1	1	1	1	1	OLYM
112	2	1	0	1	1	1	1	1	1	1	BADL
133	2	1	1	1	0	0	1	1	1	1	GLAC
135	2	1	1	1	1	0	1	1	1	1	GRCA
132	2	0	1	1	1	1	1	2	1	1	DEVA, GRSA
99	2	0	0	0	1	0	0	2	0.5	0.5	BRCA, CARE
105	2	0	0	1	0	0	0	3	0.33	0.33	CRLA, WICA, YELL
106	2	0	0	1	0	1	0	3	0.33	0.33	SEKI, THRO, YOSE
108	2	0	0	1	1	1	0	3	0.33	0.33	CAVE, LAVO, SAGU
12	0	0	0	1	1	1	0	1	0	0	CONG
19	0	0	0	2	1	0	0	1	0	0	DRTO
44	0	0	1	2	1	1	0	1	0	0	PINN
51	1	0	0	0	1	0	0	1	0	0	ARCH
52	1	0	0	0	1	1	0	1	0	0	ZION
65	1	0	0	2	0	0	0	1	0	0	BIBE
70	1	1	0	2	0	1	0	1	0	0	EVER
81	1	0	1	1	0	0	0	1	0	0	CANY
82	1	0	1	1	0	1	0	1	0	0	SHEN
84	1	0	1	1	1	1	0	1	0	0	BLCA
101	2	1	0	0	0	0	0	1	0	0	GRSM
113	2	0	0	2	0	0	0	1	0	0	CHIS
117	2	1	0	2	0	0	0	1	0	0	REDW
137	2	0	1	2	0	0	0	1	0	0	VOYA
9	0	0	0	1	0	0	0	2	0	0	CUVA, MACA

Table 3.5, *continued*: The Truth Table, Ordered by Inclusion Values¹

Combo #	ADJFED	ADJRES	CCxPPURP	PERCAP	NM	WILD	OUT	n	incl	PRI	Cases
11	0	0	0	1	1	0	0	2	0	0	ACAD, BISC
64	1	1	0	1	1	1	0	2	0	0	JOTR, PEFO
114	2	0	0	2	0	1	0	2	0	0	GUMO, NOCA
130	2	0	1	1	0	1	0	3	0	0	GRTE, MORA,ROMO

¹Cases that are bolded were coded as collaborative with Indigenous peoples, according to park foundation documents.

3.4.2 Truth Table Minimization

The truth table minimization uses the truth table (Table 3.5) to determine the simplest combinations of input variables (park characteristics) leading to the defined output (collaboration with Indigenous communities) without any contradictions (Duşa, 2018). The result of the minimization process, Table 3.6, indicated the combinations of defined input variables necessary for a park to be considered collaborative with Indigenous peoples. Overall, there were six combinations across the nine parks considered collaborative with Indigenous peoples.

Table 3.6: Truth Table Minimization Output

ADJFED	ADJRES	CCxPPURP	PERCAP	NM	WILD	PARK
2	1	1	1	na	0	GLAC; GRCA
2	1	0	1	na	1	OLYM; BADL
1	1	0	1	0	1	MEVE
1	0	0	2	1	0	GRBA
2	0	1	1	1	1	DEVA; GRSA
0	0	0	2	0	1	ISRO

Adjacent to other federally managed lands (ADJFED) & recognized reservations (ADJRES). The minimization output showed that all parks except Isle Royale (ISRO) were adjacent to federally managed lands. Of those that were adjacent, three of the five combinations (representing six parks) were adjacent to lands managed by departments other than the Department of the Interior or adjacent to lands managed by multiple departments. Additionally, half of the combinations in the minimization output (five of the nine parks) were adjacent to federally recognize Indigenous reservations. The combinations that were not adjacent to reservation lands had a national monument designation prior to national park establishment.

Cultural connections mentioned in park purpose statement (CCxPPURP). Mention of cultural connections in the park purpose statements was not as common, only appearing twice across the six combinations (though such mentions did represent four parks). When CCxPPURP was present, the parks in that combination were also adjacent to federal lands other than those managed by the Department of the Interior.

Park budget per capita (PERCAP). Across the combinations identified by the minimization process, all fell within one standard deviation of the mean or were above one

standard deviation of the mean, suggesting that having at least the standard amount of budget per visitor or more, improved chances of collaborating with Indigenous peoples. Park budget per capita above one standard deviation appeared to not be related to adjacency (to federal and/or Indigenous lands) or mention of cultural connections in park purpose statements.

National monument status prior to park establishment (NM) & wilderness designation within park boundaries (WILD). Presence of national monument varied, in which two combinations were coded as “1” (yes), two combinations were coded as “0” (no), and two combinations were “na” (designation does not matter, as all other input variables match across the parks listed in the PARK column of Table 3.6). There was no consistent pattern for wilderness designation in this output.

3.5 Discussion and Conclusion

This study examined factors that could lead to collaboration between U.S. national park and U.S. federally recognized Indigenous peoples through multi-value qualitative comparative analysis (mvQCA). In doing so, this research proposed a revised set of categories of collaboration, arguing that existing scales (e.g., Arnstein, 1969) do not integrate government stakeholders, Indigenous peoples, *and* non-Indigenous communities, *and* Indigenous peoples in collaborative natural resource management. This research also identified four thematic elements of collaboration (i.e., culture, partnerships, knowledge, and shared goals & objectives) and connected the presence/absence of these elements in national park foundation documents to the proposed categories of collaboration.

Such categorization showed that most parks in the sample fell into the coordination category. The foundation documents of these parks mentioned Indigenous peoples in the context of culture (i.e., *historic aspects*, *cultural connections*, and/or *museum collections*) and partnerships (either *formal partnerships* or *park recognized affiliations*). Though not considered collaborative with Indigenous peoples by this research, the presence of these thematic elements may indicate movement towards more collaboration with Indigenous peoples (Conley & Moote, 2003). Additionally, thirteen parks (approximately 28.9 percent of the sample) were considered collaborative with Indigenous peoples, showing that there are current efforts to integrate Indigenous peoples into the foundational management of individual national parks, particularly by acknowledging the cultural connections of Indigenous peoples to national park landscapes,

maintaining formal partnerships with Indigenous communities, acknowledgment of Indigenous knowledge (IK), and shared goals and objectives.

The minimization results of this research found that park leaders and other land management practitioners need to be aware of the factors that influence collaborative outcomes with Indigenous peoples. From the results of this study, it is apparent that national park adjacency to other federally managed lands is an important indicator of collaboration (ADJFED). These findings confirm that partnership networks of diverse scale (i.e., national, state, regional, local) and sector (i.e., government, non-profit, private) are vital to acknowledging and respecting other ways of knowing and worldviews, as well as developing shared goals and objectives. National parks, managed by the National Park Service, that have partnerships that transcend the Department of Interior may be more likely to maintain diverse networks. For example, Mount Rainier National Park (MORA) is adjacent to Gifford Pinchot National Forest, which maintains regular government-to-government relationships with the Cowlitz Indian Tribe, Confederated Tribes and Bands of the Yakama Nation, Nisqually Indian Community, and the Confederated Tribes of the Warm Springs Reservation and are working to integrate IK into the management of this Forest (Forest Service, n.d.).

Additionally, inconsistencies in the presence/absence of reservation adjacency (ADJRES) suggest that Indigenous removal from ancestral homelands to reservations in different geographic locations could impact the extent to which Indigenous peoples can, or want to, engage with these spaces (i.e., physical boundaries). Similar to the socially constructed boundaries between the Western scientific generation of knowledge and IK discussed by boundary work theory, physical boundaries can remove IK from the contexts and landscapes in which it was generated (Berkes, 1999; Whyte, 2013). For example, the removal of Maasai communities in Tanzania under the guise of national park establishment creates physical boundaries between Maasai communities and their traditional grazing lands (an reliable water sources), as well as social boundaries by indicating that these communities “don’t belong” (Reid, 2012).

To help bridge boundaries between natural resource management and Indigenous peoples, the acknowledgment of cultural connections, of any sort, in the park purpose statements (CCxPPURP) may indicate whether a park more intentionally considered Indigenous peoples into their foundation document. This interest was driven primarily by literature that discussed the

impact of acknowledgment of Indigenous peoples on fostering collaboration (Ross et al., 2011). However, there was no consistent pattern according to the combinations produced by the minimization output, perhaps indicating that the cultural connections mentioned in the park purpose statements are not in reference to Indigenous peoples.

In addition to acknowledgement of boundaries and culture, it is apparent that ample national park budget per capita (PERCAP) is necessary for collaboration with Indigenous peoples, as all combinations in the minimization output are within or above one standard deviation of the mean for this variable. The two combinations with the highest budget per capita (2), representing Great Basin National Park and Isle Royale National Park, had an overall lower presence of the other variables. In particular, Isle Royale had an absence of all other input variables except for budget per capita and wilderness designation. Though adjacency is impossible on an island, this output shows that park budget could influence the fiscal resources a park can dedicate to management not mentioned in the park purpose statement.

Lastly, though national monument designation prior to park establishment and wilderness designations seemed inconsistent in the minimization output, five of the six combinations representing seven parks, have at least one of the two designations. The exceptions, Glacier National Park and Grand Canyon National Park, both do not have wilderness designations within their boundaries. Additionally, national monument designation (NM) was displayed as “na”, indicating that its presence/absence did not have an impact in the presence of adjacency to other federally managed lands (2), adjacent to an Indigenous reservation (1), mention of cultural connections in the park purpose statement (1), and a budget per capita within one standard deviation of the mean (1). According to the Antiquities Act of 1906, national monuments are established because of historic, cultural, and/or scientific value, whereas national parks are established primarily for public recreation, as well as natural and scenic features (Taylor, 2016; Yard, 1931). Therefore, the powers granted by the Antiquities Act allow the President to quickly protect important cultural sites (as opposed to national parks that need congressional approval). As a result, the emphasis of national monument designation the cultural values of a landscape prior to park establishment could endure beyond a change in designation. Similarly, according to the Wilderness Act (1964), there are four primary components to wilderness designation: little human influence/interaction, primitive recreation, area of at least five thousand acres, and other historic, scenic, scientific, and/or natural value. National parks

with wilderness designations frame these components as untrammeled quality, natural value, undeveloped area, solitude or unconfined recreation, and other features of value (GLAC, p. 76).

In particular, ‘other features of value’ focuses on human interaction with the landscape, typically summarizing historic and prehistoric Indigenous influence in these spaces, as well as the potential for continuing cultural connections to the landscape. Considering colonialist exclusionary national park histories, this finding could indicate that spaces historically managed by Indigenous peoples prior to their removal helped to maintain the long-term ecological integrity of these spaces, especially since Western conceptualizations of wilderness (free from human interaction) could reduce landscape resilience (Dowie, 2019). These claims are reflected in a 2021 report from the United Nations that found that Indigenous and community managed forest in Latin America experience less deforestation and a greater capacity for carbon sequestration (FAO, 2021; Santiago, 2021). Such findings show the importance of not only historic Indigenous interactions with the landscape, but also how such intergenerational knowledge can connect to contemporary landscapes.

Though some variables in this analytical approach are only applicable in the U.S. national park context (i.e., national monument designations), further research utilizing this methodology could examine additional factors not included in this initial study that could be more globally applicable. Literature discussing collaborative natural resource management globally tends to focus on either local communities (without specifying if Indigenous peoples are included) or Indigenous peoples exclusively, rather than acknowledging that each have a role in collaborative natural resource management (Ross et al., 2011; Tipa & Welch, 2006).

Tipa & Welch (2006) attempt to fill this gap through a case study of freshwater collaborative resource management among Māori communities and other stakeholders in New Zealand examine the institutional arrangements among these stakeholders, developing a cyclical model of ‘co-management’ that address intersections of government institutions, local communities, and Indigenous communities (Tipa & Welch, 2006). Ignoring these relationships not only contributes to western colonial narratives of exclusion, but the underuse of ecosystem dependent on Indigenous and local management can negatively affect natural landscapes by decreasing biodiversity and ecological resilience. Nightingale et al. (2006) describe how community driven forest management in Nepal increased local autonomy and decreased degradation, whereas state driven management led to decentralization and the overextraction of forest resources

communities who did not historically rely on that area of forest. Though this example only considers local Nepalese communities, similar ideas can be applied to Indigenous contexts, as exhibited by Indigenous forest management in Latin America, described above (FAO, 2021; Santiago, 2021).

Informed by boundary work theory and conceptualizations of collaborative management, this study developed a framework through which both non-Indigenous communities and Indigenous peoples are considered (or not) in collaborative processes with lands managed by government authorities for the ‘public good’. Bridging socially constructed boundaries in natural resource management through recognition of Indigenous historic and contemporary culture, (in)formal partnerships, acknowledgement of Indigenous Knowledge and its role in natural resource management, and shared goals and objectives are vital to collaborative management outcomes in the United States and global contexts (Berkes, 2021; Ross et al., 2011). In analyzing the ways in which these elements presented themselves in management documents, this study ultimately contributed to a body of literature dedicated to addressing gaps between conventional exclusionary natural resource management and continuing Indigenous presence on the landscape and engagement with planning and decision-making.

Chapter IV: Conclusion

This thesis aimed to investigate the ways in which U.S. national parks represent federally recognized Indigenous peoples in their foundation documents and connect these findings to the global protected area movement through boundary work theory and ideas of collaborative natural resource management. To achieve this, two studies were conducted.

The first study (Chapter II) was a qualitative content analysis of U.S. national park foundation documents, which are guiding management plans published for the 2016 National Park Service Centennial. This analysis examined Indigenous representation in park management documentation that will set the stage for the next 100 years. Results from this study showed that U.S. national park purpose statements emphasize the importance of natural landscapes and recreation. In contrast, coded sections of text (i.e., paragraphs that explicitly mentioned Indigenous peoples) were dominated by the importance of historic and contemporary cultural landscapes. Such results suggest that parks understand the role of Indigenous peoples from a cultural perspective (an important function of the National Park Service) but are less clear on the role of Indigenous peoples in maintenance of natural landscapes and recreational opportunities. Across the foundation documents, many cultural themes (i.e., *historic aspects, cultural connections, museum collections*) were coded alongside mention of natural landscapes (i.e., *flora & fauna, physical features, wilderness value*). However, these code overlaps often only acknowledged historic interactions of Indigenous peoples with the landscape, rather than (1) highlighting the ways in which parks can bridge scientific and Indigenous Knowledge (IK) in the management of natural landscapes and (2) the role that contemporary Indigenous peoples can play in park education and recreation.

The second study (Chapter III) utilized results from the qualitative content analysis to categorize parks according to collaboration with Indigenous peoples and conduct a multi value qualitative comparative analysis (mvQCA) to understand what park characteristics can explain

collaborative potential. This study developed a metric through which public lands and other protected areas can assess such collaboration, leading to intentional and inclusive natural resource management practices. The operationalization of collaboration in this study, explained across six categories, was determined through a careful review of relevant literature and emphasized four dominant themes focused on collaboration with Indigenous peoples (i.e., culture, partnerships, knowledge, and shared goals & objectives).

Results from this study showed that, of the 45 parks included in the sample, 13 parks were considered collaborative with federally recognized populations, with two of these falling in the ‘cooperation’ category and eleven in the ‘delegative authority’ category (Table 3.3). The remaining 32 parks were considered not collaborative, though 26 of parks coded as such were just below the threshold for collaboration in the ‘coordination’ category (missing mentions of Indigenous Knowledge in their respective foundation documents).

Additionally, mvQCA illustrated how the combinations of different park characteristics, or input factors, (e.g., wilderness designation), can influence collaboration with federally recognized Indigenous peoples. Results of the mvQCA identified six combinations representing nine parks and showed that adjacency to other federally managed lands, particularly those outside of the Department of the Interior (DOI), was an important indicator of collaboration. Similarly, park budget per capita (PERCAP) across all combinations was either within one standard deviation of the mean (1) or above one standard deviation of the mean (2). The two parks (Great Basin [GRBA] & Isle Royale [ISRO]) with the highest budget to visitor ratio had the fewest number of other variables coded above zero. This showed that the absence of other variables may be mitigated by ample funding to support collaboration, though in the case of Isle Royale budget per capita was high because it had relatively few visitors in 2016.

Lastly, five of the six combinations (representing seven parks) had either a national monument designation prior to park establishment or current wilderness designation, indicating that such designations could provide the framework necessary to recognize Indigenous peoples in management plans. The combination, representing Glacier (GLAC) and Grand Canyon (GRCA), that did not have such designations were adjacent to non-DOI managed lands (ADJFED), adjacent to an Indigenous reservation (ADJRES), mentioned cultural connections in their park purpose statement (CCxPPURP), and had a budget per capita within one standard deviation of the mean (PERCAP), indicating that the presence of these variables could also

encourage recognition if Indigenous peoples, particularly in the absence of designation frameworks.

Considered together, the results of these two studies demonstrate that more proactive and intentional approaches to collaborative natural resource management between U.S. national parks and federally recognized Indigenous peoples need to be implemented. The first study demonstrated that Indigenous peoples are important collaborators in natural resource management, but U.S. national park foundation documents showed that parks do not appear to collaborate with Indigenous populations as fully as they could across all aspects of management because boundaries between scientific knowledge and Indigenous knowledge still seem apparent. The second study categorized park foundation documents according to collaboration with Indigenous peoples, finding that the majority of parks (32/45) are not collaborative. Many parks deemed not collaborative were considered ‘in coordination’ (26 of 32 parks), primarily lacking attention to Indigenous knowledge. Though this research did not consider specific factors that may inhibit collaboration with Indigenous populations, the similar methodologies could be applied to address this.

Additionally, case studies in other countries demonstrate that boundary organizations (Zurba et al., 2012) and/or Indigenous-led protected areas (Davies et al., 2013; Nursey-Bray & Hill, 2010; Ross et al., 2009) can lead to management more inclusive of a variety of stakeholders. As a result, global applications of the research could guide approaches to similar research questions in other settler states, such as Australia and Canada, as well as be used to assess the development of more recently established park systems, allowing them to become more proactive to their collaborative management approaches.

In the U.S. context, Cherokee scholar Carroll (2014) outlines that ways in which Indigenous sovereignty and management can empower populations to reclaim landscapes they have historically been excluded from. Similarly, Ojibwe author Treuer (2021) argues that national parks should return to Tribal, rather than U.S. government, management as a form of reparation. In addition, wilderness designations and prior national monument status provide a general framework for acknowledging historic cultural influence on park landscapes. Other existing federal legislation concerning Indigenous peoples – including the American Indian Religious Freedom Act (1978), Native American Graves Protection and Repatriation Act (1990), and Executive Order 13007 “American Indian Sacred Sites” – focus on (re)instituting basic

rights for Indigenous communities. This research showed that though such legislation can impact the ways in which Indigenous peoples are represented in U.S. national park foundation document, according to mvQCA minimization patterns, national park adjacency to federally recognized Indigenous reservation seemed to have little influence on collaboration with Indigenous peoples, perhaps reflecting histories of Indigenous removal from their ancestral landscapes (e.g., members of the Cherokee Nation, and other Tribes, were forcibly removed from the east coast to reservations via the Trail of Tears) (Kimmerer, 2013; Taylor, 2016). Additionally, a lack of trust due to these histories can inhibit the collaboration of Indigenous peoples with parks despite proximity (Dietsch et al., 2021). As a result, there needs to be more guidance for parks on integrating Indigenous peoples into all aspects of management (especially in relation to natural landscapes and visitor opportunities), further institutionalizing the importance of historic (potentially geographically removed) and contemporary Indigenous peoples to national park landscapes, as well as acknowledging and repairing past injustices (Carroll, 2014; Dietsch et al., 2021; Premauer & Berkes, 2015).

Limitations of this broader design include researching only (the privileged) half of the present narrative (i.e., published documents by a dominant institution, the U.S. National Park Service, generally respected globally) and losing many diverse worldviews and lived experiences. For example, this research focused solely on national park perspectives and documents; further insight into the primary research questions could be gained through discussion with Indigenous peoples. Similarly, mvQCA input variables were primarily chosen according to presence in the foundation documents and/or relation to the theoretical perspectives of this research. A more robust mvQCA input could be derived from discussions with Indigenous and non-Indigenous stakeholders about what characteristics facilitate or inhibit their engagement with planning and management.

Additionally, national park foundation documents are only one example of park management documents. Though these documents provide a basis through which parks decide core components of national park management and decision-making, investigating other park management plans can provide more detailed insight in park actions. For example, the Badlands National Park South Unit General Management Plan & Environmental Impact Statement, published in 2012 (five years before the Badlands foundation document), explored Native American connections to the landscape, relationships of the South Unit with Native American

Tribes (e.g., Oglala Sioux), and management options that included a Tribal Park in dedicated sections of the document, though this was not discussed in the Badlands (BADL) foundation document. Another limitation of analyzing management plans is that though such documents provide a guideline through which parks can determine whether they have met the four elements necessary for collaborating with Indigenous peoples, these documents may not necessarily lead to long-term collaborative outcomes. For example, this research coded shared goals & objectives (i.e., physical landscapes, visitorship & public involvement) when also mentioned alongside Indigenous peoples, but these codes do not indicate whether Indigenous peoples *co-produced* these goals and objectives (J. Davies et al., 2013).

Though planning frameworks, such as the national park foundation documents, are important, they are not the only indicator of park management (Davies et al., 2013). As a result, ground truthing management practices for individual parks though additional social science methods (e.g., interviews, focus groups, observation) can offer specific actions that can be taken to improve park relationships with Indigenous peoples on a case-by-case basis outside of published management documents. Ground truthing would also be useful, as parks that do not have congressionally approved wilderness designations may still manage their lands by those same guidelines. Additionally, some phrases in the park foundation documents were repeated, and thus coded, multiple times throughout a single document, potentially inflating the importance of these code combinations when compared to what the park is actually doing on the ground in real time.

Lastly, and perhaps most importantly, this research did not account for whether Indigenous peoples want to, or are able to, become involved in different aspects of national park management. For example, histories of forced removal, assimilation, and genocide of Indigenous peoples likely discourage Indigenous peoples from collaborating with institutions that caused (and are arguably still causing) persistent intergenerational trauma (Bombay et al., 2009; Carroll, 2014; Falconer, 2021; NPR Associated Press, 2022; Terrill, 2022). Additionally, an overall loss of Indigenous Knowledge as a result of these histories can inhibit collaboration because such Knowledge no longer exists or will take time to re-establish (Ross et al., 2011). Similarly, desire to protect Indigenous Knowledge and practices from further extraction could result in the safeguarding of such knowledge from land managers, academics, and the public. For example, the location(s) of data collection and archaeological sites from Henson et al.'s (2021) study of

Grizzly Bear DNA and Indigenous language groups on the west coast of Canada is excluded, following protocols established through collaboration with Nuxalk, Haíłzaqv, Kitasoo/ Xai'xais, Gitga'at, and Wuikinuxv First Nations²⁰.

Despite the limitations discussed above, the broad approach of this research positions it to be applied in other contexts, including at other U.S. federal and/or state managed lands, additional management guidelines/plans, as well as other park systems outside the U.S. The codebook was created to address all overarching management themes throughout the national park foundation documents yet can be tailored to different management contexts to achieve informative results. For example, the codebook for this research identified *flora and fauna* (NLFF) as a single category; however, such codes could be expanded to include additional categories while examining plans specific to the management of natural landscapes (e.g., areas managed by the U.S. Fish and Wildlife Service). Alternatively, natural landscapes could be revised with Indigenous input to more closely reflect the ways in which Indigenous peoples see and interact with natural landscapes. Similarly, the *historic aspects* code (CLHA), which encompassed park history, historic structures, and archaeological sites, could also be expanded in park contexts more focused on cultural histories (e.g., Hopewell Culture National Historical Park in Ross County, OH).

As discussions of Indigenous integration into natural resource management become more salient in academic and non-academic contexts, it is important that both research and management in these disciplines evolve alongside this growing field. Examples from academic literature, including Indigenous authors Carroll (2014) and Whyte (2013), emphasize the relationship between Indigenous knowledge and Western science, while Berkes (2021) and Buzinde et al. (2020) suggest that bridging these knowledge sets are vital to successful conservation outcomes. Similarly, Potawatomi author and botanist Robin Wall Kimmerer (2013) describes bridging boundaries as it relates to her own personal experiences of intergenerational trauma, learning Indigenous languages that emphasize the “animacy of the world” (p. 57), and teachings of Indigenous ways of knowing.

²⁰ Similarly, endangered species are often protected by safeguarding information about their locations to prevent further extraction. For example, making the locations of charismatic megafauna (e.g., elephants, lions, etc.) available may contribute to increases in poaching activities. The recent demand for publicly available/open access data in attempts to make academic scholarship less exclusionary has not only threatened endangered species but Indigenous Knowledge and the willingness of Indigenous peoples to collaboration with academic institutions (Ng, 2022).

The methods and results of this research from a non-Indigenous perspective contribute to the natural resource management literature by analyzing the role(s) of U.S. national parks in collaborating with Indigenous peoples through their foundation documents, guiding the National Park Service into a second century of stewardship. Broader applications of this research will hopefully prompt other non-Indigenous researchers and institutions to be more cognizant of the role they play in reconciling divisions between different ways of knowing about the relationships of people to various lands.

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Appendix A: National Parks in Sample and Abbreviations

Park Name	Park Code	Park Name	Park Code	Park Name	Park Code
Acadia National Park	ACAD	Dry Tortugas National Park	DRTO	North Cascades National Park	NOCA
Arches National Park	ARCH	Everglades National Park	EVER	Olympic National Park	OLYM
Badlands National Park	BADL	Glacier National Park	GLAC	Petrified Forest National Park	PEFO
Big Bend National Park	BIBE	Grand Canyon National Park	GRCA	Pinnacles National Park	PINN
Biscayne National Park	BISC	Grand Teton National Park ¹	GRTE	Redwood National Park ¹⁰	REDW
Black Canyon of the Gunnison National Park	BLCA	Great Basin National Park	GRBA	Rocky Mountain National Park	ROMO
Bryce Canyon National Park	BRCA	Great Sand Dunes National Park ²	GRSA	Saguaro National Park	SAGU
Canyonlands National Park	CANY	Great Smoky Mountains National Park	GRSM	Sequoia and Kings Canyon National Parks ¹	SEKI
Capitol Reef National Park	CARE	Guadalupe Mountains National Park	GUMO	Shenandoah National Park	SHEN
Carlsbad Caverns National Park	CAVE	Isle Royale National Park	ISRO	Theodore Roosevelt National Park	THRO
Channel Islands National Park	CHIS	Joshua Tree National Park	JOTR	Voyageurs National Park	VOYA
Congaree National Park	CONG	Lassen Volcanic National Park	LAVO	Wind Cave National Park	WICA
Crater Lake National Park	CRLA	Mammoth Cave National Park	MACA	Yellowstone National Park	YELL
Cuyahoga Valley National Park	CUVA	Mesa Verde National Park	MEVE	Yosemite National Park	YOSE
Death Valley National Park	DEVA	Mount Rainier National Park	MORA	Zion National Park	ZION

¹Includes multiple park units in foundation document. GRTE: Grand Teton & John D. Rockefeller Jr. Memorial Parkway; REDW: Redwood National & State Parks; SEKI: Sequoia & Kings Canyon National Park

²National Park & Preserve

Appendix B: Reported ICR Kappa Values

Kappa (Brennan & Prediger) Values, 90 percent code overlap generated by MAXQDA*

Coder 1 is the primary researcher, Coder 2 is the research assistant

		Coder 1		
		1	0	
Coder 2	1	a = 946	b = 104	1050
	0	c = 133	0	133
		1079	104	1183

$$P(\text{observed}) = P_o = a / (a + b + c) = 0.80$$

$$P(\text{chance}) = P_c = 1 / \text{Number of codes} = 1 / 17 = 0.06$$

$$\text{Kappa} = (P_o - P_c) / (1 - P_c) = 0.79$$

If there is an unequal number of codes per segment or if only one code is to be evaluated:

$$P(\text{chance}) = P_c = \text{Number of codes} / (\text{Number of codes} + 1)^2 = 0.05$$

$$\text{Kappa} = (P_o - P_c) / (1 - P_c) = 0.79$$

*Excludes codes FPART (formal partnerships), CPEL (enabling legislation), and AMBIG (ambiguous)

Kappa (Brennan & Prediger) Values, 80 percent code overlap generated by MAXQDA*

Coder 1 is the primary researcher, Coder 2 is the research assistant

		Coder 1		
		1	0	
Coder 2	1	a = 954	b = 100	1054
	0	c = 129	0	129
		1083	100	1183

$$P(\text{observed}) = P_o = a / (a + b + c) = 0.81$$

$$P(\text{chance}) = P_c = 1 / \text{Number of codes} = 1 / 17 = 0.06$$

$$\text{Kappa} = (P_o - P_c) / (1 - P_c) = 0.79$$

If there is an unequal number of codes per segment or if only one code is to be evaluated:

$$P(\text{chance}) = P_c = \text{Number of codes} / (\text{Number of codes} + 1)^2 = 0.05$$

$$\text{Kappa} = (P_o - P_c) / (1 - P_c) = 0.80$$

*Excludes codes FPART (formal partnerships), CPEL (enabling legislation), and AMBIG (ambiguous)

Appendix C: Final Codebook

Theme	Code	Label	Description	Inclusion	Exclusion
Partial Codebook	General Tribe	TRGEN	Peoples [that] are 'native' to a particular place, original to their lands rather than having migrated from elsewhere (Ross et al., 2011, p. 21).	Use of any general term to refer to the federally recognized Indigenous peoples mentioned anywhere in the text of the document OR the enabling legislation.	Do not use for any general Indigenous terms. Do not use when referring to a government agency (e.g., Bureau of Indian Affairs).
	Specific Tribe	TRSPEC	Peoples [that] are 'native' to a particular place, original to their lands rather than having migrated from elsewhere (Ross et al., 2011, p. 21).	use of specific Tribe name in document anywhere in the text of the document OR the enabling legislation.	Do not use for any specific Indigenous terms. Does not include major landmarks, town, other parks, named after a Tribe (e.g., Pueblo Mountain).
	Park Purpose	PPURP	A statement identifying the specific reason/s for establishing a particular park, often based on founding legislation and park history (GRSM, CANY, and others).	Park purpose statement as shown in foundation document (will be transcribed in the text of the document and labeled).	Do not use this code on any other point in the document other than the actual statement (will be 1 use per document).
	Formal Partnerships	FPART	A group of organizations and/or individuals that have "...agreements that have been reached through formal documented processes..." (CAVE p. 10), coordinating activities, facilitating "the formation of common goals and objectives (Guerrero et al., 2015, p. 108), and sharing knowledge & social capital (Armitage et al., 2020; Davies & White, 2012; Guerrero et al., 2015).	Documented partnerships contained in only the Administrative Commitments section(s) in the text of each document (may occur in dedicated section or in appendix under the same name), code ONLY formal partnerships associated with an Indigenous code (TRGEN, TRSPEC).	Do not use in sections other than the administrative commitment, instead refer to 'Park Recognized Affiliations' code. FPART codes should only overlap with TRGEN/TRSPEC. If there is descriptive text with an Indigenous mention in another table cell, use the codebook to code.

Theme	Code	Label	Description	Inclusion	Exclusion
Partial Codebook cont.	Enabling Legislation	CPEL	Documents preceding an enactment of law, therefore establishing laws related to/affecting the national park of interest (Sekula, n.d.).	Use this any time you are coding the enabling legislation as it appears in the enabling legislation PDF document. This includes legislation for the establish of National Monuments, as well as the National Park. Do not use any other code from the codebook.	Do not use to code in the text of the document, or any part of the word document uploaded to MAXQDA.
	Ambiguous	AMBIG	Open to interpretation, may have multiple meanings and/or meaning may be unclear.	When a document seems to be referring to Native American Indigenous peoples in the text of the document but doesn't directly mention these populations.	DO NOT USE WITH OTHER CODES.
Natural Landscapes	Flora & Fauna	NLFF	Those 'wild' plants & animals native to the area of interest.	any plants or animals mentioned, including ranges, themes of biodiversity, and management (e.g., fisheries management).	Does not include mention of 'ecosystems', 'landscape', or other encompassing terms.
	Physical Features	NLPF	The part of the environment that includes purely physical factors (Marriam-Webster Dictionary).	Any features of the environment considered by western science as 'non-living', including geology, paleontology, water, climate change, soundscapes, landscapes, resources, ecosystems, or other terms that encompass both 'living' and 'non-living' features; also includes mentions of park boundaries.	Does not include specific mention of plants, animals, or wilderness. Does not include cultural landscapes or things (such as architecture) "inspired" by nature. Does not include park name.
	Wilderness Value	NLWV	"...an area where the earth and its community of life are untrammelled by man...undeveloped Federal land retaining its primeval character and influence..." (<i>Wilderness Act</i> , 1964).	Any direct mention to wilderness, wilderness value, wild, or wilderness/undeveloped character (i.e., use of term).	Does not include mentions of 'ecosystems' or 'landscapes' or other encompassing terms that imply 'wilderness'. Does not include 'wildlife' despite use of 'wild', instead see NLFF.

Theme	Code	Label	Description	Inclusion	Exclusion
Cultural Landscapes	Historic Aspects	CLHA	The study/concern with the past (Kennedy, n.d; CANY, CHIS, GLAC, and others).	Any mention of something related to cultural landscapes directly related to the history of the park.	Does not include infrastructure maintained by the park for visitors, see definition below.
	Cultural Connections	CLCC	Information/knowledge about other cultures (typically non-western), identifying, researching, and documenting park cultural resources in the present (Gobo & Marciniak, 2016; <i>NPS Ethnography: African American Heritage & Ethnography</i> , n.d.).	Reference to the active present and/or future management of cultural landscapes and/or of culture more generally.	Does not include ethnography when it is referring to archaeological sites or other relics of the past, see 'Historic Aspects' code.
	Museum Connections	CLMC	Objects and/or artifacts publicly displayed by the park as scientific and historical documentation, deemed important to park resources and the collective history of the site of interest (<i>Scope of Museum Collections</i> , 2003).	Mention of museums themselves or any reference to the cultural, historical and/or natural artifacts or archives displayed in a museum setting, including their use in research, publications, exhibits, programs, and media. May overlap with 'Historic Aspects' code.	n/a
	Non-Indigenous	CLNI	Those that are not 'native' to a particular place, migrated from elsewhere. (Ross et al., 2011, p. 21).	Any reference to non-Indigenous peoples in the text of the foundation document.	n/a

Theme	Code	Label	Description	Inclusion	Exclusion
Visitorship & Public Involvement	Education	VPEDU	The process of receiving or giving systematic instruction (Oxford English Dictionary via Google).	Related to the education of individuals and/or groups within or around the park. May include park educational programs, including ranger talks, field trips, citizen science, and museum exhibits.	n/a
	Infrastructure	VPINF	The basic physical and organizational structures and facilities needed for operation (Oxford English Dictionary via Google).	Anything related to (physical park) operation, including administrative buildings, roads, facilities, visitor centers, campgrounds etc. May include facilities outside of the park or park architecture, if mentioned.	Does not include historic buildings or structures (defined above), but rather infrastructure maintained by the park for visitor use.
	Recreation	VPREC	Leisure activities different from the everyday routine that restore an individual fatigued by non-leisure activities (Hammit, 2004).	Park recreational activities and overall "visitor experience", including hiking, boating, sightseeing, camping, climbing, and/or other tourist-related activities.	Does not include mention of visitor centers (referring to buildings maintained by the park), instead refer to VPINF.

Theme	Code	Label	Description	Inclusion	Exclusion
Communication & Legislative Processes	Traditional Ecological & Indigenous Knowledge	CPTEK	A collaborative concept referring to a "cumulative body of knowledge, proactive, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationships of living things (including humans) with one another and their environment" (Berkes, 1999; Whyte, 2013, p. 3).	Refers directly to Federally recognized, North American Indigenous knowledge. Could be related to past or present knowledge (or use of knowledge); also includes mentions of traditions related to Indigenous peoples even when TEK isn't specifically mentioned. May overlap with any of the cultural connections codes frequently.	Do not use in reference to non-federally recognized North American Indigenous peoples or the cultural knowledge of other groups of people (e.g., Hispanic).
	Scientific Research	CPSR	Knowledge generated through systematic study & observation (Carlsson & Berkes, 2005; Gavin et al., 2015; Plummer & Fitzgibbon, 2004).	Anything in relation to scientific research, the scientific method/process and knowledge generation.	Do not use if there is not an obvious connection to scientific research/value (e.g., allusion to the scientific process).
	Park Recognized Affiliations	CPPRA	Agreements to "share planning and decision-making responsibilities"(Arnstein, 1969, p. 221).	Mentions of partnerships, stakeholders, and/or collaborations (incl. when a specific stakeholder is mentioned) in the text of the foundation document, including analysis of fundamental resources and values.	Do not use to code administrative commitments, instead see FPART code.
	Legislative History & Policy Recommendations	CPLH	Documents preceding an enactment of law, therefore establishing laws related to/affecting the national park of interest (Sekula, n.d.).	Any legislation or policy mentioned in the text of the document, including Laws, Executive Orders, Regulations, NPS Policy-Level Guidance.	Do not use code in reference to enabling legislation (instead use CPEL code). Does not frequently overlap with CPPRA.

Appendix D: Notes on Coding Consistency

Important Terms Regarding Formatting

The terms, as they are defined below will be used throughout the codebook and steps

Text of the document(s): refers to all text included in the word document set uploaded to MAXQDA. Each individual document contains the information for the park the file is named for. This text includes Parts I, II, and III of each foundation document (as listed by the table of contents, typically named 'core components', 'dynamic components', and 'contributors') AND all included appendixes. Includes both text that is formatted in typical paragraph form and all text included in tables, bullet points or other, less conventional, formatting.

Enabling Legislation: The enabling legislation for each foundation document will be included as a PDF in a separate MAXQDA document set of the same name. These documents contain information regarding the establishment of a particular park and should ONLY be coded using the partial codebook to gauge presence/absence of Indigenous codes (TRGEN/TRSPEC). See step 2 for more information.

Full Codebook: When coding using the 'full codebook', this refers to considering all codes except those contained in the partial codebook. Codebook sections of the full codebook are 'cultural landscapes', 'natural landscapes', 'visitorship', and 'communication processes'

Partial Codebook: When coding using the 'partial codebook', use ONLY those codes that are under that theme in the codebook.

Additional Notes on Coding Consistency

Refer to these when unsure how to proceed

When coding and there is a bolded or italicized title to the paragraph that is being coded, include the title in your coding in the follow sentence (typically the first sentence of text in that paragraph). Examples of this include Scope on p. 18 of OLYM or Human Interaction with the Land on p. 9 of CONG.

Do not code any other titles or headers

Some Fundamental Resources and Values or Significance Statements may be repeated throughout the document, this is okay, code as usual.

Code ONLY based on what is included in the text, do not code based on inferences of past knowledge of a park or location.

Don't try to do everything in one sitting, takes breaks, do other things, walk around, etc. Just make sure that you have completed a section of text or a document so it is clear where you left off with your work and there will be no missing data.

If you aren't sure, write a memo!

Though the codes are mutually exclusive in that they do not overlap in the codebook, you may have to apply multiple codes to a sentence, if all themes are present. For example, CLHA and CLCC can be coded in the same sentence AS LONG AS both the cultural present and past are mentioned. If only one themes is mentioned, code it as such. Likewise, you can apply both NLFF and NLPF to the same sentence if both themes are present.

Appendix E: Code Coverage Compared to all Text by NPS Region

UNIT	Natural Landscapes			Cultural Landscapes				Visitorship			Communication & Legislation				
	NLFF	NLPF	NLWV	CLHA	CLCC	CLMC	CLNI	VPEDU	VPINF	VPREC	CPTEK	CPSR	CPPRA	CPLH	CODED
Southeast Region															
BISC	0%	1%	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%
CONG	0%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
DRTO	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EVER	1%	3%	0%	3%	1%	0%	1%	1%	1%	1%	1%	0%	1%	1%	7%
GRSM	1%	0%	1%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	3%
MACA	0%	1%	0%	2%	1%	0%	1%	0%	0%	1%	0%	0%	1%	1%	3%
Northeast Region															
ACAD	0%	2%	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	2%
SHEN	1%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%
Midwest Region															
BADL	0%	1%	0%	2%	2%	0%	0%	0%	1%	0%	0%	0%	1%	0%	5%
CUVA	0%	1%	0%	2%	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%	3%
ISRO	1%	3%	0%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	5%
THRO	1%	0%	0%	1%	1%	0%	0%	0%	0%	1%	0%	2%	2%	0%	3%
VOYA	0%	1%	0%	2%	1%	0%	1%	0%	0%	1%	0%	0%	1%	0%	5%

WICA	3%	5%	0%	5%	5%	0%	2%	0%	0%	0%	1%	0%	1%	0%	10%
UNIT	NLFF	NLPF	NLWV	CLHA	CLCC	CLMC	CLNI	VPEDU	VPINF	VPREC	CPTEK	CPSR	CPPRA	CPLH	CODED
<i>Intermountain Region</i>															
ARCH	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
BIBE	0%	0%	0%	2%	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%	3%
BLCA	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BRCA	0%	2%	0%	4%	4%	1%	2%	0%	0%	0%	0%	1%	3%	0%	8%
CANY	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
CARE	0%	1%	0%	3%	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%	5%
CAVE	0%	1%	0%	1%	1%	0%	1%	0%	0%	0%	0%	0%	2%	0%	4%
GLAC	1%	1%	0%	1%	2%	0%	0%	0%	0%	1%	0%	1%	2%	1%	6%
GRCA	0%	2%	0%	2%	2%	0%	1%	0%	0%	0%	0%	0%	4%	3%	10%
GRSA	1%	1%	0%	2%	1%	0%	1%	0%	0%	0%	1%	0%	1%	1%	5%
GRTE	0%	2%	0%	2%	1%	0%	1%	0%	0%	0%	0%	0%	1%	1%	5%
GUMO	0%	1%	0%	2%	1%	0%	1%	0%	0%	0%	0%	0%	1%	1%	4%
MEVE	1%	3%	0%	3%	1%	1%	0%	0%	1%	0%	1%	0%	2%	2%	9%
PEFO	0%	1%	0%	3%	2%	0%	0%	0%	0%	0%	0%	0%	2%	1%	7%
ROMO	0%	1%	0%	1%	1%	0%	0%	0%	0%	1%	0%	0%	1%	0%	3%
SAGU	1%	1%	1%	2%	2%	0%	2%	0%	0%	0%	1%	0%	1%	0%	5%
YELL	0%	1%	0%	3%	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%	5%
ZION	0%	2%	0%	2%	1%	0%	1%	1%	0%	1%	0%	1%	0%	0%	4%
<i>Pacific West Region</i>															
CHIS	0%	2%	0%	3%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%
CRLA	0%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
DEVA	1%	3%	2%	2%	4%	0%	1%	0%	0%	1%	2%	0%	3%	2%	8%

UNIT	NLFF	NLPF	NLWV	CLHA	CLCC	CLMC	CLNI	VPEDU	VPINF	VPREC	CPTEK	CPSR	CPPRA	CPLH	CODED
GRBA	0%	1%	0%	2%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	4%
JOTR	0%	1%	0%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
LAVO	0%	2%	1%	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%
MORA	0%	2%	0%	1%	1%	0%	0%	0%	0%	0%	1%	0%	1%	1%	4%
NOCA	0%	0%	0%	1%	0%	0%	1%	0%	1%	1%	0%	0%	0%	0%	1%
OLYM	3%	4%	1%	2%	2%	0%	1%	1%	0%	1%	1%	2%	2%	1%	10%
PINN	0%	1%	0%	2%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	3%
REDW	1%	2%	0%	2%	3%	0%	1%	3%	0%	1%	2%	0%	5%	1%	11%
SEKI	0%	0%	1%	1%	0%	0%	1%	0%	1%	0%	0%	0%	1%	0%	2%
YOSE	1%	3%	2%	4%	2%	0%	1%	0%	0%	2%	0%	1%	1%	1%	8%

Appendix F: Code Coverage Compared to Coded Text by NPS Region

UNIT	Natural Landscapes			Cultural Landscapes				VPEDU	Visitorship		Communication & Legislation			
	NLFF	NLPF	NLWV	CLHA	CLCC	CLMC	CLNI		VPINF	VPREC	CPTEK	CPSR	CPPRA	CPLH
Southeast Region														
BISC	34%	65%	0%	100%	0%	0%	55%	0%	0%	0%	0%	0%	0%	0%
CONG	4%	52%	0%	51%	30%	0%	25%	11%	0%	11%	0%	0%	20%	4%
DRTO	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EVER	9%	36%	2%	45%	21%	0%	10%	8%	12%	8%	10%	1%	13%	19%
GRSM	18%	9%	17%	73%	12%	0%	40%	6%	2%	0%	2%	2%	9%	0%
MACA	12%	37%	0%	45%	16%	0%	20%	3%	0%	19%	0%	11%	17%	20%
Northeast Region														
ACAD	0%	64%	0%	54%	39%	14%	14%	0%	39%	0%	0%	0%	4%	2%
SHEN	46%	56%	35%	47%	0%	0%	11%	0%	10%	5%	0%	8%	0%	21%
Midwest Region														
BADL	5%	17%	1%	40%	31%	0%	3%	2%	12%	7%	3%	2%	27%	3%
CUVA	0%	34%	0%	67%	20%	0%	21%	0%	0%	5%	0%	0%	21%	2%
ISRO	23%	61%	8%	51%	23%	0%	10%	2%	0%	10%	9%	5%	4%	26%
THRO	15%	13%	6%	35%	38%	9%	10%	3%	3%	17%	3%	52%	47%	0%
VOYA	8%	25%	2%	46%	12%	6%	23%	0%	0%	14%	0%	6%	28%	9%
WICA	29%	55%	0%	47%	52%	0%	18%	0%	0%	2%	11%	0%	9%	3%

UNIT	NLFF	NLPF	NLWV	CLHA	CLCC	CLMC	CLNI	VPEDU	VPINF	VPREC	CPTEK	CPSR	CPPRA	CPLH
<i>Intermountain Region</i>														
ARCH	0%	0%	0%	54%	0%	0%	11%	0%	0%	0%	0%	0%	31%	15%
BIBE	0%	11%	0%	52%	22%	0%	23%	0%	0%	3%	0%	4%	27%	14%
BLCA	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	86%
BRCA	2%	29%	2%	53%	47%	8%	30%	1%	3%	5%	5%	9%	37%	2%
CANY	0%	0%	0%	42%	0%	0%	0%	0%	0%	0%	0%	0%	40%	19%
CARE	0%	20%	0%	66%	11%	0%	25%	0%	0%	2%	0%	3%	27%	4%
CAVE	0%	25%	0%	36%	16%	8%	13%	0%	0%	5%	2%	1%	60%	11%
GLAC	9%	21%	1%	17%	38%	0%	4%	0%	0%	8%	2%	11%	36%	10%
GRCA	0%	25%	1%	19%	21%	4%	7%	0%	3%	1%	1%	0%	43%	31%
GRSA	16%	30%	0%	47%	22%	0%	18%	1%	0%	2%	10%	2%	27%	11%
GRTE	2%	49%	6%	46%	19%	4%	10%	2%	2%	8%	0%	3%	20%	10%
GUMO	4%	25%	0%	49%	26%	0%	32%	1%	0%	0%	4%	6%	20%	18%
MEVE	9%	28%	1%	35%	10%	11%	5%	1%	7%	5%	9%	3%	22%	18%
PEFO	3%	17%	1%	49%	26%	0%	3%	1%	7%	0%	0%	0%	26%	10%
ROMO	0%	31%	4%	36%	21%	0%	14%	0%	0%	26%	0%	4%	42%	13%
SAGU	19%	26%	10%	46%	30%	0%	32%	3%	0%	1%	20%	0%	24%	7%
YELL	3%	28%	0%	60%	31%	3%	14%	0%	2%	5%	0%	0%	31%	2%
ZION	4%	49%	13%	50%	19%	4%	40%	15%	0%	26%	2%	23%	2%	10%
<i>Pacific West Region</i>														
CHIS	0%	49%	0%	84%	39%	23%	12%	11%	0%	0%	0%	0%	11%	0%
CRLA	15%	34%	0%	40%	54%	6%	0%	0%	0%	0%	20%	7%	7%	15%
DEVA	12%	38%	22%	27%	50%	3%	10%	2%	2%	10%	20%	2%	32%	30%
GRBA	0%	39%	0%	48%	24%	2%	5%	6%	0%	0%	5%	3%	18%	1%
JOTR	4%	20%	0%	51%	41%	0%	8%	0%	0%	8%	0%	0%	9%	0%
LAVO	5%	41%	13%	68%	22%	3%	9%	8%	0%	4%	8%	0%	0%	1%

UNIT	NLFF	NLPF	NLWV	CLHA	CLCC	CLMC	CLNI	VPEDU	VPINF	VPREC	CPTEK	CPSR	CPPRA	CPLH
MORA	6%	36%	0%	34%	29%	0%	1%	0%	0%	6%	14%	0%	21%	27%
NOCA	0%	0%	0%	100%	0%	0%	100%	0%	100%	100%	0%	0%	0%	0%
OLYM	26%	43%	7%	24%	22%	4%	6%	5%	0%	7%	5%	25%	20%	14%
PINN	12%	43%	3%	50%	12%	0%	27%	6%	0%	0%	19%	9%	6%	0%
REDW	6%	20%	0%	20%	30%	3%	6%	25%	0%	7%	16%	1%	47%	6%
SEKI	0%	13%	27%	51%	19%	0%	24%	6%	26%	12%	0%	2%	22%	11%
YOSE	7%	40%	20%	48%	24%	0%	12%	3%	0%	22%	1%	6%	8%	12%

Appendix G: mvQCA Code Generated in RStudio

```
##import data

mvQCA <- read.csv(file.choose(), row.names = "UNIT");
mvQCA

## Load QCA Package

library(QCA)

## Truth Table

TT <- truthTable(mvQCA, outcome = "COLLAB", conditions = "ADJFED,
CCxPPURP,
PERCAP, ADJRES, NM, WILD", show.cases = TRUE, sort.by = "incl");
TT

## Export Truth Table to .txt document

write.table(TT$tt, file = "04212022_TT.txt", sep = "\t", quote = FALSE)

## Minimization?

min <- minimize(TT, details = TRUE);
min
```