

Protecting biodiversity in our national parks: proposing a regional communication strategy
for the National Park Service

by

Shelby Hollman

A REPORT

submitted in partial fulfillment of the requirements for the degree

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Department of Landscape Architecture and Regional & Community Planning
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Approved by:

Major Professor
Howard Hahn

Abstract

The mission of the National Park Service is 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. The park service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world (National Park Service 2019a).” The influx of tourism and lack of funding has left parks struggling to balance tourism with conservation efforts based upon a review of National Park Service budget allocations (The United States Department of the Interior 2019). Conservation management is mandated nationally from the government and parks take this information and apply it within the individual park boundaries and coordinate with their respective state governments (National Park Service 2019a).

From communication with the National Park Service concerning biodiversity conservation efforts within the parks, there seems to be no mandated strategy to manage projects regionally. Even though there is communication happening between parks regarding certain research efforts, not all the park staff can easily communicate with staff from other parks. This study examines biodiversity conservation strategies in the Intermountain Region including Glacier, Yellowstone, Grand Teton, Rocky Mountain National Parks, and their partners in addition to national parks in other countries like Canada and Australia. Through qualitative research, including document analysis and interviews, the findings revealed a few key ideas centered around improving graphic communication on the park service website and increasing connection between key stakeholders.

The result of the findings is a strategy focused on a regional communication network that connects the National Park Service with donors, partners, researchers, educators, volunteers, and the public through an online portal. The network also provides a way to organize projects by type. Examples of network implementation include a proposed website and an annual report featuring key projects for the National Park Service. The outcome of this research is a report, from an outsider’s perspective, for the National Park Service to consider improving communication efforts between the National Park Service, their partners, and the public. The report is intended to make the parks’ biodiversity conservation efforts more visible in order to protect them, and potentially promote greater financial sponsorship and volunteerism from visitors to better protect the natural environment in an era of budget shortfalls.

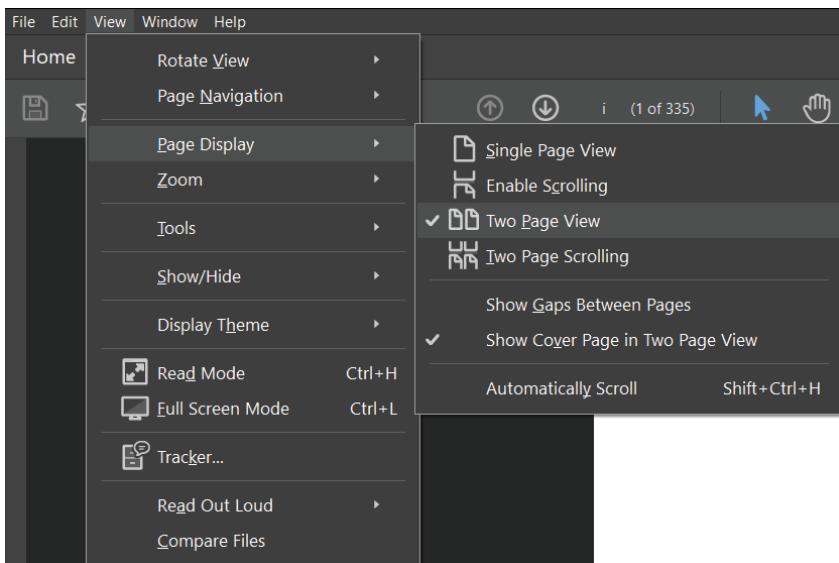
PROTECTING BIODIVERSITY IN OUR NATIONAL PARKS:

Proposing A Regional Communication Strategy for the National Park Service

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A report submitted in partial fulfillment of the requirements for the degree:
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Department of Landscape Architecture and Regional & Community Planning
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Master's Project Committee:
Howard Hahn, Associate Professor, Department of LARCP
Dr. Anne Beamish, Associate Professor, Department of LARCP
Dr. Jessica Fefer, Assistant Professor, Department of Park Management & Conservation

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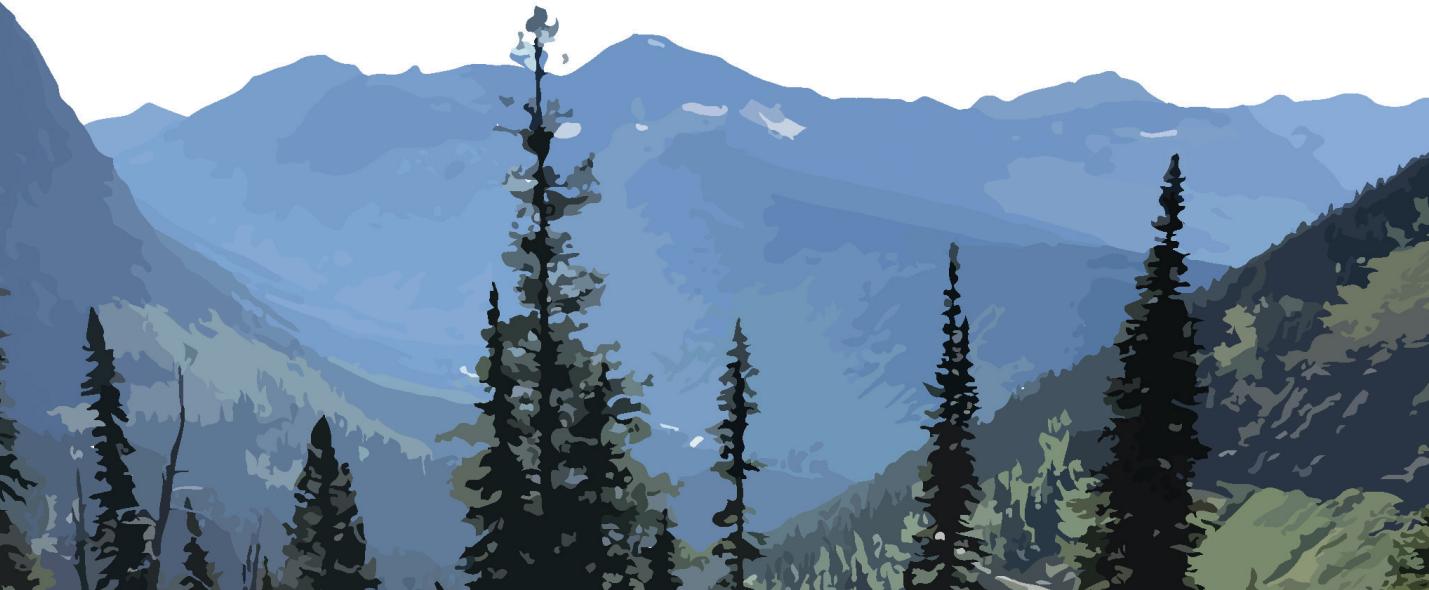
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Major Professor: Howard Hahn

Supervisory Committee: Dr. Anne Beamish and Dr. Jessica Fefer



ABSTRACT

The mission of the National Park Service is 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. The park service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world (National Park Service 2019a).” The influx of tourism and lack of funding has left parks struggling to balance tourism with conservation efforts based upon a review of National Park Service budget allocations (The United States Department of the Interior 2019). Conservation management is mandated nationally from the government and parks take this information and apply it within the individual park boundaries and coordinate with their respective state governments (National Park Service 2019a). From communication with the National Park Service concerning biodiversity conservation efforts within the parks, there seems to be no mandated strategy to manage projects regionally. Even though there is communication happening between parks regarding certain research efforts, not all the park staff can easily communicate with staff from other parks. This study examines biodiversity conservation strategies in the Intermountain

Region including Glacier, Yellowstone, Grand Teton, Rocky Mountain National Parks, and their partners in addition to national parks in other countries like Canada and Australia. Through qualitative research, including document analysis and interviews, the findings revealed a few key ideas centered around improving graphic communication on the park service website and increasing connection between key stakeholders. The result of the findings is a strategy focused on a regional communication network that connects the National Park Service with donors, partners, researchers, educators, volunteers, and the public through an online portal. The network also provides a way to organize projects by type. Examples of network implementation include a proposed website and an annual report featuring key projects for the National Park Service. The outcome of this research is a report, from an outsider’s perspective, for the National Park Service to consider improving communication efforts between the National Park Service, their partners, and the public. The report is intended to make the parks’ biodiversity conservation efforts more visible in order to protect them, and potentially promote greater financial sponsorship and volunteerism from visitors to better protect the natural environment in an era of budget shortfalls.



Figure 1.1. Yellowstone National Park (Hollman 2019).

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Figure 1.2. Glacier National Park (Hollman 2019).

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Figure 1.3. Grand Teton National Park (Hollman 2019).

KEY TERMS AND DEFINITIONS

Biodiversity: “the variety of life on earth (National Park Service 2019a)”

Conservation: “the protection of a natural environment that allows natural processes to continue (Ministry of Environment Lands and Parks 1996, 94)”

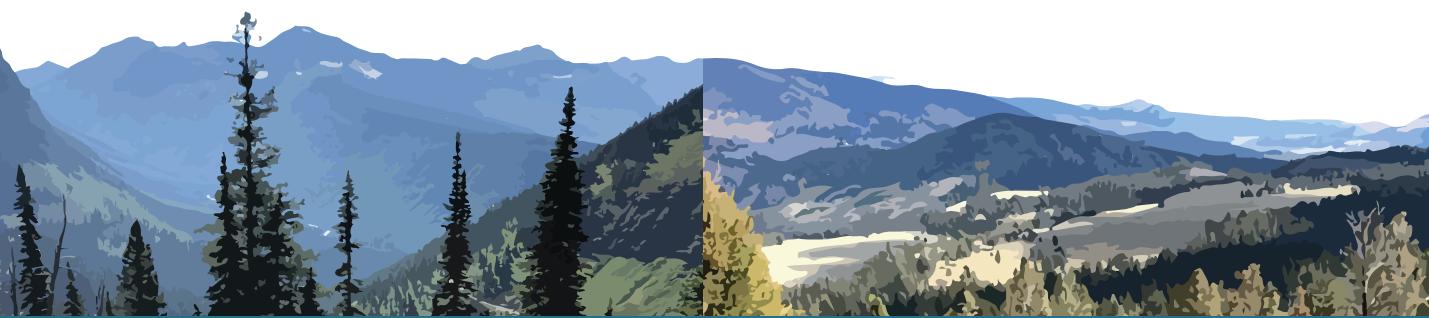
Ecosystem: “the unit of a natural community of plants and wildlife and their environment (Ministry of Environment Lands and Parks 1996, 94)”

Rehabilitation: “the adjustment of a park landscape and environment by repairing or enhancing the affected resources to suit new conditions (Ministry of Environment Lands and Parks 1996, 95)”

Restoration: “the reinstatement of a park’s natural landscape and environment (Ministry of Environment Lands and Parks 1996, 95)”

Preservation: “saving in a static state (Ministry of Environment Lands and Parks 1996, 94)”

Sustainable design: “restores or conserves a park’s natural processes; sustainable construction methods and materials include sustainably harvested lumber, permeable paving, using constructed wetlands for stormwater and greywater, reducing roads, and designing for less use of resources (Ministry of Environment Lands and Parks 1996, 95)”



CHAPTER ONE: INTRODUCTION



CHAPTER ONE: INTRODUCTION

IDENTIFY ISSUES
AND POTENTIAL
STRATEGY

CHAPTER TWO: BACKGROUND

CONTEXTUALIZE
ISSUES

CHAPTER THREE: METHODS

OUTLINE PROCESS TO
ADDRESS ISSUES

CHAPTER FOUR: FINDINGS

DISCOVER THE BEST
SOLUTIONS TO
ADDRESS ISSUES

CHAPTER FIVE: PROPOSED STRATEGY

ADDRESS ISSUES WITH
A DETAILED STRATEGY

CHAPTER SIX: CONCLUSIONS

IMPLEMENTATION OF
THE STRATEGY AND
FINAL THOUGHTS

Figure 1.4. Project Organization Diagram (Hollman 2019)

I. INTRODUCTION

This chapter introduces the main issues that the research project addresses and identifies the strategy that will be laid out in this report (Figure 1.4). The author's research focuses on studying how a biodiversity conservation communication strategy can be created for the National Park Service in the Intermountain Region because the author wants to promote better conservation organization across park boundaries in the United States and provide more visibility of the biodiversity conservation projects that are currently happening to promote visitor knowledge and financial support of these projects. The author wants to help the reader understand that there could be a better way to organize biodiversity conservation projects and disseminate the information to the public in a way that is more organized and uses the resources the parks service already has. Within the Intermountain Region, the research is focused on Glacier, Yellowstone, Grand Teton, and Rocky Mountain National Parks in the United States because the parks currently have no clear guiding management strategy for their conservation efforts at a regional scale as information related to biodiversity conservation projects can be hard to find or understand. The research compares how other national park organizations prioritize biodiversity conservation management between their parks and with

the public to the National Park Service. The outcome is a regional communication strategy that focuses on organizing regional projects by type and priority, who should be involved in the efforts, how the efforts should be combined, and how the efforts should be published to the public. The goal of the research is to propose a better way for the National Park Service to communicate between the parks, their partners, and the public to protect the natural environment for future generations, setting a new standard in the Intermountain Region and greater United States.

II. STATEMENT OF THE PROBLEM

Dilemma:

From an outsider's perspective, the National Park Service does not appear to coordinate biodiversity conservation or management at a regional level that organizes/prioritizes conservation projects between parks or consistently presents conservation information, potential financial partnerships, or highlights volunteerism opportunities to the public in a way that is easily accessible or understood.

Observations:

- NPS communication between parks:

- 1) No apparent regional communication strategy
- 2) Separate efforts by individual parks
- 3) Conservation projects are not shown in one place (Figure 1.5)

- NPS public communication:

- 1) Conservation projects are not easily accessible via websites
- 2) Conservation efforts are not shown to be prioritized in the park's communication
- 3) Conservation efforts are not linked to other volunteer programs (Figure 1.5)

From communication with the National Park Service concerning biodiversity conservation efforts within the parks, there seems to be

no mandated strategy to manage projects regionally. Even though there is communication happening between parks regarding certain research efforts, not all of the park staff can easily communicate with staff from other parks. All the parks have a similar overarching objective mandated by the *Management Policies 2006* document, but they all have their own ways of achieving these goals with their own foundation document that guides management within their park boundaries (National Park Service 2006, 2013, 2017bce).

This lack of overall coordination at the regional scale could be detrimental to overall ecosystem health because park impacts can extend beyond park boundaries. Several researchers advocate for management of biodiversity outside of public/private boundaries and the need for conservation at a large scale (Schelhas 2009; Aycrigg et al. 2013; Leslie 2014; Svancara et al. 2005; Dietz and Czech 2005).

As one report states, "While individual parks can be considered distinct units, they are embedded in larger regional and continental landscapes influenced by adjacent land and water uses and regional cultures. Connectivity across these broader landscapes is essential for system resilience over time (National Park System Advisory Board 2012, 9)."

These regional goals and objectives need to be coordinated between the parks to protect the natural resources that make up delicate ecosystems of the parks. Before these efforts can be coordinated at a regional scale, however, these efforts also need to be coordinated between parks and their partnerships because it

is unclear whether individual park efforts are as effective as they could be, or what conservation project priorities are being promoted on the National Park Service website (Appendix C).

The national parks need to have a better way to communicate their scientific findings regarding

IDENTIFIED BIODIVERSITY CONSERVATION ISSUES

1. NPS COMMUNICATION BETWEEN PARKS & PARTNERS

A) NO REGIONAL COMMUNICATION STRATEGY

B) SEPARATE EFFORTS BY INDIVIDUAL PARKS & PARTNERS

C) CONSERVATION PROJECTS ARE NOT SHOWN IN ONE PLACE

2. NPS PUBLIC COMMUNICATION

A) CONSERVATION EFFORTS ARE NOT EASILY ACCESSIBLE

B) CONSERVATION EFFORTS ARE NOT SHOWN TO BE PRIORITIZED

C) CONSERVATION EFFORTS ARE NOT STRONGLY LINKED TO INVOLVEMENT

Figure 1.5. Identified Biodiversity Conservation Issues. This diagram highlights the author's observations about the NPS communication between parks and with the public (Hollman 2019).

biodiversity conservation than what currently exists (Whatley 1995; Kim et al. 2011; Landscape Conservation Cooperatives 2014; National Park Service 2001). Having a strategy in place to strengthen communication between parks regionally is important to have in place before public communication can be improved. The information first needs to be prioritized and organized before it can be presented to the public more clearly. One of the main avenues that parks use to provide the public with information is their website (National Park Service 2019a). Two recent studies found that most people use online resources to make their travel arrangements (Hallo et al. 2017, 2019). One of these studies specifically looked at the National Park Service website and found that 31.1% of travelers surveyed used the website as a source of information for their trip planning (Hallo et al. 2017). This means that the website is getting a lot of traffic from park visitors and, as a primary source of information, the website in some ways can be considered the face of the park. This makes it important to consider the way the parks are presenting themselves to the public online and how the public interprets that information.

Currently, individual park websites are mainly informative and do not capitalize on prioritizing

or mobilizing conservation dissemination at a regional or individual park scale (Appendices C-D). The three main sections on the NPS homepage (“Plan Your Visit”, “Learn and Explore”, and “Get Involved”) separate project learning and involvement opportunities (Appendix C-D). This means if a visitor wants to learn about a project and then get involved, they must go to separate places on the NPS website. It takes time to click through the many tabs present on the National Park Service website’s homepage to even get to where conservation efforts are mentioned. Instead, the homepage is geared towards current park news (Appendix C). Additionally, the parks’ individual websites seem to mostly prioritize tourism aspects, such as what to do or see (Appendix C). If a visitor wants to find out information about conservation efforts or get involved, they must search beyond the home page. The websites also do not have a clear cohesive message or show the same information which can be confusing when trying to locate a specific topic (Appendices C-D). The way that the parks connect to visitors, volunteers, educators, donors, researchers, and other partners regarding biodiversity conservation projects could be more intentional and better connected by studying examples from park partners and other countries (Appendices C-D).

III. IMPORTANCE

One of the most important management objectives of the National Park Service is to protect and preserve sensitive landscapes that are scenic, intact, and support high levels of biodiversity. Therefore, from a scientific perspective, national parks represent a comparative baseline when studying fragile and threatened ecosystems when assessing biodiversity and habitat health (National Park Service 2019a). Visiting protected habitats supporting rich biodiversity is also a popular draw for people unaccustomed to observing relatively undisturbed landscapes. Multiple research efforts or management techniques are occurring within the National Park Service to protect biodiversity, but many may not be apparent or easily accessible to the public. Biodiversity contributes to several different ecosystem processes such as “primary productivity, nutrient cycling, and resilience to environmental change (Darst et al. 2009, 224).” The consequences of losing biodiversity will not only impact our environment, but adversely affect society as a whole. These natural resources need to be protected and landscape architects can help shape the future of our natural environments by advocating for resource protection and new communication strategies, especially in our national parks.

Recent surges in national park tourism places additional strain on natural resources, in addition to the National Park Service itself trying to balance visitor needs, logistics, infrastructure maintenance, funding, paid personnel/volunteer management, resource protection, biodiversity research activities, and coordinating internal and external communications at multiple scales. In a time of accelerated communications and social media, the author envisions a new strategic communication structure centered around biodiversity conservation that simultaneously leverages cross-communication between park personnel, the general public, researchers, educators, volunteers, and financial partners for the benefit of all. Initially, the communication strategy focuses on conservation communication, but could be extended to focus on other key research topics as well.

IV. GOALS

- Create a biodiversity conservation strategy for the selected Intermountain Region national parks that focuses on communication between parks and organization of their projects and efforts to better protect their natural resources.
- Improve communication efforts between the NPS and the public to make the park's biodiversity conservation efforts more visible to potentially promote visitor funding contributions, increase volunteerism in the parks, and help change people's travel behavior in sensitive areas.
- Compare the way current biodiversity conservation efforts are organized in the national parks to efforts from around the world to come up with an ideal strategy for communication between parks and the public based on successful conservation management strategies.

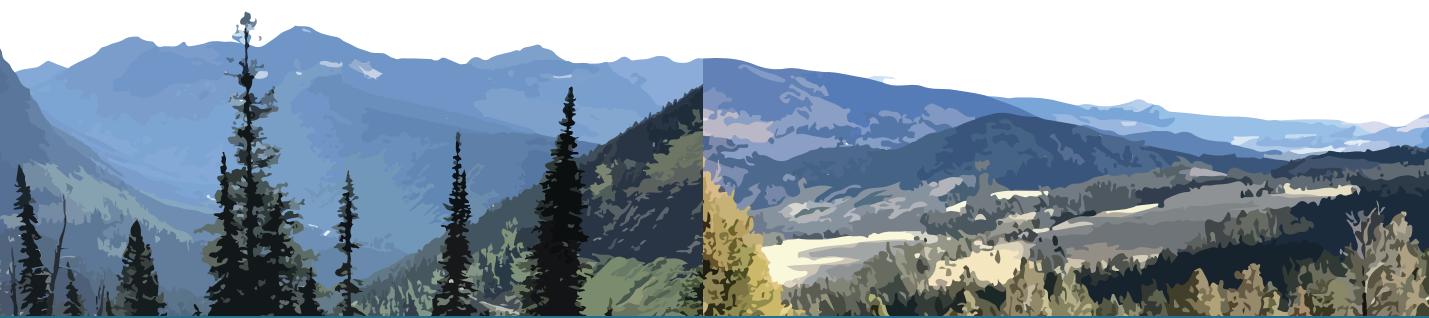
V. RESEARCH QUESTIONS

Primary Question

How can a communication strategy be created for the National Park Service that coordinates biodiversity conservation information at a regional level between parks and organizes/prioritizes conservation projects to the public in a way that is easily accessible or understood from an outsider's perspective?

Sub Questions

- What set of guidelines do the national parks currently have in place relating to biodiversity conservation?
- How does the National Park Service currently manage and disseminate their biodiversity conservation information?
- How do national parks in the Intermountain Region currently manage and disseminate their biodiversity conservation projects?
- What organizational units deal with biodiversity conservation efforts within each park of the Intermountain Region? How are the efforts coordinated between the parks and their primary partners?
- What strategies do other countries employ regarding national parks' biodiversity conservation management, organization, and dissemination?



CHAPTER TWO: BACKGROUND



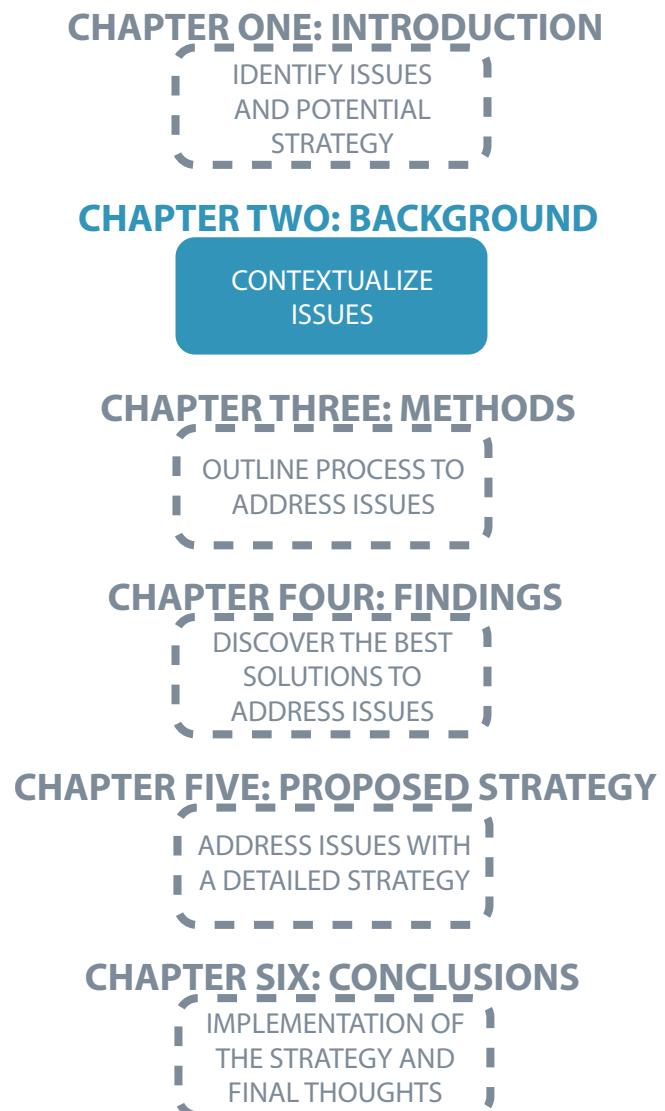


Figure 2.1. Project Organization Diagram (Hollman 2019)

I. BACKGROUND

This chapter contextualizes the issues identified in *Chapter One: Introduction*. This is accomplished by documenting the goals and challenges the National Park Service is facing today to support the need for this project. It also shows the purpose, goals, and challenges the individual Intermountain Region national parks are facing to understand the similarities and differences between the parks that were chosen for this study. Additionally, an overview of Parks Canada and Australia is included to explain why these countries' national park organizations were chosen for this study.

II. THE NATIONAL PARK SERVICE

The national parks are divided into seven regions by the Department of the Interior: Alaska, Intermountain, Midwest, National Capital, Northeast, Pacific West, and Southeast (Intermountain Region GIS Program Office 2003). Each region has a regional director that manages the park superintendents and other directors in that region (Intermountain Region GIS Program Office 2003). However, there are no federal documents that provide conservation management strategies at the regional level.

The federal government mandates conservation management through various acts and policies, and the national parks take this information and apply it to their park with their own governing documents, coordinating with their respective state governments to address local concerns (National Park Service 2019a, 2006). Because the parks do not have federally standardized regional documents that consider conservation between the national and local level, challenges can surface which this report explores (Figure 2.2).

According to their mission statement, “The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future

generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world (National Park Service 2019a).” More people are getting out and exploring nature than ever and according to one study, since 2015, over 300 million people have visited a recreation area in the United States each year (National Park Service 2019h). In the National Park Service, another study claimed that one-third of the public has visited a National Park Service unit in the past two years, and 80% said they would visit again within the next year (Schuett et al. 2010).

As visitation continues to rise, the number of volunteers has also been growing over time, but the federal budget available to sustain the parks has been more variable (Figure 2.3). This makes it more imperative than ever for the National Park Service to be a nimble leader in protecting the parks for future generations as visitation and volunteers continue to rise, and budget support is uncertain.

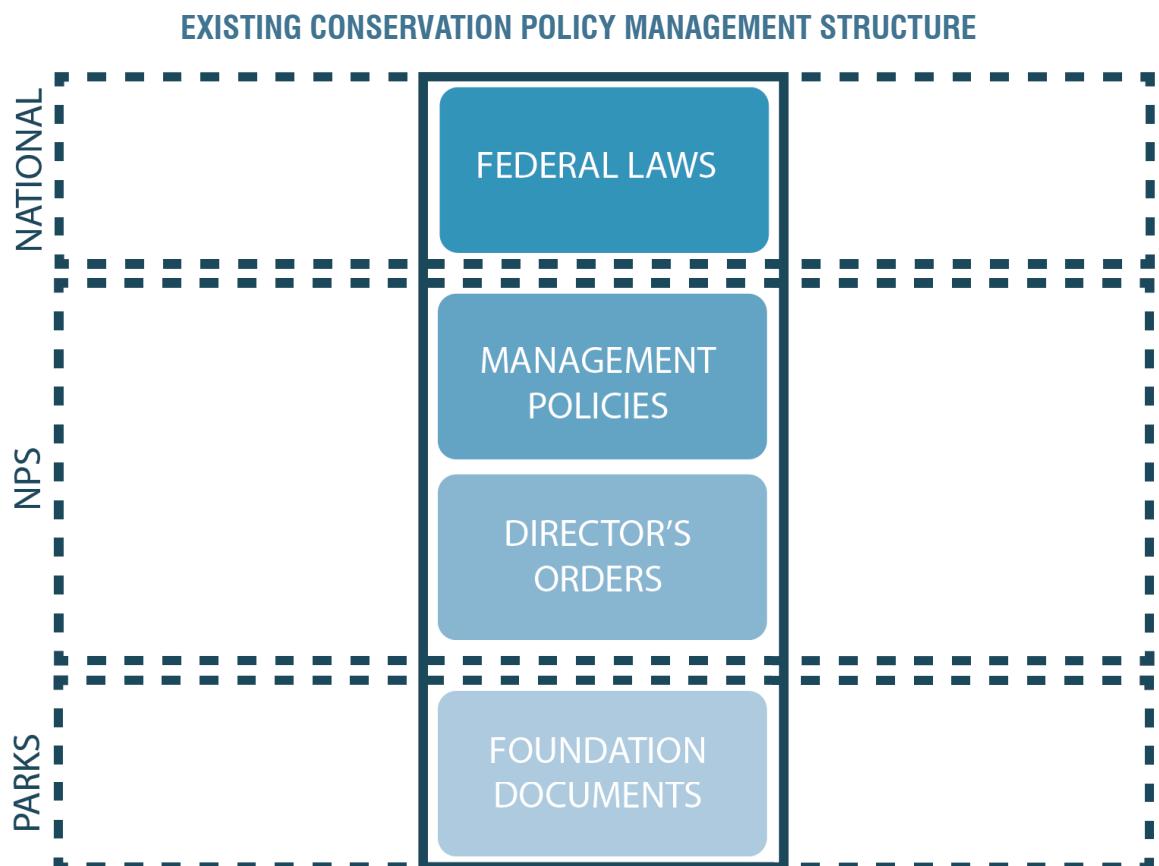
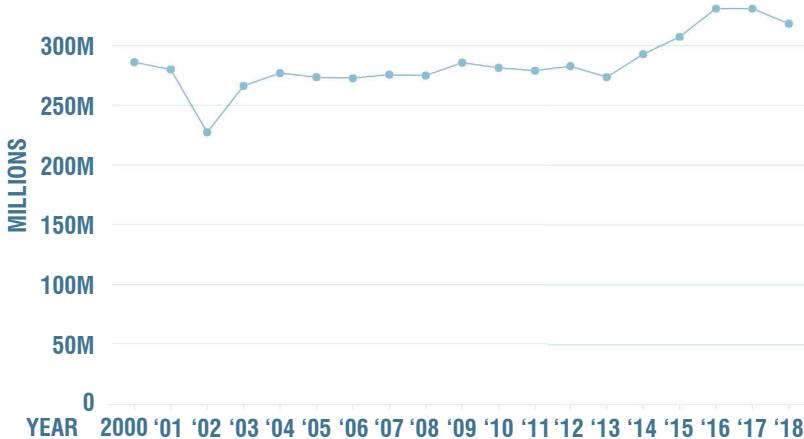


Figure 2.2. Existing NPS conservation policy management structure: This graphic shows that there is not a regional management conservation policy that connect across park boundaries (Hollman 2019).

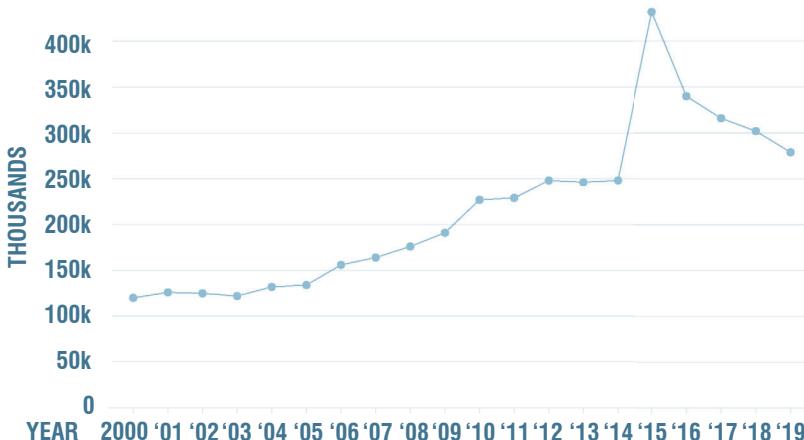
NPS VISITORS OVER TIME (IN MILLIONS)

Source: (National Park Service 2020)



NPS VOLUNTEERS-IN-PARKS OVER TIME (IN THOUSANDS)

Source: (National Park Service 2019p)



NPS BUDGET OVER TIME

Source: (National Park Service 2019a)

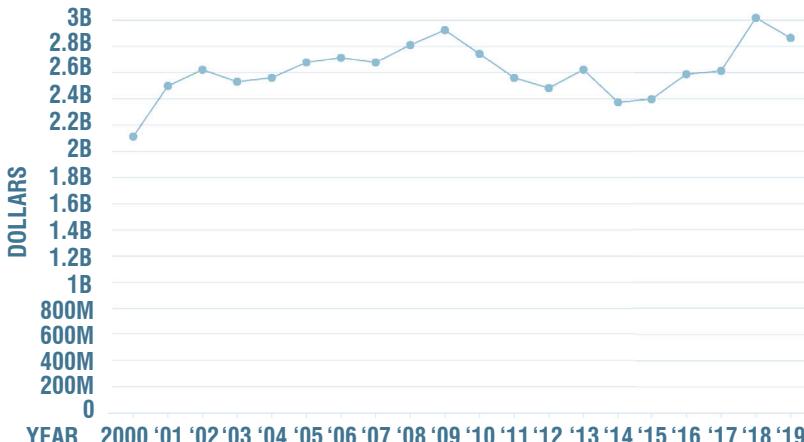


Figure 2.3. NPS changes over time: NPS Visitors, Volunteers-In-Parks, and Budget over time (Hollman 2019).

A. GOALS AND MANAGEMENT OF THE NATIONAL PARK SERVICE

While the overall goals of the National Park Service are made clear in their mission statement, it is important to study in depth how they are communicating their goals through their management policies and partnerships to understand how the parks are presenting themselves to the public. The *Management Policies 2006* document is the official guide to managing the national parks (National Park Service 2006). The relevant information from this document related to the report is categorized under conservation, tourism, and education of visitors (National Park Service 2006).

i. CONSERVATION

Protected areas reduce habitat loss and maintain species population levels which helps preserve biodiversity (Watson et al. 2014). Some claim that this is the most important service the national parks offer (Said and Maryono 2018). Parks provide many environmental services such as preservation of the diversity of plants and animals, habitats for threatened species, protection of life support systems, outdoor learning laboratories, important grazing and plant collection areas for local people, and sustainable use of

biological natural resources and its ecosystems (Eagles et al. 2002; Said and Maryono 2018). However, parks have shifted over time, and it is important to consider how to continually adapt to these changes (Eagles et al. 2002). “Parks and protected areas represent a rich and complicated suite of ideas. Park managers must be fully aware of the history of the meanings contained in any one site, as well as the changes in emphasis over time. The oldest parks have been swept by changing concepts many times and, as a result, contain a complex assemblage of landscapes, artifacts, structures and landforms (Eagles et al. 2002, 15).” To combat this, a sustainable focus and plan is required to think about the long-term, “providing for the needs of the present while maintaining options for future generations to meet their own needs (Eagles et al. 2002, 75).”

In the *Management Policies 2006* document, it states that the parks must: “ensure that conservation will be predominant when there is a conflict between the protection of resources and their use” and “reflect NPS goals and a commitment to cooperative conservation and civic engagement (National Park Service 2006, 2).” The document also says there is a need to cooperate beyond park boundaries to achieve these goals (National Park Service 2006).

This includes partners like the National Park Foundation and the National Park Conservation Association. The Natural Resource Stewardship and Science Directorate (NRSS) is a division of the National Park Service which “provides scientific, technical, and administrative support to national parks for the management of natural resources” in order to help protect park resources and values (National Park Service 2019l). Specifically, the Biological Resources Division (BRD) looks at biodiversity in the parks (National Park Service 2019b). The National Park Service relies on their partnerships to help achieve their conservation goals and funding initiatives (National Park Service 2006).

ii. TOURISM

Other authors say the most important services parks can offer are tourism and recreation for the public (Said and Maryono 2018). Bringing in tourism is a key goal of the national parks as it is one of the main ways parks receive their funding outside of government budget allocations (Buckley 2004). One key draw to the national parks that they try to protect is the “theme of wilderness (Eagles et al. 2002, 3).” Visitors chase after this idea “where individuals lead a spiritual quest into the wilderness, travelling alone or with a few companions. They take only a few supplies, eschew mechanized

transport and accept nature on its own merits. They stay for long periods of time and accept the tests of nature on nature’s own terms. They return from the wilderness psychologically strengthened to accept life’s challenges (Eagles et al. 2002, 3).” Other key benefits that the parks provide include: community social functions, business and profit, physical and emotional health, recreation opportunities, meaning of life, protecting native people and their lands, and historical and cultural preservation (Eagles et al. 2002).

According to their *Management Policies 2006* document, the parks should “support and promote appropriate visitor use through cooperation and coordination with the tourism industry (National Park Service 2006, 107).” Parks use the *Management Policies 2006* document and the Visitor Use Management Framework (IVUMF), a document published by the Interagency Visitor Use Management Council for use by the government, as a guide for visitor use management to “maximize benefits for visitors while achieving and maintaining desired resources conditions and visitor experiences on federally managed lands and waters (Interagency Visitor Use Management Council 2016, vi).”

iii. EDUCATION

Part of the park's mission statement is to educate and inspire future generations (National Park Service 2019a). The park service provides this in many different ways. Some examples include guided tours from rangers, visitor centers with educational information and shows, and informative signage throughout the parks (National Park Service 2019a). The parks also offer several activities centered specifically around children such as the "Every Kid Outdoors" program and fun field trip experiences (National Park Service 2019a). In addition to the services the parks provide, their non-profit partner, the National Park Foundation, provides many different engaging experiences for tourists seeking to volunteer in the parks with programs such as the Conservation Service Corps which focuses on enhancing technical and leadership skills while protecting, restoring, and enhancing the national parks (National Park Foundation 2020b). Other interpretive and educational partnerships include the Volunteers-in-Parks (VIP) Program and cooperating associations (National Park Service 2006, 2019q).

The *Management Policies 2006* document states that the parks should provide visitors with "information and orientation programs,

interpretive programs, curriculum-based education programs, interpretive media, park brochures, technology and interpretation, research and scholarship, guided tours, visitors' centers, informative signage, and volunteer programs such as the Conservation Service Corps (National Park Service 2019a, 2006; National Park Foundation 2019)." While the document does highlight the importance of technology and interpretation, there is not much guidance on how to specifically share that information on their website.

B. CHALLENGES FACING NATIONAL PARKS

As previously stated in the dilemma, the National Park Service does not have a clear regional communication strategy between parks to manage biodiversity conservation across boundaries or a way to communicate that information to the public in a way that is easily accessible. This stems from a larger issue that the parks struggle with in how they choose to prioritize their goals. These concerns have been around since the 1980s and a major challenge and seemingly conflicting message from their vision statement is how to balance tourism with resource conservation (Siehl 1987). Not only that, but the parks do not necessarily have the funding to get everything done that needs to be accomplished. With their resources spread so

thin, the parks service does its best to address the challenges mentioned here and more.

i. FUNDING

Many national parks have “publicly funded access and publicly funded visitor infrastructure, including carparks, toilets, tracks and trails, lookouts, visitor centers and interpretive materials (Buckley 2004, 8).” Funding for the parks comes from two major sources outside of the federal budget: the Land and Water Conservation Fund and visitors (Siehl 1987). The Land and Water Conservation Fund was founded in 1964 to safeguard natural areas by using part of the revenue from offshore oil and gas to protect American land and water (LWCF 2019). The LWCF state grants program contributes \$20 billion to local and state economies (LWCF 2019). National park visitors also help support the local economy “through the purchasing of accommodation, food and beverages, transport, motor-vehicle services, shopping and other related activities within communities surrounding the park (Bushell 2003, 203).” However, an increasing issue in national parks is the decrease in public budgets from Congress and the potential to generate revenue streams (Schwartz et al. 2012; LWCF 2019). Even though the number of protected areas is growing nationally, the amount of

funding is not. According to one report, the National Park Service’s budget fell by almost 13% between 2009 and 2013 (Watson et. al. 2014). Protected areas require management in order to properly protect them, which is not readily available in most areas because of the lack of funding. Parks need support in order to provide the services required for parks to continue (Buckley, 2004). Because of this struggle with funding, it is hard for the parks to prioritize their efforts between visitation and conservation.

ii. BALANCING VISITATION WITH RESOURCE CONSERVATION

There needs to be proper management of resources in order to protect the national parks’ natural environment. The mission of the National Park Service is to “conserve the scenery and the natural and historic objects and the wild life” as well as to “provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations (Bottomly O’Looney et al. 2010, 50).” This is a daunting task, especially when it comes to resource allocation because “they attempt to match demand for visitor experiences in their destination’s setting with limited capacity, while at the same time address conflicting social,

political and environmental concerns such as public access, fairness, and sustainability (Schwartz et al. 2012, 500)." Managing this conflict between use and preservation has been a theme over time in the park service, arising with new issues like "the location of visitor facilities, airplane and helicopter sightseeing tours, motorized water travel, and wilderness designation (Scheulhas 2009, 11)." Several authors agree that balancing the need of national park visitors with the need to conserve natural areas presents a challenge (Burns et al. 2010; Bottomly O'Looney; Schwartz et al. 2012; Schelhas 2009).

The *National Parks Budget Breakdown* also shows that there is an overwhelming amount of funding going towards parks operation over preservation (Figure 2.4) (The United States Department of the Interior 2019). Because much of the budget is allocated towards tourism, conservation of natural resources has more support from outside sources and partners such as the National Park Foundation, National Parks Conservation Association, and research partnerships (Figure 2.4) (National Park Service 2006). The amount of staff dedicated to these services also shows the priorities of the National Park Service with about 2,900 people dedicated to tourism or

visitor services, and about 200 dedicated to conservation or environmental services (Figure 2.4) (National Park Service 2017f). While the goal of the parks is to provide both of these services, much of the current effort from the National Park Service is going towards tourism.

Beyond resource management, it is important to consider the impact that visitors have on the environment. An imperative of the National Park Service is to study the impacts of activities inside the park on wildlife, water quality, and soil, and outside the park from surrounding use and the development of adjoining land (Siehl 1987; National Park Service 2006). Some authors argue that visitors to natural areas can affect vital natural resources of tourism by compacting and eroding soils, trampling fragile vegetation, polluting surface water and disturbing sensitive wildlife (Manning et al. 2004). However, other studies have shown that this ecological disturbance from visitors could also be due to inadequate visitor planning and management, staffing, type of development, and season of use (Bushell 2003, 206; Eagles et al. 2002). Visitor management is difficult because "(i) systems of management and control are not equipped or resourced to predict and monitor complex, subtle and cumulative impacts on biological diversity or cultural

heritage, in either the short or long term; and (ii) different stakeholders may have highly diverse views on what constitutes appropriate use (Bushell 2003, 199)."

One of the most common solutions to combating visitor impact is to limit access, however there are some issues with this when

it comes to access and equity. Part of this equity issue is the belief that "society generally and not just users should pay for protected areas since everyone derives many benefits (Bushell 2003, 205)." An issue regarding equity is "ensuring that everyone is able to enjoy regular access to natural areas. As with other areas of public policy, such as health and

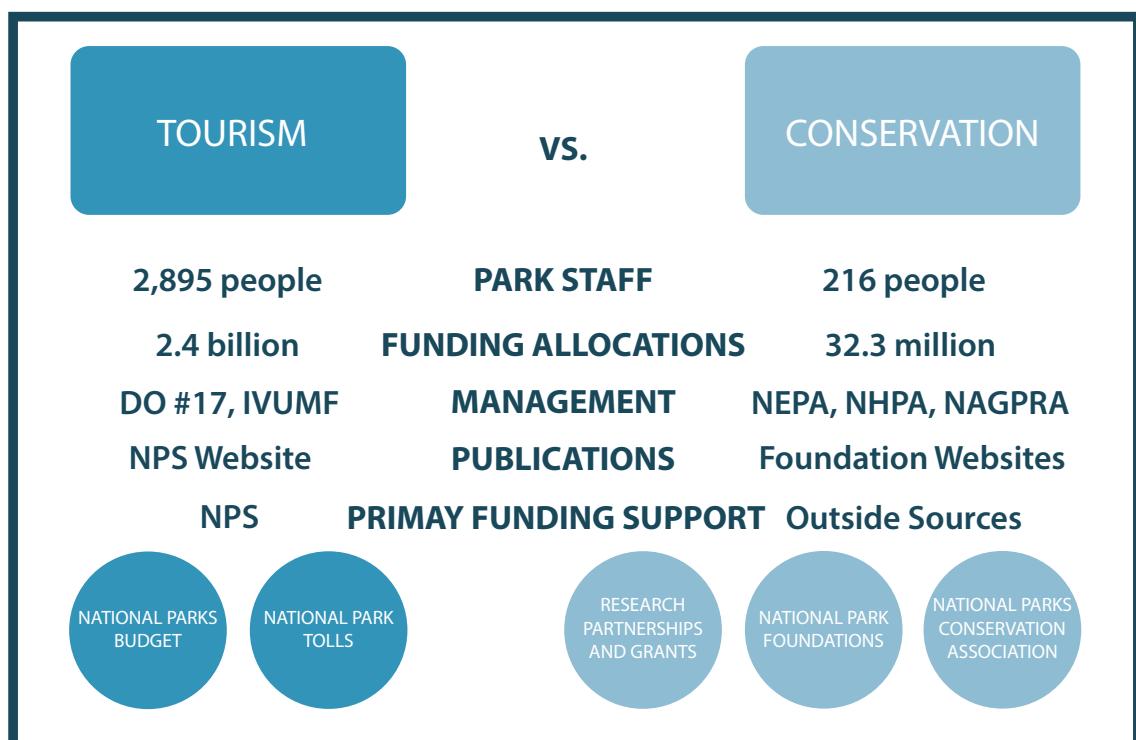


Figure 2.4. Tourism vs. Conservation. This graphic shows the difference between the support for tourism vs. conservation in the parks. For the purposes of this study, the words "tourism" and "visitor" were associated with tourism staff counts, and the words "conservation" and "environment" were associated with conservation staff counts (Hollman 2019).

education, there are many issues about the user-pays approach, which can deny access to many in lower socio-economic groups (Bushell 2003, 205)." Another article affirms this by stating that parks should "address issues of social fairness, an aspect that is often ignored revenue management applications (Schwartz et al. 2012, 507)." The national parks are for everyone, so it is important to consider equity and access when dealing with high visitation.

iii. COMMUNICATION

The National Park Service stated back in 2001 that they needed to corroborate their scientific findings concerning environmental concerns with other agencies and that they must communicate these findings to the public (National Park Service 2001). The park service also said there is an outstanding opportunity to communicate its stewardship message through educational outreach, assistance, and public recognition (National Park Service 2001). Even though this was stated almost two decades ago, it is still something the parks are struggling with today. While the parks have mastered "the art of explaining the significance of resources, helping visitors find personal meaning in them, and inspiring people to care about these protected places," communicating the science behind these places is relatively new and one

that the park service is still refining (Watkins et al. 2018, 74). This means that the parks need to go beyond explaining "what they know" to tell people "how they know it (Watkins et al. 2018, 74)." It is becoming increasingly more important to engage the public by "pursuing collaborations between scientists and professional communication staff of parks and their partner organization (Watkins et al. 2018, 67)." However, finding an effective way to communicate scientific findings to the public has been a challenge as many people find them difficult to understand (Whatley 1995; Kim et al. 2011; Landscape Conservation Cooperatives 2014; National Park Service 2001). If communication is a priority from the beginning of a project, collaboration between experts and their roles can become clearer (Watkins et al. 2018). Only by intentional communication and planning can findings be clearly communicated to the public.

Because of the government and scientific committees involved behind the scene, communication between stakeholders can be difficult. The *NPS Climate Change Response Strategy* states, "Scientific and decision-making communities have different purposes, norms, and standards for accountability, which can challenge communication between them.

Networks are needed that link science providers with the managers and their staffs who use the information (National Park Service 2010, 9)." The article goes on to state that the Cooperative Ecosystem Studies Units, Inventory and Monitoring Networks, and other collaborations could be enhanced to support better communication (National Park Service 2010)." Their goals for enhancing communication include: (1) coordinate and distribute climate change information internally (2) increase climate change knowledge and understanding internally (3) provide external communications about the implications of climate change and (4) model and communicate sustainable practices that lead by example (National Park Service 2010). An updated version of this document, the *Cultural Resources Climate Change Strategy* looks at how the climate change strategy protects cultural resources (Rockman et al. 2016). Its goals are to (1) connect impact and information, (2) understand the scope, (3) integrate practice, and (4) learn and share (Rockman et al. 2016). They state that, "a current challenge for cultural resources climate change communication is awareness of the links between cultural resources impacts and information across climate change science, adaptation, and mitigation (Goal 1) and of the diversity of observed and projected climate

change impacts to cultural resources (Goal 2) (Rockman et al. 2016, 30)." This document emphasizes the importance of communicating scientific findings to the public.

Another framework has been established by the Department of the Interior (DOI) called the Landscape Conservation Cooperatives (LCC) which focuses on landscape-level planning and management (Acycrigg et al. 2013). The LCC is made up of "public-private partnerships composed of states, tribes, federal agencies, non-governmental organizations, universities, international jurisdictions, and others working together to address landscape and seascape scale conservation issues (Landscape Conservation Cooperatives 2014, i)." Their goals are centered around (1) a conservation strategy (2) collaborative conservation (3) science and (4) communication (Landscape Conservation Cooperatives 2014). Their vision is to foster "landscapes capable of sustaining natural and cultural resources for current and future generations (Landscape Conservation Cooperatives 2014, 3)." The LCC is a great example of a framework centered around communication at a regional scale focused on conservation. All the frameworks mentioned here further support the need for a more consistent database for scientific findings and

how that is shared with the public (Acycrigg et al. 2013; Rockman et al. 2016; National Park Service 2010). While the parks recognize this lack of communication, there still is much to be done to improve communication not only between parks and their partners, but between the parks themselves.

iv. MANAGING ACROSS PARK BOUNDARIES
Some of the challenges the national parks face could be addressed by offering a new perspective that is rooted in communication and education at a regional scale (Pearce and O'Campo-Raeder 2008). Of course, management across park boundaries is easier said than done because the land is managed by several agencies such as states, localities, and private owners (Siehl 1987). Even so, several entities, including the National Park System Advisory Board, state the importance of a regional focus (National Park System Advisory Board 2012; Schelhas 2009; Aycrigg et al. 2013; Leslie 2014; Svancara et al. 2005; Dietz and Czech 2005). The National Park System Advisory board states, “While individual parks can be considered distinct units, they are—regardless of size—embedded in larger regional and continental landscapes influenced by adjacent land and water uses and regional cultures. Connectivity across these

broader land- and seascapes is essential for system resilience over time to support animal movements, gene flow, and response to cycles of natural disturbance (National Park System Advisory Board 2012, 9).” In addition to the advisory board, one researcher states that “we cannot protect most migratory species with our actions within our individual units. The protection must be across boundaries, region-wide, and we must expect that some migration patterns will change with climate and habitat change (Berger et al. 2014, 8).”

One reason for a regional focus is to protect migratory species that travel between parks. While the National Park Service is an international leader in managing parks and protecting wildlife, the current coordination efforts of protected areas for wildlife species are not enough (Berger et al. 2014; Darst et al. 2009). It is also important to provide this connection to protect larger wildlife populations outside of park boundaries because smaller populations have more limited gene pools and may be more susceptible to drought, pests, or hard winters (Think Big 2011). We need a whole systems approach with a focus on “landscape-level connectivity and the health and diversity of species (Leslie 2014).” While park management across boundaries present a

challenge, it is necessary to think at a regional scale to protect the ecosystems that support the parks' variety of life.

C. VISITORS

Because communication with the public is a crucial part of this report, it is important to understand the motivations and demographics behind the tourists that are visiting the parks.

i. MOTIVATION

Several studies have examined the motives of why people travel and why people choose to visit the places that they do. One recent study looked at a push and pull framework that focuses on how visitor behavior to the national parks is influenced by perception and motivation (Said and Maryono 2018). Push factors are outside factors that influence a tourist to visit a destination, and pull factors are the internal motives that influence a tourist to visit a destination. This study looked at the push factors of local hospitality and services, trip cost and convenience, perceptions of a safe/secure environment, recreation and sporting activities, entertainment and drinking opportunities, personal and historical links, cultural and shopping services, and unusual and distant vacation spots (Said and Maryono 2018). It found that the most important push

factor ranked by tourists was local hospitality and services (Said and Maryono 2018). The other main motivations behind visitor travel were climate or environment, relaxation or escape, adventure, and personal reasons (Said and Maryono 2018).

The pull factors that the study looked at were attitude towards the destination, the opinion from relatives and friends, experience from previous travelling and the limits of time and financial capacity (Said and Maryono 2018). The satisfaction characteristics studied were categorized under personnel, nature characteristics, infrastructure, recreation facility, and information-communication (Said and Maryono 2018). The researchers found that the main influencing internal motivational factors were self-motivation, perception, and available time and money (Said and Maryono 2018). Overall, the study found that it was important to balance preserving sustainability with a satisfying visitor experience in order to keep attracting tourists (Said and Maryono 2018).

Another study looked at how interpretation efforts of the National Park Service can motivate visitor behavior. They stated that their key findings "echo the evidence of previous

literature, which indicates that interpretation efforts partly succeed in altering visitor behavior, but its impacts are limited to site-specific issues (Kim et al. 2011, 330)." This means that site-specific low-impact behavior is more likely to be changed than general long-term behavior by current interpretation efforts of the National Park Service. Thus, the current issue with existing interpretation efforts is that it does not impact long-term behavior such as giving donations, volunteer work, memberships, or responsibility-denial behavior. This research suggests that different strategies need to be considered to impact long-term behavior for different types of visitors (Kim et al. 2011).

ii. DEMOGRAPHICS

The same study found that the typical visitors who were more influenced by the interpretation efforts of the National Park Service "were older, had high interest in the natural environment, and a desire to learn about the site-specific issues while visiting the site (Kim et al. 2011)." This means that the visitors who were being influenced by existing signage or ranger-lead tours already had an interest in the natural environment and wanted to learn while being there, which tended to coincide more with the older population that is visiting the parks.

Another study over the last decade did a visitor

analysis of National Park Service visitors from 1990 to 2008 to determine the typical visitor demographic. Instead of focusing on visitor behavior, their study focused on the variables of personal group size, first-time visitation, day use, families with children under 18, distance traveled to parks from within the United States, those living within 100 miles of the park, country of origin, and the state where visitors lived (Schuett et al. 2010). The findings of the study were based on a 75% response rate from those who filled out a questionnaire (Schuett et al. 2010). The findings from the questionnaire can be seen in Table 2.1.

The findings of these studies have several implications. First, the visitor demographic study shows that the average mean group size is declining over time, as well as the number of families with children over 18. The percentage of seniors visiting, however, is growing, probably because people are living longer and the parks are "especially attractive for seniors who have time, money, and mobility to visit a park (Schuett et al. 2010, 206)." The study about the interpretation efforts of the National Park Service shows that their current way of reaching the public is effective for this growing age group (Kim et al. 2011). Additionally, the number of first-time visitors was also especially

Study Variable (means)	Natural (n=74)	Urban (n=32)	Military (n=20)	Hist/Cult. (n=54)	p-value
Personal group size ¹	4.17	4.17	3.87 ^a	5.47 ^a	0.036
% family group with children under 18	26.48 ^a	18.75 ^{abc}	25.63 ^b	28.77 ^c	0.006
% senior (65+)	10.58	10.91	11.63	12.87	0.112
% first-time visitors	63.79 ^a	41.85 ^{abc}	63.92 ^b	68.2 ^c	0.000
% visitors who live within 100 miles of the park	17.15 ^{ab}	52.40 ^{acd}	33.14 ^{bc}	30.69 ^d	0.000
Distance traveled to park in miles (U.S. visitors only)	864.57 ^a	289.94 ^a	672.13	609.98	0.000
% day use	63.06 ^{abc}	74.76 ^{ade}	93.81 ^{bd}	90.63 ^{ce}	0.000
% international visitors	11.83 ^{abc}	4.31 ^a	4.03 ^b	5.41 ^c	0.000
# of U.S. states visitors came from	41.03 ^a	31.41 ^{abc}	39.85 ^b	38.50 ^c	0.000

Table 2.1. Analysis of variance by park type, 1990-2008
(Schuett et al. 2010)

high, which means most visitors know less about the national park system. As the population visiting the parks continue to change over time, it is important to understand how to best cater to the shifting needs of the visitors, especially to those who are younger and have less interest in on-site interpretation and environmental awareness (Kim et al. 2011). Different strategies need to be implemented to reach different groups of people. For example, because of the increase in first-time visitors and an older demographic, signage and ranger-led tours may be an effective way to help people find relevance for those who do not know much about an area and are interested in the natural environment (Schuett et al. 2010). However, this may not be as effective for stimulating long-term behavior management which leaves an opportunity for the park service to grow in how it communicates with the public to encourage further support for the parks.

III. INTRODUCTION TO THE INTERMOUNTAIN REGION PARKS

The Intermountain Region was selected for study because it contains several of the most visited parks in the United States, containing six of the top ten most visited national parks (Figure 2.5) (National Park Service 2019a). This means the region is facing higher stress on its environments due to this high amount of visitation. Glacier, Yellowstone, Grand Teton and Rocky Mountain parks were selected because they have some of the most information available regarding their biodiversity conservation projects due to their prominent partnerships and are facing similar climate issues in the Rocky Mountains. Glacier was also specifically included because it is part of the Waterton-International Peace Park with Canada which is a gesture of ongoing peace that promotes connection regionally across park boundaries. While managed separately, the goal of these countries is to protect the same ecosystem (National Park Service 2017b).

This section provides a park profile for the key parks being analyzed that compares their goals, ecosystems, and challenges. This section also examines how the parks take the information from the *Management Policies 2006* document and apply it at a local level to better understand the communication between the parks and how they share information with the public. Additionally, this section examines key information provided by the foundation documents of each park, which were created as part of the National Park Service Centennial to provide guidance for planning and management decisions (National Park Service 2017e). The goals section specifically looks at the significance of the park (why an area is important within a global, national, regional, and systemwide context), fundamental resources and values (merit primary consideration during planning and management processes), and interpretive themes (key stories or concepts visitors should understand after their visits).



Figure 2.5. The Intermountain Region and Key Parks. Glacier, Yellowstone, Grand Teton, and Rocky Mountain National Parks are some of the most prominent parks in the Intermountain Region and have similar purposes, ecosystems, and challenges (Hollman 2019).

Source: (Google Earth 2019)

A. GLACIER NATIONAL PARK

Intro

Glacier National Park is one of the largest, most intact ecosystems in the United States and is part of the world's first International Peace Park along with Waterton in Canada (National Park Service 2017b). Glacier is located on the Continental Divide and is home to several different types of species and wildlife and also offers many recreational opportunities (National Park Service 2017b).

Goals

Purpose: “The purpose of Glacier National Park, part of the world’s first international peace park, is to preserve the scenic glacially carved landscape, wildlife, natural processes, and cultural heritage at the heart of the Crown of the Continent for the benefit, enjoyment, and understanding of the public (National Park Service 2017b, 4).”

Significance:

- The geology and hydrology illustrates geologic processes over time.
- The wilderness experience offers access to diversity of scenery and rare primitive wilderness.
- Glacier is one of the most ecologically intact landscapes remaining in the temperate world.
- Cultural connections provide physical evidence of human activity evidenced by archaeology over time.
- The Going-to-the-Sun Road provides access to five different eco-regions within the park.
- Transboundary cooperation between the United States and Canada is a model of collaboration across boundaries.

(National Park Service 2017b, 4-5)

Fundamental Resources and Values of the Park:

- Glaciated geologic landscape/the Miistakis
- Clean water and air
- Diverse habitats that support iconic wildlife
- Tribal connections
- Variety of recreational opportunities
- International Peace Park

(National Park Service 2017b)

Interpretive Themes:

- Geologic features
- Wilderness experiences
- Ongoing peace between the United States and Canada
- Cultural resources chronicle the evolving history of human activities, Indian traditions, interaction, and experiences in the American West

- The park has “enabled its ecological processes and biological diversity to survive relatively intact in a rapidly changing and encroaching world and may provide refuge for some species in the face of climate change.”
(National Park Service 2017b, 8)

Ecosystem

a. Natural Features and Ecosystems

Forests, fossils, geologic formations, glaciers/glacial features, lakes and ponds, mountains, rivers and streams, soils, wetlands, marshes and swamps make up the park (National Park Service 2016).

b. Life Zones

Grasslands, aspen parkland, montane forest, subalpine zone, and alpine tundra (National Park Service 2015a)

c. Wildlife & Vegetation

Wildlife (# of species): 24 fish — 18 native and 7 non-native, 71 mammals, 276 documented birds; one of the only places in the US that supports natural populations of all indigenous carnivores and their prey species (National Park Service 2017a)

Vegetation (# of species): 1,132 vascular and 858 non-vascular (National Park Service 2017a)

Challenges

a. Main Threats: climate change, energy development, nearby land management, and increasing visitation (National Park Service 2017b)

b. Management Issues: Managing different activities inside borders is a challenge the park is currently facing (Turner 2010); Climate change - Global temperature is increasing causing glaciers around the world to disappear which affects mountain resources and biodiversity (Shijin et al. 2012) (Garavaglia et al. 2012) (Price et al. 1999)



Figure 2.6. Mountain goat
(Hollman 2019)

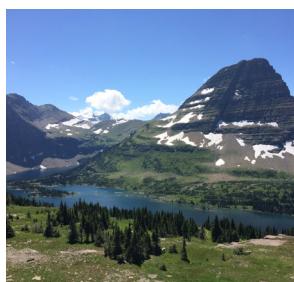


Figure 2.7. Bear Mountain
(Hollman 2019)

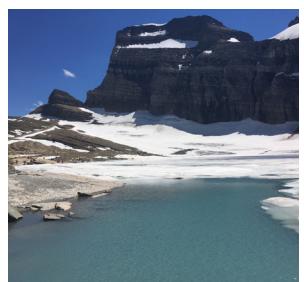


Figure 2.8. Grinnell Glacier
(Hollman 2019)

B. YELLOWSTONE NATIONAL PARK

Intro

Yellowstone was the world's first national park and was set aside "in recognition of its unique hydrothermal features and for the benefit and enjoyment of people (National Park Service 2017e, 2)." It has over 10,000 thermal features, with a "large underground volcanic system" to fuel them that has shaped the park's landscape over time (National Park Service 2017e, 2).

Goals

Purpose: "Yellowstone National Park, the world's first national park, was set aside as a public pleasuring ground to share the geothermal wonders and preserve and protect the scenery, cultural heritage, wildlife, and geologic and ecological systems and processes in their natural condition, for the benefit and enjoyment of present and future generations (National Park Service 2017e, 4)."

Significance:

- Yellowstone is the first national park in the world.
- It was set aside for its "geothermal wonders" which are the planet's "most active, diverse, and intact collection of geothermal, geologic, and hydrologic features and systems and the underlying volcanic activity that sustains them."
- "The park is the core of the Greater Yellowstone Ecosystem, one of the last, largest, mostly intact, natural ecosystems in the temperate zone of Earth."
- "Yellowstone contains a unique and relatively pristine tapestry of cultural resources that span over 11,000 years."
- "Yellowstone visitors have unparalleled opportunities to experience unique geothermal wonders, free-roaming wildlife, inspiring scenic views, cultural heritage, and spectacular wilderness character."

(National Park Service 2017e, 4-5)

Fundamental Resources and Values of the Park:

- Geothermal wonders
- Dynamic geologic processes and features
- Hydrologic systems
- One of the largest, mostly intact temperate ecosystems in the world
- Enduring connection to Yellowstone
- A park for the people
- A "wild" experience

(National Park Service 2017e)

Interpretive Themes:

- Geology
- Geothermal features
- Natural resource preservation
- Wildlife

- Ecosystem
 - Human culture and history
 - First national park
 - Wilderness
 - Laboratory
 - Climate change and sustainability
 - Management
- (National Park Service 2017e)

Ecosystem

a. Greater Yellowstone Ecosystem

- Contains half of the world's active geysers
 - Supports the largest concentration of wildlife in the lower 48 states
 - Made up of grasslands and forests (most of the park is underlain by volcanic bedrock)
- (National Park Service 2019r)

b. Wildlife & Vegetation

Wildlife (# of species): 67 mammals, 285 birds, 16 fish (5 nonnative), 6 reptiles; 2 threatened species: Canada lynx, grizzly bears (National Park Service 2019s)

Vegetation (# of species): 9 species of conifers, 1,000+ native flowering species (3 endemic), 224 species of invasive plants, 186 species of lichens (National Park Service 2019s)

Challenges

a. Main Threats: protection of natural and cultural resources, infrastructure and operation sustainability, and visitor experience (National Park Service 2017e)

b. Management Issues: Climate change, invasive species, managing an ecosystem across political boundaries, land use change, bison management, grizzly bear management, native fish conservation, and high visitation are all issues the park is currently facing (National Park Service 2019r).



Figure 2.9. Yellowstone Canyon (Hollman 2019)



Figure 2.10. Mammoth Hot Springs (Hollman 2019)



Figure 2.11. Old Faithful (Hollman 2019)

C. GRAND TETON NATIONAL PARK

Intro

Grand Teton National Park was “dedicated and set apart as a public park or pleasure ground for the benefit and enjoyment of the people of the United States under the name of the Grand Teton National Park of Wyoming (National Park Service 2017c, 2).” It is part of the Greater Yellowstone Ecosystem which includes the Teton Range as its central feature (National Park Service 2017c).

Goals

Purpose: “The purpose of Grand Teton National Park is to preserve and protect the spectacular scenery of the Teton Range and the valley of Jackson Hole; protect a unique geologic landscape that supports abundant diverse native plants and animals and associated cultural resources; protect wildlands and wildlife habitat within the Greater Yellowstone area, including the migration route of the Jackson elk herd; and to provide opportunities for enjoyment, education, inspiration, and scientific investigation compatible with these resources for present and future generations (National Park Service 2017c, 4).”

Significance:

- Grand Teton is known for its iconic mountain landscape featuring rugged peaks and glacial lakes, contrasting with sagebrush flats.
- It preserves the landscape of one of the “world’s most impressive and highly visible fault block mountain ranges.” The Teton range is one of the youngest ranges but exposes some of the oldest rocks on earth.
- The Snake River Headwaters provide “stunning canyons, open meadows, broad vistas, striking mountains, glacial lakes, and sage flats.”
- The park supports diverse cultures and cultural trends.
- Visitors can experience solitude and wilderness character alongside recreation and educational activities in world renowned landscape and wildlife refuges.
- There are many opportunities for wildlife viewing.
- Many scientific research opportunities exist to study temperate zone natural systems and processes.

(National Park Service 2017c, 4-5)

Fundamental Resources and Values of the Park:

- Scenery
- Geologic features and processes
- Ecological communities and natural processes
- Aquatic resources and processes
- Cultural history and resources
- Visitor experiences in an outstanding natural environment
- Natural soundscapes and night skies

(National Park Service 2017c)

Interpretive Themes:

- Geology
- Ecology
- People
- Legacy
- Inspiration
- Discovery

(National Park Service 2017c)

Ecosystem

a. Greater Yellowstone Ecosystem

The park is dominated by the Teton Range (mountains), fossils, flood plains, glaciers/glacial features, mountains, lakes and ponds, forests, wetlands, marshes, and swamps (National Park Service 2019r).

b. Wildlife & Vegetation

Wildlife (# of species): 22 rodents, 17 carnivores, 6 hoofed mammals, 3 rabbits/hares, 6 bats, 4 reptiles, 6 amphibians, 16 fish, 300+ birds, numerous invertebrates (National Park Service 2019f)

Vegetation (# of species): 7 species of coniferous trees, 900+ species of flowering plants (National Park Service 2019f)

Challenges

a. Main Threats: climate change, park visitation, aging infrastructure, workforce management, and business of the National Park Service (National Park Service 2017c)

b. Management Issues: The park needs comprehensive visitor use management plans for highly developed areas of the park and a wilderness stewardship and backcountry management plan for the park and parkway. Changing habits of birds, grizzly bears, and amphibians due to climate change also present a challenge (National Park Service 2017c).



Figure 2.12. Fall color at Jenny Lake (Hollman 2019)



Figure 2.13. Grand Teton Mountains (Hollman 2019)



Figure 2.14. LSR Preserve (Hollman 2019)

D. ROCKY MOUNTAIN NATIONAL PARK

Intro

Rocky Mountain National Park is a premier wildlife watching destination that contains 415 square miles of “the scenic southern Rocky Mountains of Colorado” which “provide Rocky Mountain National Park with its sense of wonder and inspiration, and support a diversity of ecosystems, including montane, subalpine, and alpine biological communities (National Park Service 2013, 2).”

Goals

Purpose: “The purpose of Rocky Mountain National Park is to preserve the high-elevation ecosystems and wilderness character of the southern Rocky Mountains within its borders and to provide the freest recreational use of and access to the park’s scenic beauties, wildlife, natural features and processes, and cultural objects (National Park Service 2013, 2).”

Significance:

- The park provides access to wild places for visitors to recreate and experience solitude and outstanding scenic beauty.
- The fragile alpine tundra makes up a third of the park and is one of the largest examples of alpine tundra ecosystems protected in the United States.
- Glaciers and fresh water carved the the park's landscape and its waters are the source of several river systems including the Colorado River and the Cache la Poudre (Colorado's first and only designated wild and scenic river).
- Dramatic elevation change straddles the Continental Divide, allowing for diverse terrestrial and aquatic ecosystems, varied plant and animal communities, and a variety of ecological processes.
- The park is a “designated UNESCO international biosphere reserve and globally important bird area, with portions of the park’s montane, subalpine, and alpine ecosystems managed as research natural areas for scientific and educational purposes.”
- The mountain landscape has drawn people for thousands of years from prehistoric big game to dude ranching to recreational tourism.

(National Park Service 2013, 2)

Fundamental Resources and Values of the Park:

- Access to wild places
- High-elevation ecosystems
- Wilderness character
- Headwaters of the Continental Divide
- Ability to experience a wide variety of recreational opportunities
- Traces of human footprints on the landscape

(National Park Service 2013)

Interpretive Themes:

- Diverse natural ecosystems provide opportunities to understand the interconnectedness of the natural world and foster stewardship.
- Rocky Mountain National Park's spectacular mountain wilderness provides opportunities to connect to the natural world through recreation, enjoyment, learning, and spiritual renewal.
- National parks like Rocky Mountain serve as a resource benchmark and play an important role as an international outdoor laboratory where changes can be monitored and the health of the planet can be assessed.
- Human use of this land has evolved over time and reflects landscape values and use from American Indians to early settlers to today's visitors.

(National Park Service 2013)

Ecosystem

a. Natural Features and Ecosystems

The park is made up of montane, subalpine, alpine tundra, and glacial ecosystems (National Park Service 2018e).

b. Wildlife & Vegetation

Wildlife (# of species): 280 birds, 7 native fish, 4 exotic, 66 native mammals (grizzly, gray wolf, and bison are locally extinct, lynx/wolverine are rare and may be locally extinct), 142 confirmed butterflies (National Park Service 2018e)

Vegetation (# of species): approx. 1,100 vascular plants (National Park Service 2018e)

Challenges

a. Main Threats: congestion and visitor use management, transportation, climate change, backcountry data and understanding (National Park Service 2013)

b. Management Issues: The park needs a visitor-use management plan, backcountry/wilderness plan, and commercial services planning (National Park Service 2013).



Figure 2.15. Bighorn rams
(National Park Service 2015)



Figure 2.16. Hikers on the UTE Trail
(National Park Service 2015)



Figure 2.17. Hallet Peak reflected in Dream Lake
(National Park Service 2015)

Glacier

“Crown of the Continent”

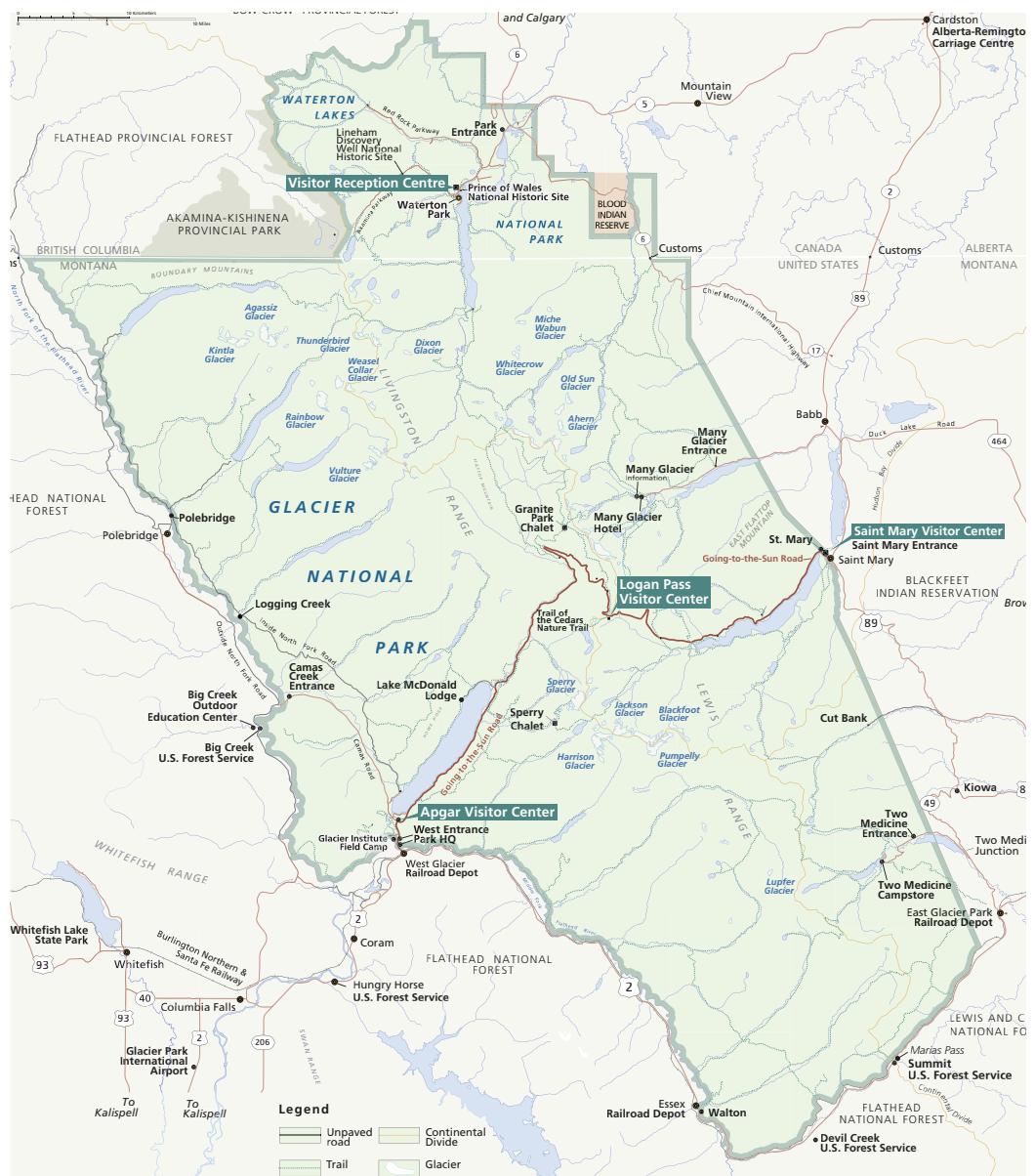


Figure 2.18. Glacier Park Map (National Park Service 2017b)

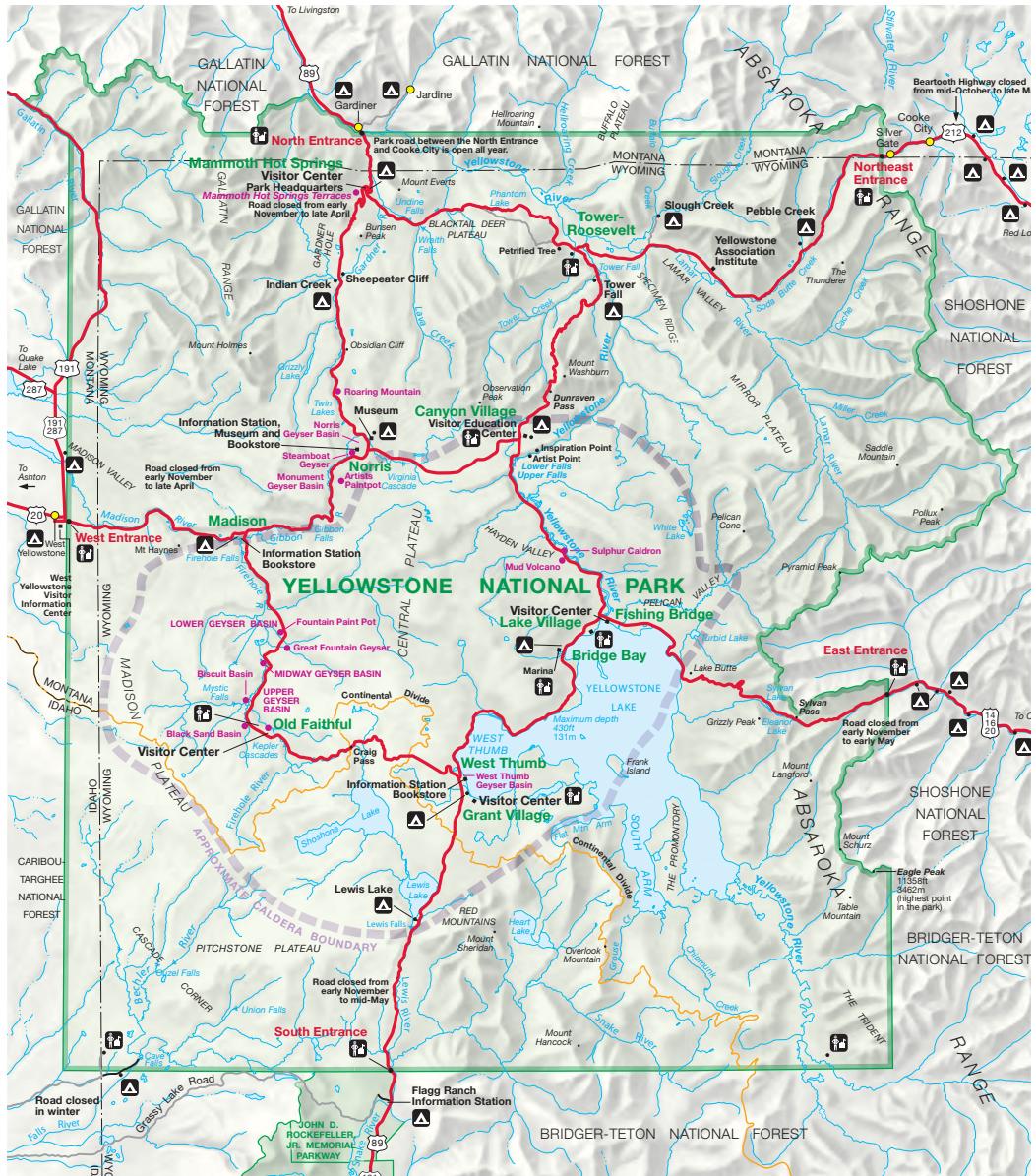


Figure 2.19. Yellowstone Park Map (National Park Service 2017d)

Yellowstone

“Two Million Acres of Memories”

Grand Teton

“Mountains of the Imagination”

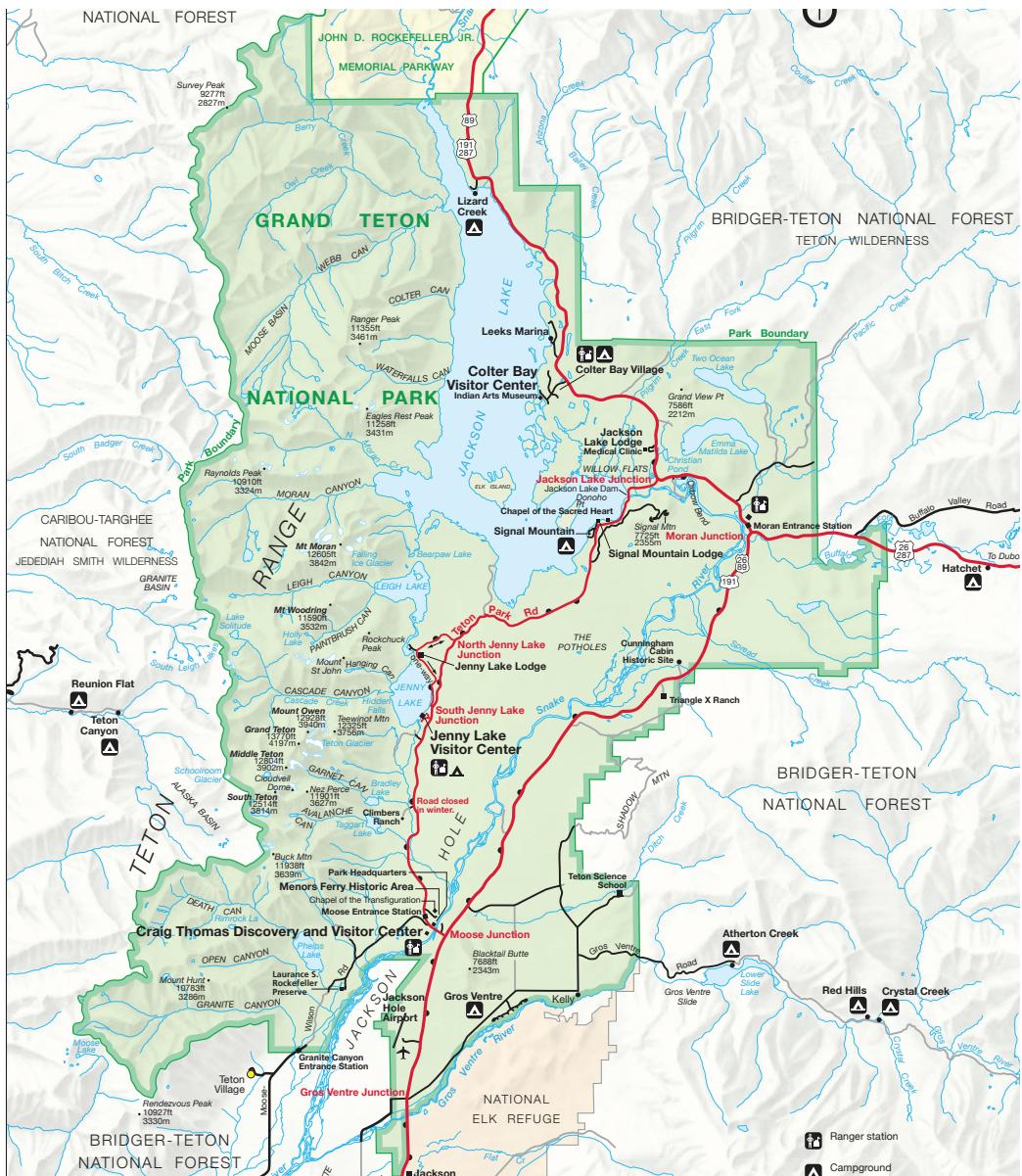


Figure 2.20. Grand Teton Park Map (National Park Service 2017c)

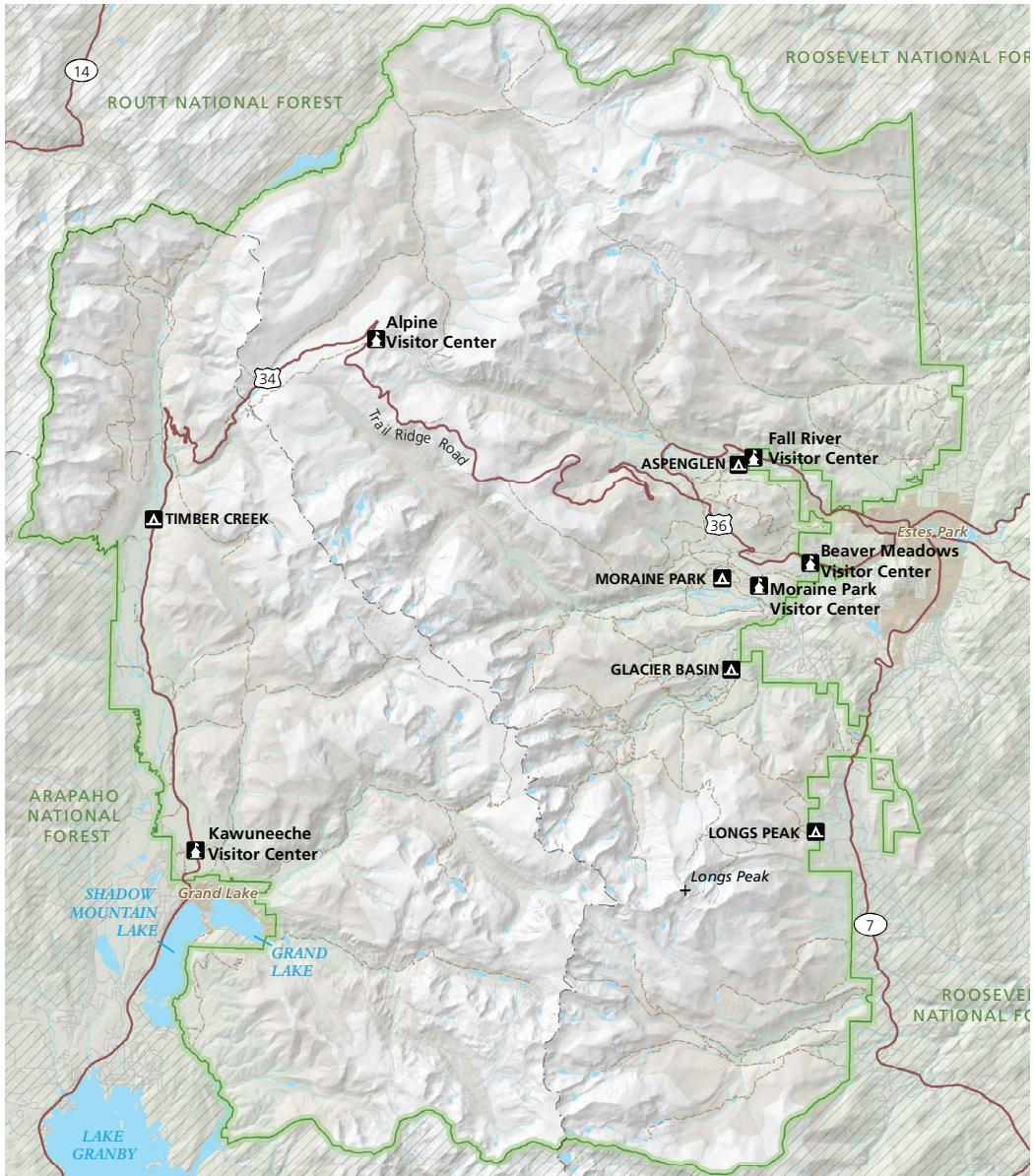


Figure 2.21. Rocky Mountain Park Map (National Park Service 2013)

Rocky Mountain

“Feel Like You’re On Top of the World!”

IV. EXISTING CONSERVATION STRATEGIES FROM OTHER COUNTRIES

This section examines how other national park organizations prioritize biodiversity conservation management between their parks and with the public to compare to the National Park Service. These parks provide an example of how the National Park Service could be organized regionally and how they can provide more information regarding biodiversity conservation more prominently on their website homepage. Parks Canada and Australia, the official national park organizations of their respective countries, were chosen based on their proven dedication to protecting their natural resources and biodiversity and how they communicate this on their website. While these organizations are both good examples, Parks Canada is given special attention due to its proximity to the United States and its connection to the Intermountain Region.

A. PARKS CANADA

Parks Canada was studied because of their focus on a regional management plan and their conservation management strategies around biodiversity. Parks Canada was created by the Canada National Parks Act to protect Canada's landscapes (Parks Canada 2018a). Parks Canada's mission statement is "On behalf of the people of Canada, we protect and present nationally significant examples

of Canada's natural and cultural heritage, and foster public understanding, appreciation and enjoyment in ways that ensure the ecological and commemorative integrity of these places for present and future generations (Parks Canada 2018c)." The United States and Canadian parks both have a similar goal "to retain representative areas of each of the major environmental regions in the state in which they were when first encountered by Europeans and to allow habitat evolution to proceed without human interference from that point (Henderson 1992, 397)."

Parks Canada, however, focuses on regional ecosystems and conservation and they have more of a regional approach to planning (Parks Canada 2019a). They have a *National Park System Plan* document developed in 1997 that emphasizes the importance of regional protection (Parks Canada 1997). They state that, "national parks are part of larger ecosystems and must be managed in that context. Parks Canada recognizes the need to integrate parks into their surrounding landscapes so that parks function as part of a connected network (Parks Canada 2019a)." They also state that "ecological integrity must be assessed and understood at a landscape scale...The goal of conserving ecological

integrity is best addressed by maintaining or restoring the diversity of genes, species and communities expected for the region. It is simply consistent with the vision of integrity, which is “wholeness”—if parts are missing, the ecosystem is not whole (Parks Canada 2019a).” Where the United States does not specifically address the need to protect a certain representation of vegetative communities, Canada uses representation targets to “structure their protected areas network” which forms the basis of their parks (Aycrigg et al. 2013, 2).

On their website they also state that, “National parks protect natural environments representative of Canada’s natural heritage. These special places are gateways to nature, to adventure, to discovery, to solitude. They celebrate the beauty and infinite variety of our country. Protected and preserved for all Canadians and for the world, each is a sanctuary in which nature is allowed to evolve in its own way, as it has done since the dawn of time. Each provides a haven, not only for plants and animals, but also for the human spirit. A place to wander... to wonder... to discover yourself (Parks Canada 2019a).” They go on to say that, “National parks are established to protect and present outstanding representative

examples of natural landscapes and natural phenomena that occur in Canada’s 39 natural regions, as identified in the national parks system plan (Parks Canada 2019a).” While the parks definitely promote tourism, they state that the goal is protection: “Parks have a limited capacity to withstand use. Visitors are welcome to visit them but the cumulative effects of human use and facilities should not be a strain on that capacity (Parks Canada 2019a).” Parks Canada makes it clear on their website and in their projects that conservation is a priority.

B. PARKS AUSTRALIA

Parks Australia was studied because of their wide variety of management strategies across their regions, along with their government wide conservation management strategies focused on overall biodiversity conservation. Parks Australia’s vision is to protect “outstanding natural places that enhance Australia’s well-being (Parks Australia 2020a).” Their goals are to “protect and conserve the natural and cultural values of Commonwealth reserves, support the aspirations of traditional owners in managing their land and sea country, and offer world class natural and cultural experiences, enhancing Australia’s visitor economy (Parks Australia 2020a).”

Parks Australia is under the Department of the Environment and Energy and oversees the main commonwealth national parks (Australian Government 2019). These commonwealth regions are: Western Australia (WA), The Northern Territory (NT), Queensland (Q), South Australia (SA), New South Wales (NSW), Victoria (VIC) and Tasmania (TAS). The specific parks under Parks Australia's authority are: Kakadu National Park, Uluru-Kata Tjuta National Park, Booderee National Park, Christmas Island National Park, Pulu Keeling National Park, and Norfolk Island National Park (Parks Australia 2020b).

Parks Australia is guided by the Environment Protection and Biodiversity Conservation Act 1999, *Australia's Biodiversity Conservation Strategy 2010-2030*, and *The Director of National Parks Corporate Plan 2019-2023* (Australian Government 2019). These documents and laws focus on “protecting the natural places that enhance Australia’s well-being (Australian Government 2019).” Individual regions then take these governing documents and principles and apply them to their parks, emphasizing the importance of protecting biodiversity and doing their part to protect Australia’s unique wildlife and vegetation.

Australia's biodiversity conservation strategy “provides an overview of the state of Australia’s biodiversity and outlines collective priorities for conservation. The strategy aims to coordinate efforts at a national level across all sectors to sustainably manage biological resources in a way that meets current needs and ensures their long-term resilience, health and viability (Australian Government 2019).” Like the United States, there is one overall system that governs Parks Australia at a national level. The difference is that Australia divides up local control of parks by region where each region oversees the parks in that area. Australia also makes it clear that conservation is a priority by structuring their park under the Department of the Environment and Energy in their government and centering their work around conservation strategies and plans.



Figure 2.22. Banff National Park, Canada (Hollman 2019)



CHAPTER THREE: METHODS



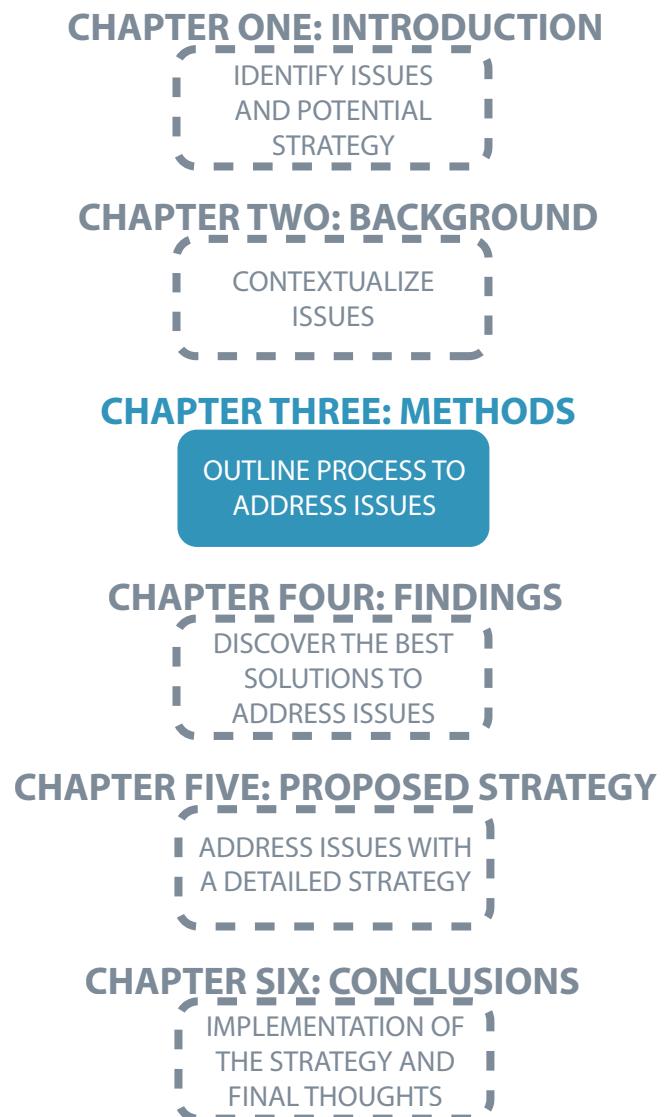


Figure 3.1. Project Organization Diagram (Hollman 2019)

I. METHODS

This chapter outlines the process to address the issues identified in *Chapter One: Introduction* (Figure 3.1). This is accomplished by proposing methods to collect data for the purpose of discovering the best solutions. The methods used are document analysis of the National Park Service, Intermountain Region Parks, and Parks Canada and Australia, along with interviews of key National Park Service staff, to devise a regional management strategy for biodiversity conservation that improves upon current communication between parks and their partners, and how the public receives information (Figure 3.2). The findings are detailed out in *Chapter Four: Findings* and the outcome is revealed in *Chapter Five: Proposed Strategy* which focuses on a regional network to improve communication between the parks, their partners, and the public.

II. OUTCOMES

A. GOALS

The goal of this research is to protect biodiversity by proposing a new communication strategy that helps the National Park Service better organize biodiversity conservation projects regionally between parks and their partners and disseminate that information to the public in a way that is easy to understand.

B. OBJECTIVES

This strategy addresses three major objectives for the goals identified above and the issues identified by the author about the communication issues between the parks and the accessibility of that information to the public (Figure 1.5).

To address park organization the objectives are:

- (a) *Coordinate*
- (b) *Organize*
- (c) *Promote*

To address public communication the objectives are:

- (a) *Inform*
- (b) *Advocate*
- (c) *Connect*

C. OUTCOME

The outcome of this project is a proposed strategy centered around communication that addresses the goals and expands on the outcomes identified for the National Park Service. This was accomplished by conducting key interviews and document analyses which will be detailed in *Chapter Four: Findings*. This strategy explores how the National Park Service can better communicate between parks, their partners, and the public by proposing an improved regional communication strategy focused on a regional network with improved website access for the public and an annual report (Figure 3.2).

The strategy focuses on how to coordinate information at the park level to have a regional focus, organize research projects by type and priority, and promote stronger communication with a user-friendly network. The strategy also proposes how research efforts could be published to better inform the public, advocate for biodiversity, and connect projects to volunteerism and donation opportunities. The ultimate outcome of the project is to protect biodiversity in the parks.

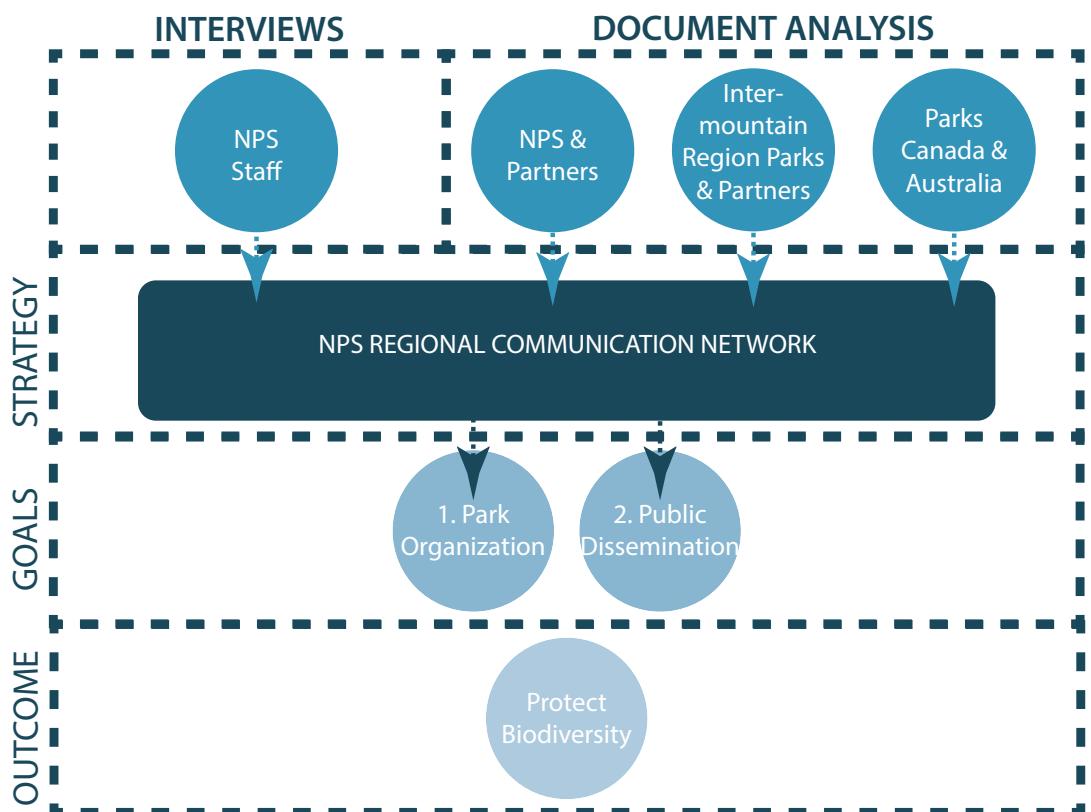


Figure 3.2. Methods Diagram (Hollman 2019)

III. DOCUMENT ANALYSIS

This section analyzes biodiversity conservation efforts and strategies at two different scales: the National Park Service overall and specific national parks in the Intermountain Region including Glacier, Yellowstone, Grand Teton, and Rocky Mountain parks. Parks Canada and Australia were also studied to compare their efforts to the National Park Service as a whole. This section also shows how the methods address the goals of park organization and public dissemination.

First, documentation related to the goal of park organization was collected. Specifically, the National Park Service and their partners were studied to determine their goals, management policies, conservation efforts/projects, and reports. Then, Intermountain Region parks were analyzed to determine their individual goals, primary challenges, government funding, full-time employees, total acres managed, and visitors. Conservation information found on their website, primary guiding documentation, and information about their public/private partnerships were also gathered. After that, Parks Canada and Australia's documents and websites were analyzed to determine their goals, conservation efforts/project reports, organizational charts, visitor data, volunteers, budget (% dedicated to conservation),

employee departments (% dedicated to conservation), primary partnerships, and primary guiding documentation or policy related to conservation.

Second, the National Parks Service and their partners, the Intermountain Region parks and their partners, and Parks Canada and Australia had their websites studied to determine their target audience, first impressions, primary message, website headings, and access to biodiversity conservation information to address the goal of public dissemination. Finally, after this data were collected to address both goals, it was analyzed in a matrix to determine commonalities in the data (Appendix F). The findings are presented in the next chapter. After the data was analyzed, it was used in tandem with the results from the interviews to come up with the proposed strategy in Chapter Five. Specific details about the purpose, supporting background, the data collection, and product are provided below.

A. PARK ORGANIZATION

i. PURPOSE

The purpose of this section is to examine the National Park Service and their primary partner's biodiversity conservation efforts and determine how each Intermountain Region

park and their primary partners interprets government mandates from a national to a local level. This section also analyzes what other countries are doing regarding biodiversity conservation management and organization.

ii. SUPPORTING BACKGROUND

The need for better park organization at a regional level can be found in *Chapter Two: Background under (B) Challenges Facing National Parks (ii) Managing Across Park Boundaries*. The specific resources that were analyzed to determine the current organization between parks include the following:

- National Park Service: NPS Management Policies 2006, the National Resource Stewardship and Science Directorate (NRSS), the National Park Service Foundation (NPF), and the National Park Service Conservation Association (NPCA)
- Intermountain Region Parks: park foundation documents and partners
- Parks Canada and Australia: Canada – *National Parks System Plan, Canadian Protected Areas Status Report, A Natural Priority Report*; Australia – *Environment Protection and Biodiversity Conservation Act*

1999, Australia's Biodiversity Conservation Strategy 2010-2030, and The Director of National Parks Corporate Plan 2019-2023

iii. METHODS - DATA COLLECTION

National Park Service: First, the overall National Park Service management policies related to biodiversity conservation were studied to understand how the park service manages their conservation projects. The selected National Park Service partners were also studied to see how their focus supplements the National Park Service and understand where conservation management is occurring. Specifically, information concerning both the park service and their partners' goals, management policies, conservation efforts/projects, and reports was collected (Figure 3.3).

Intermountain Region Parks: Second, the national parks selected within the Intermountain Region (Glacier, Yellowstone, Grand Teton, and Rocky Mountain National Park) were specifically studied to understand how individual parks manage conservation. This was accomplished by studying their foundation documents and primary partnerships. The specific data gathered includes information about their goals, primary challenges, government funding, full-time employees, total acres managed, and

visitors. Conservation information found on their website, primary guiding documentation, and information about their partnerships were also gathered (Figure 3.3).

Parks Canada and Australia: Last, Parks Canada and Australia were studied to analyze their dedication to conservation management and biodiversity protection. The specific data that was collected includes their goals, conservation efforts/project reports, organizational charts, visitor data, volunteers, budget (% dedicated to conservation), employee departments (% dedicated to conservation), primary partnerships, and primary guiding documentation or policy related to conservation. Their goals were also compared to that of the United States National Park Service (Figure 3.3).

iv. PRODUCT

This section examines what information national parks are sharing between themselves and their partners about biodiversity conservation projects. Data were gathered and summarized with the methods from the public dissemination goals into a chart to be easily interpreted and show key findings, which are further discussed in the next chapter. These findings include data from the National Park Service and their partnerships, similarities

across the Intermountain Region parks, and what conservation efforts other national park organizations around the world are doing. After all the data were collected, this information was placed in a matrix showing elements found throughout the research process to identify commonalities in the data (Appendix F).

This section contributes to the final product mentioned in the (I) Outcomes section. The data contribute to documenting how the National Park Service is currently managing biodiversity conservation projects between parks and how that compares to other countries around the world. The resulting information contributes to the communication strategy for the park service to look at how to coordinate research efforts regionally.

The interpretation looks at how to coordinate, promote, and organize biodiversity conservation projects. A regional focus provides a more comprehensive look at strategies that are being applied in similar ecosystems or eco-regions, therefore allowing the information to be better understood by the National Park Service. This could lead to better conservation management across park boundaries in the United States, protecting biodiversity.

B. PUBLIC DISSEMINATION

i. PURPOSE

The purpose of this section is to figure out how the park service and their partners are currently communicating their biodiversity conservation projects and efforts to the public, how each park and their partners in the Intermountain Region communicate their individual park projects and efforts to the public, and how Parks Canada and Australia are communicating their conservation projects and efforts to the public. This involved studying each park's website as the primary tool of communication between the parks and visitors (Appendix C).

ii. SUPPORTING BACKGROUND

The need for better dissemination of information to the public can be found in *Chapter Two: Background* under (B) Challenges Facing National Parks (i) Communication. The specific websites examined to determine how information is publicly communicated include the following:

- National Park Service: nps.gov/index.htm (NPS); nationalparks.org/ (NPF); npca.org/ (NPCA); nps.gov/orgs/1778/index.htm (NRSS)

- Intermountain Region Parks: nps.gov/romo/index.htm; rmconservancy.org/ (Rocky Mountain); nps.gov/yell/index.htm; yellowstone.org/ (Yellowstone); nps.gov/grte/index.htm; gtnpf.org/ (Grand Teton); nps.gov/glac/index.htm; glacier.org/ (Glacier)
- Parks Canada and Australia: pc.gc.ca/en/pn-np (Canada); parksaustralia.gov.au/ (Australia)

iii. METHODS - DATA COLLECTION

National Park Service: First, the overall National Park Service website was studied to find information related to biodiversity conservation to understand how the park service disseminates their conservation information to the public. The National Park Foundation, the National Park Conservation Association, and the National Resource Stewardship and Science Directorate's websites were also studied to understand how their websites supplement the National Park Service and understand who is leading conservation efforts. Specifically, the data concerning both the park service and its partners' publishing efforts that were collected include the target audience, first impressions, primary message, the website headings, and accessibility of information related to biodiversity conservation (Figure 3.3).

Intermountain Region Parks: Second, the national parks selected within the Intermountain Region (Glacier, Yellowstone, Grand Teton, and Rocky Mountain National Park) were specifically studied to understand how the parks disseminate information about their individual conservation projects and efforts. This was accomplished by studying the parks' and their partner's websites as the primary communication tool. The specific data gathered includes information about their publishing efforts includes the target audience, first impressions, primary message of their front page, what the website headings are and how they compare to the other parks, and accessibility of information related to biodiversity conservation (Figure 3.3).

Parks Canada and Australia: Last, Parks Canada and Australia's websites were analyzed to understand how other countries display their biodiversity conservation projects and efforts to the public. The specific data collected about how their efforts are published includes the target audience, first impressions, primary message, the website headings, and accessibility of information related to biodiversity conservation. Their publishing efforts were also compared to that of the National Park Service (Figure 3.3).

iv. PRODUCT

This section examines how national parks are disseminating information about biodiversity conservation projects and efforts to the public. All the data was gathered and summarized with the methods from the park organization goals into a chart to be easily interpreted and show key findings, which are further discussed in the next chapter. These findings include data about how the National Park Service and their partnerships provide biodiversity conservation information to the public as a whole, how the Intermountain Region parks and their partners share conservation information at an individual scale, and how other parks around the world are sharing their conservation efforts and projects. After all the data were collected, this information was placed in a matrix showing common elements found throughout the research process to identify key themes and commonalities (Appendix F).

This section contributes to the final product mentioned in the (I) Outcomes section. This information contributes to documenting how the national parks are currently sharing their conservation projects and efforts with the public on their website and how that compares to other countries around the world. The resulting information contributes to the

communication strategy for the National Park Service to look at how to best document and disseminate their conservation efforts and strategies to the general public.

The public dissemination section looks at how to inform, advocate, and connect conservation projects to address the issues identified. Better

communication between the parks allows information to be better organized, therefore allowing the information to be better understood by the general public. This could lead to more visibility of the conservation projects that are currently happening in the United States, promoting more sponsorship and volunteerism from visitors.

DOCUMENT ANALYSIS SUMMARY

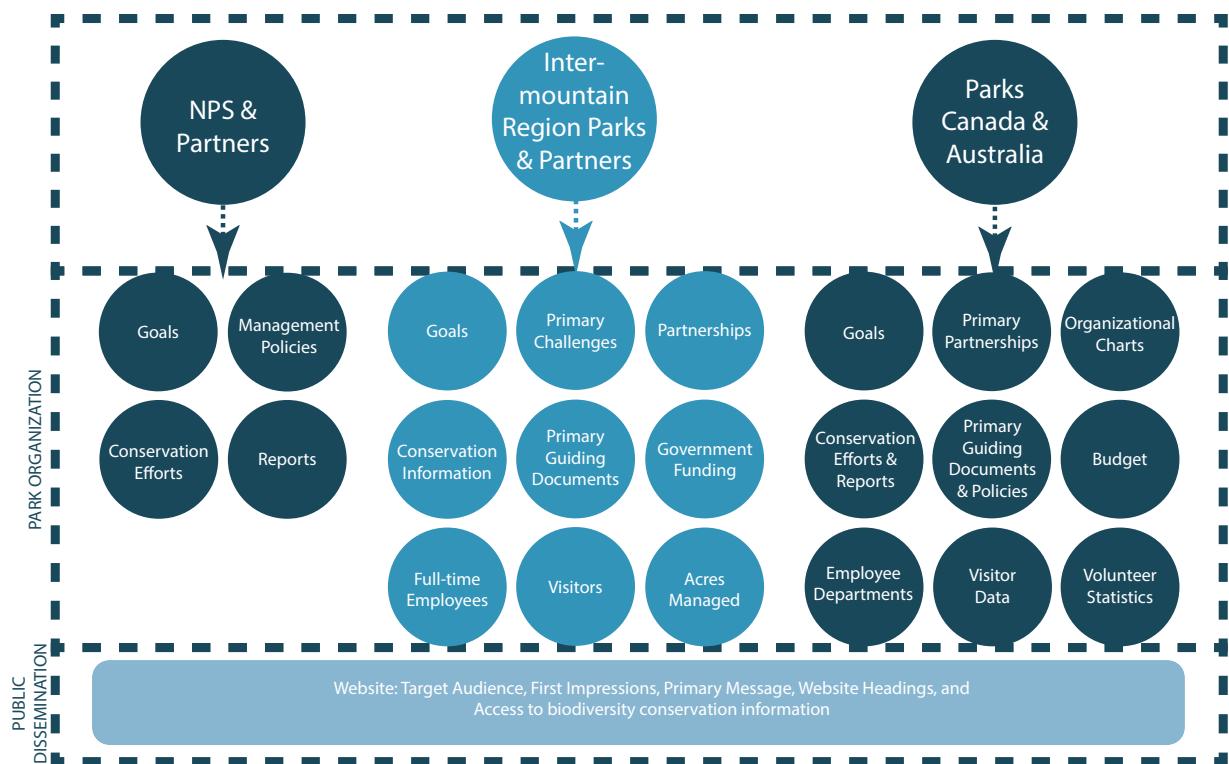


Figure 3.3. Document Analysis Data Collection Summary (Hollman 2019)

IV. INTERVIEWS

Conducted in tandem with the document analysis, national park staff were interviewed to better understand how the parks disseminate information to the public and what the communication is like between different national parks in the Intermountain Region. The focus of the interviews is on park staff to allow the findings to be directly related to the internal structure of the park service. The findings from the interviews were analyzed with the findings from the document analysis after all the data were collected to inform the proposed strategy. The interviews supplement the document

analysis and are divided here to clearly show how the questions achieve the goals of park organization and public dissemination. Since the research focuses on the Intermountain Region, a regional perspective was deemed appropriate, along with selected individual park staff who focus on conservation (Figure 3.4).

Interviewees:

ROMO: Chief of Resource Stewardship
GLAC: Chief of Planning and Environmental Compliance
NRSS regional and national level staff

REGIONAL STAFF

NRSS
DIRECTOR

NRSS
COORDINATOR

WILDLIFE
CONSERVATION
BRANCH CHIEF



PARK STAFF

ROCKY
MOUNTAIN

GLACIER

Figure 3.4. Interviewee Graphic (Hollman 2019)

A. PARK ORGANIZATION

i. PURPOSE

The purpose of this section is to determine how parks communicate with each other within the National Park Service and to determine the need for stronger regional communication between parks and their partners regarding biodiversity conservation. It is important to consider the attitude of the park service regarding biodiversity and provide a look at the existing communication structure from their perspective. It also was important to talk to them about the current structure of the park service, how the current administration has affected conservation projects in the parks, and to clarify the relationships between stakeholders the staff's perspective.

ii. SUPPORTING BACKGROUND

The need for better dissemination of information to the public can be found in *Chapter Two: Background* under (B) Challenges Facing National Parks (ii) Managing Across Park Boundaries. However, the entire background for the park service and each park is important to consider when interviewing the staff.

iii. METHODS

The interview questions were reviewed and approved by the Institutional Review Board

(IRB) at Kansas State University to ensure that responsible interview protocols were fulfilled (Appendix G). The interviews were conducted over the phone or by using Zoom conference call technology. Each interview lasted between 30 minutes to a little over an hour, and everyone was asked the same 15 questions. The specific questions that were asked to the National Park Service staff that address organization of the parks include the following:

1. Balancing tourism and biodiversity conservation is a stated goal of the National Park Service. In your experience, how is this accomplished?
2. When a conflict arises between tourism and biodiversity conservation, how is it typically resolved?
3. In your experience, do you see biodiversity conservation being a high enough priority compared to tourism management within the NPS?
4. What biodiversity conservation guidelines/standards currently exist for the NPS and how are the guidelines/standards applied in your park?

5. When parks are conducting biodiversity conservation projects, how are they documented?
6. How are biodiversity conservation projects, whether in terms of existence and research results, shared across parks?
7. In what ways do you think the documentation and communication of biodiversity conservation projects could be improved between the parks?
8. Are partners like the NPS' Natural Resource Stewardship and Science Directorate being used to communicate biodiversity conservation efforts on a regional basis? If so, how?
9. Who coordinates the financial and/or management efforts supporting biodiversity conservation projects between the NPS, conservancies, foundations and other partners? Do you see any emerging trends regarding this relationship?
10. Who decides how to prioritize biodiversity conservation projects related to education, preservation, scientific research, and maintenance?

iv. PRODUCT

These questions supplement the research done by the author to provide a perspective inside the National Park Service and to support the park organization outcomes of the study. This data contributes to the final product mentioned in the (I) Outcomes section. The interviews have been digitally recorded and summarized with the data stored on a password protected computer only accessible by the graduate student and primary investigator. Summaries of these interviews can be found in Appendix G.

B. PUBLIC DISSEMINATION

i. PURPOSE

The purpose of this section is to determine the need for better communication between the National Park Service and visitors on the park service website from a staff's perspective. It determined, from a professional's opinion, the attitudes of the park service and provided a behind the scenes look at what goes into the park website and how they prioritize information about biodiversity conservation.

ii. SUPPORTING BACKGROUND

The need for better dissemination of information to the public can be found in *Chapter Two: Background* under (B) Challenges Facing National Parks (i) Communication. However, the

entire background for the park service and each park is important to consider when interviewing the staff.

iii. METHODS

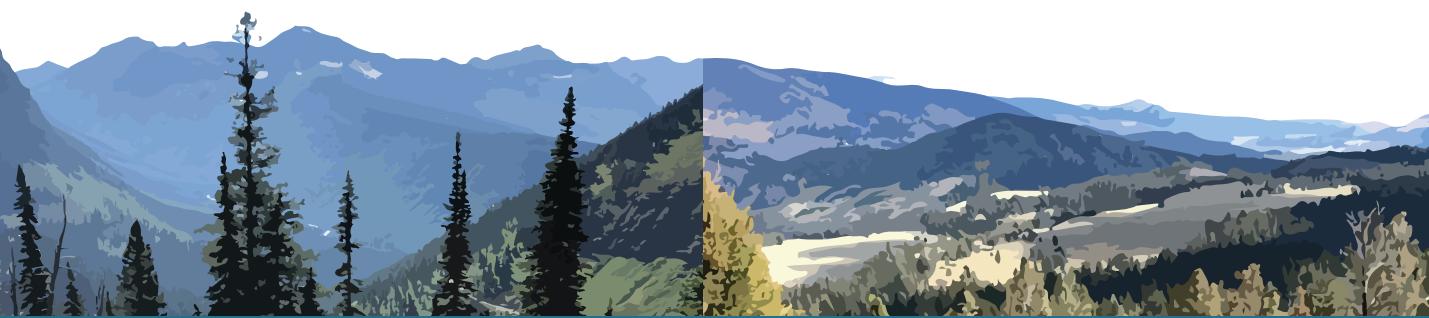
The interview questions were reviewed and approved by the Institutional Review Board (IRB) at Kansas State University to ensure that responsible interview protocols were fulfilled (Appendix G). The interviews were conducted over the phone or by using Zoom conference call technology. Each interview lasted between 30 minutes to a little over an hour, and everyone was asked the same 15 questions. The specific questions that were asked to the National Park Service staff to address public dissemination of biodiversity conservation include the following:

1. How do you make documented biodiversity conservation projects accessible/available online to the public?
2. In what ways do you think the documentation of biodiversity conservation projects could be better communicated or disseminated to the public?
3. Do you think the park service mission is adequately represented on the NPS website?

4. How does your park prioritize the information that is displayed on your website?
5. Do you think better communication about biodiversity conservation projects to the public can increase volunteerism? If so, would the overall benefit be worth the extra coordination effort? Does this depend on the scale of volunteerism or public support?

iv. PRODUCT

These questions supplement the research done by the author to provide a perspective inside the National Park Service and to support the public dissemination outcomes of the study. This data contributes to the final product mentioned in the (I) Outcomes section. The interviews have been digitally recorded and summarized with the data stored on a password protected computer only accessible by the graduate student and primary investigator. Summaries of these interviews can be found in Appendix G.



CHAPTER FOUR: FINDINGS



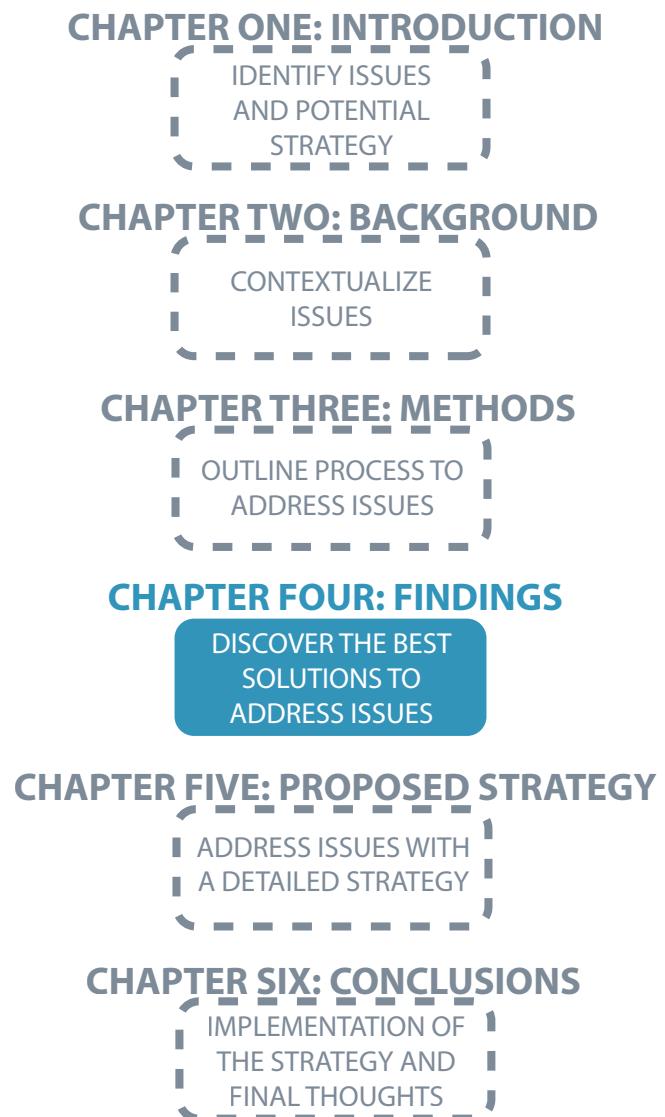


Figure 4.1. Project Organization Diagram (Hollman 2019)

I. FINDINGS

This chapter reports the findings associated with each previously described method in *Chapter Three: Methods* to best identify strategies which improve National Park Service communication between parks, their partners, and the public (Figure 4.1). Each section of the findings expands upon key ideas from the data collection that are used to inform the proposed strategy in *Chapter Five: Proposed Strategy*, which is the culmination of the research project.

I. DOCUMENT ANALYSIS SUMMARY

Three separate document analyses were conducted for this section. The following is the list of data collected for each analysis.

National Park Service:

- *Goals*
- *Management policies*
- *Conservation efforts/projects*
- *Reports*
- *Website analysis*

Intermountain Region parks:

- *Goals*
- *Primary challenges*
- *Government funding*
- *Full-time employees*
- *Total acres managed*
- *Visitors*
- *Conservation information*
- *Primary guiding documents*
- *Public/private partnerships*
- *Website analysis*

Parks Canada and Australia:

- *Goals*
- *Conservation efforts/project reports*
- *Organizational charts*
- *Visitor data*
- *Volunteer Statistics*
- *Budget (% dedicated to conservation)*

- *Employee departments (% dedicated to conservation)*
- *Primary guiding documentation/policy*
- *Primary partnerships*
- *Website analysis*

This section ends with the key findings from the analysis to discuss how they are relevant to *Chapter Five: Proposed Strategy*.

A. NATIONAL PARK SERVICE

The organizations studied in this section are the National Park Service (NPS), the National Resource Stewardship and Science Directorate (NRSS), the National Park Service Foundation (NPF), and the National Park Service Conservation Association (NPCA). The NRSS is technically a division of the NPS, but they have their own separate page on the NPS website. So, even though they are not an official partner, they were included in this list because they specifically focus on science in the parks and how that information is documented and shared with the public (National Park Service 2019i).

The NPF is included in this list because they are the official nonprofit partner of the NPS documented on the park service website partners list (National Park Service 2017d). The NPCA is also a partner listed on the park service website, but it is not specifically called out on the official National Park Service Partner page (National Park Service 2017d). The NPCA was included in this list because they have worked with the park service for over one-hundred years and they specifically focus on conservation (see Appendix F for the full list of findings).

i. GOALS

The goal of the NPS is to protect natural resources in their parks for future generations. All the goals analyzed here mention preserving the national parks for future generations, but the NPF and NPCA emphasize supporting the parks financially (National Park Foundation 2020c; National Parks Conservation Association 2020b). The NPF also states one of its goals is to build partnerships for the parks (National Park Foundation 2020c). The NRSS emphasizes how it supports the parks through research and education (National Park Service 2019i). So, while all the partners support the main goal, each one focuses on a different aspect of what that support looks like (Figure 4.2).

ii. MANAGEMENT POLICIES

The NPS uses the *Management Policies 2006* document as its primary guiding document, but the NPS also is guided by federal laws such as the Organic Act of 1916 and the Endangered Species Act of 1973 that protect natural resources in the parks (National Park Service 2019a). The NRSS, while part of the NPS, has specific standards set in place for managing the scientific data gathered in the parks and prioritizes “accuracy, security, longevity, and accessibility (National Park Service 2019i).”

This ensures quality data for both the public and

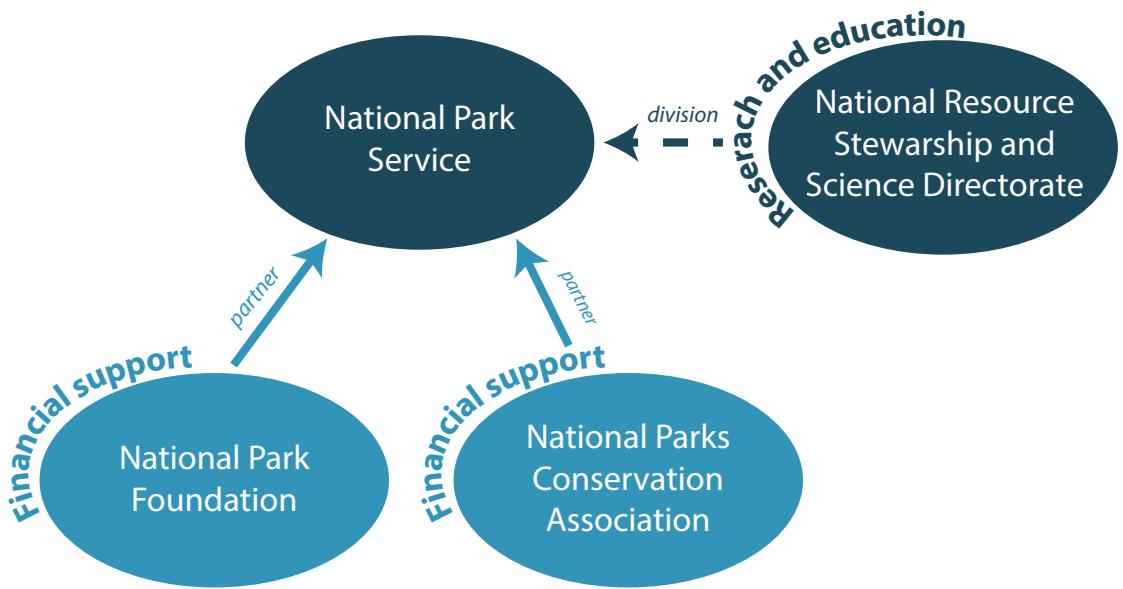


Figure 4.2. NPS Partnership Graphic (Hollman 2019)

the park service. The four pillars of the NRSS are: holding the line, managing amid continuous change, leveraging for conservation at scale, and enhancing stewardship and science access and engagement (National Resource Advisory Group 2016). The NRSS has more of a regional focus than any of the other guidelines stated here as they emphasize a focus on scale.

The NPF and NPCA have guiding plans and strategies that they follow more than federally mandated laws and regulations. The NPF has its own strategic plan that focuses on “a commitment to stewardship, a model for success, and a call to action (National Park Foundation 2018).” They are guided by the principles of “stewardship, strategy, impact,

common ground, partnership, innovation, diversity, and future orientation (National Park Foundation 2018)." They also mention their fundraising goals and strategic framework centered around "protecting, connecting and engaging (National Park Foundation 2018)." While the NPCA does not have a strategic plan, they state on their website that they are guided by their four core values of commitment, inclusion, integrity, and respect to "promote a diverse, ethical, and innovative culture (National Parks Conservation Association 2020d)." They are "committed to fostering a workplace of excellence to achieve our mission to protect and enhance national parks (National Parks Conservation Association 2020d)." Overall, the organizations focus on park stewardship.

iii. CONSERVATION EFFORTS/PROJECTS

The parks and their partners provide information about biodiversity conservation in different ways. If biodiversity conservation is searched on the NPS website, a list called "Conservation Accomplishments from 2017-2018" comes up (National Park Service 2018a). However, no other records or connected documents come up in this search. The NPS also sponsors a program called Citizen Science which is an initiative to help get visitors involved with research in the

parks (National Parks Service 2018b). The Citizen Science page does have a list of specific biodiversity projects and ways for volunteers to get involved, but there is not a way to search for specific projects (National Parks Service 2018b).

On the Biological Resources Division page, the NRSS states that their research focuses on biodiversity in parks, invasive species, and pollinators, but no specific list of projects is provided (National Park Service 2019b). The NRSS also has a map where they display what they monitor by specific regions, but there is also not a list of specific projects (National Park Service 2019d). If visitors or the park staff want to find specific projects, they can search through the Integrated Resource Management Applications (IRMA) Portal, but it is not a very user-friendly database and there are thousands of reports to sort through.

The NPF and NPCA both have places on their website home pages where conservation projects can be found, making them more easily accessible than the NPS website. The NPF lists their projects under "Programs, Campaigns & Initiatives, and Featured Work" which includes "Strong Parks, Strong Communities, Open Outdoors for Kids, Find

Your Park, Rivers & Trails 50th Anniversary, Active Trails, Every Kid Outdoors (National Park Foundation 2020d)." However, it is not immediately clear how to find projects related to biodiversity conservation under these headings.

The NPCA also categorizes their projects by type and, in contrast to the NPF, there are several sections that relate to biodiversity conservation. Their projects are categorized under "Defending Wildlife, Telling the American Story, Restoring our Waters, Preserving Natural Sounds + Nigh Skies, Protecting Natural Wonders, Bringing Parks & People Together, Educating and Inspiring Park Visitors, Strengthening the National Park System, Clearing the Air, Preserving Antiquity, Rising to the Challenge, and Raising All Voices (National Parks Association 2020a)." The difference between the NPS and its partners is that the NPF and NPCA make it more clear on their website where to find their projects and they have searchable lists that people can review.

iv. REPORTS

Park staff were contacted to figure out where each park stored their information and each staff member provided different resources. The primary source that the NPS uses to store their research reports is the Research Permit

and Reporting System (RPRS) under IRMA (National Parks Service 2020b). This database stores research permits from anyone who uses the Inventory and Monitoring Network under the NRSS (National Park Service 2020b). The *Park Science* journal for the NPS also stores reports related to conservation but there is no a way to search through all the categories without clicking on each one and looking through the lists (National Park Service 2018d). There also does not appear to be any kind of summary report, yearly or otherwise.

Another database the NPS uses is Planning Environment and Public Comment (PEPC) that stores current project documents available for public comment which is linked to the planning heading of the NPS website (National Park Service 2020c). Here, documents can be searched by park or history of completed projects. Another place on the NPS website information can be found is on the "Explore Biodiversity Page" which gives access to a network that lists different wildlife and vegetation in each park and provides a link to the park website, but again does not link specific projects (National Park Service 2019c). The NRSS also has two major publications where they report data outside of IRMA, their Natural Resource Report series and Natural

Resource Data series (National Park Service 2019k). Here reports can be sorted by year, but there is no way to search through them or find reports under a topic section. Within the NPS and NRSS websites, there seems to be no way to search through their reports efficiently or to see any type of overall summary.

The NPF and NPCA have different ways of reporting their information from the NPS and NRSS. Because they are not part of a government agency, they are not held to the same standards of data collection as the NPS or NRSS. Both the NPF and the NPCA utilize their yearly financial reports to show how donations are spent in the park and how they are accomplishing their goals (National Park Foundation 2020a; National Parks Conservation Association 2020c). The NPCA also produces a field report each year for each region of the NPS that reviews their contributions by the numbers and includes their vision, leadership accomplishments, timeline, and work on protecting the future of the parks (National Parks Conservation Association 2019). In addition to their yearly reviews, the NPCA also has a book that just came out titled, “A Century of Impact” that highlights their projects and accomplishments over the past decade (McCarthy et. al 2019). Both the NPF and the

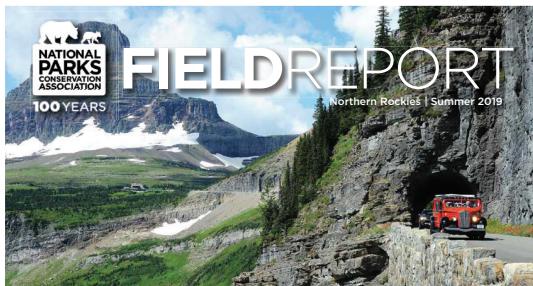
NPCA have a clear way of communicating their contributions to the NPS with the public in a graphically clear format (Figures 4.3-4.4).

v. WEBSITE ANALYSIS

The NPS and its partner’s websites were examined for ease of navigation and how information is communicated to the public (Appendix C).

a.Target Audience: The NPS in general seems to target family travelers, while the other websites are more geared towards adult travelers (National Park Service 2020a; National Park Foundation 2020b; National Parks Conservation Association 2020b). This was determined by seeing what pictures of people were being used to promote the website (Appendix C). The NRSS seems especially adult oriented because of the more complex language that is being used on their part of the NPS website (National Park Service 2019l).

The NPF and NPCA also target donors as evidenced by their pop-ups that ask for donations or the big highlighted button at the top of their websites



A CENTURY OF WORK Protecting Our Parks, Connecting Our Future

"There's an old saying that 'If you don't watch where you're going, then you'll end up where you're headed.'

And generally, when it comes to the highway system, that means driving down a one-way street toward more people, more pavement, more pollution and a whole lot less nature. But sometimes it's when's the last time you heard about a park that you're compelled to make room for more open space?

That's why, for 100 years now, NPCA has diligently watched where we're going, where we're headed, and where we all too often seem to be headed. In fact, that's one of the many things that drew me to NPCA, the organization founded on May 19, 1919.

Back then, we were protecting established parks as bandages across the wounds left by the Industrial Revolution—logging, poaching and generally commodifying nature for every front. We put protective borders around them, but there was no room for more open space.

A century later, we're connecting: linking parks and protected areas with the major rivers and trails that will need to survive the coming century. We wasn't

continued on page 6

IT TAKES A VISION Inspiring Generations of Park Protectors

In the heat of August 1924, three men sat near the scenic saddle of Logan Pass, high in the alpine wilds of Glacier National Park. They were there to settle an argument that would define once and for all the look of America's national parks.

The veteran road engineer imagined a route to the pass that tracked up 15 switchbacks, a steep and deep into rocky terrain.

The park superintendent was dismayed, saying it would "look like miners had been here." He wanted a lighter touch, a single switchback with the rest of the road dedicated to the park's soaring Garden Wall.

To expensive, the engineer countered.

Two days later, Mather made his decision: efficiency be damned. A park as we Glacier

should not be marred by an unsightly road.

It was the first time that a design aesthetic had overruled the park's practicality, and it changed forever the way the National Park Service thinks about highways. No longer were roads simple backbones with the rest of the park built on them; instead, they had to stand on their own.

Vision is a particularly powerful word, and visionaries such as Mather are powerful people. The term conjures an image of a person who can see what is supplied with intuition and sage judgment. At its human best, vision is hope and imagination and the kind of something better that we are today.

Of course, vision without action is just a dream. The real work is in the doing.

continued on page 3

Top: Historic red bus takes visitors on Glacier's Going to the Sun Road | Phil Hennawy | Alamy
Above: Stephen Mather, first director of the National Park Service | Library of Congress Archives

It Takes A Vision: Inspiring Generations of Park Protectors

continued from page one

At the time Mather was laying plans to designate Glacier as a national park, he and his friend and fellow park-pioneer Horace Albright were the power behind the scenes at the Tetons. Two world-class granite summits and an American Serengeti of wildlife, who could resist the Tetons?

Quite a number of folks it as turned out, including cattle ranchers and developers, and even the U.S. Forest Service. For a time, the Tetons were the subject of a buzz seen of vested local interests, all the while gathering around him a committed group of activists who believed they could protect 96,000 acres, but mostly was still left to the speculators and profiteers.

John D. Rockefeller, Jr.—an inventive and prescient thinker if ever there was one—sparked a 20-year firestorm when he began

quietly buying land for his dream of an expanded park. He persisted despite the National Park Service's opposition. The Tetons, but Bill Mott, director of the National Park Service, was won over.

Mott was inspired by his vision. He was a true salesperson, presenting on Capitol Hill business cases and pressuring the president from coast to coast. In 1938, an annual meeting of park superintendents, he brought out a badge with the logo, "We Have It." After an anti-wolf speaker left the stage, Mott killed the lights and the superintendents turned to the wolf at the bottom—the room glowed with piercing yellow eyes.

The work of restoring species, such as wolves, that make national parks unique and irreplaceable is far from over and not finished. But in 1995 the first wild wolves were released into Yellowstone, establishing a population that has since grown to the whole of the Greater Yellowstone Ecosystem.

Leopold, who died in 1948, would be pleased to know that the drive and ideas to better

Leopold died before wolves again roamed Yellowstone, but Bill Mott, director of the National Park Service, was won over.

Leopold's vision was not the only one that was inspired by his vision. Mott was a true salesperson, presenting on Capitol Hill business cases and pressuring the president from coast to coast.

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FIELD REPORT

NEW FACES, OLD FRIENDS Northern Rockies Welcomes New Leadership

NPCA is fortunate to have new friends to be our new leaders here in the Northern Rockies.

Betsy Buffington

REGIONAL DIRECTOR

buffington@npca.org • (406) 577-2447

Kati Schmidt

ASSOCIATE DIRECTOR OF COMMUNICATIONS

kschmidt@npca.org • (406) 250-2540

Natalie Levine

GOVERNMENT AFFAIRS

nlevine@npca.org • (202) 454-3326

Glacier Field Office

Michael Johnson

SENIOR PROGRAM MANAGER

mjohnson@npca.org • (406) 250-2540

Sarah Lundstrum

PROGRAM MANAGER

slundstrum@npca.org • (406) 250-2546

Grand Teton Field Office

Sharon Mader

SENIOR PROGRAM MANAGER

smader@npca.org • (307) 733-4680

Yellowstone Field Office

Stephanie Adams

ASSOCIATE DIRECTOR

sadams@npca.org • (202) 454-8661

Dan Bailey

PROGRAM MANAGER

dbaily@npca.org • (406) 224-8661

Kelsie Dougherty

YOLVENSEAU GREATER YELLOWSTONE

PROGRAM MANAGER

kdoyley@npca.org • (406) 970-0734

Newsletter Design by KelleyAlbertDesign.com



The wilderness, society, and the recently Conservation Lands Foundation, where she created and led an integrated campaign for grassroots leaders and more than 60 non-profit organizations to protect and expand the Northern Conservation Lands.

Betsy worked with NPCA's Washington, DC, staff for the last several years to increase the dynamism and creative team that so effectively and passionately defends our national parks.

Betsy lives in Bozeman, Montana, and spends her free time exploring the Northern Rockies and beyond.

Above: Northern Rockies Regional Director, Betsy Buffington © Betsy Buffington

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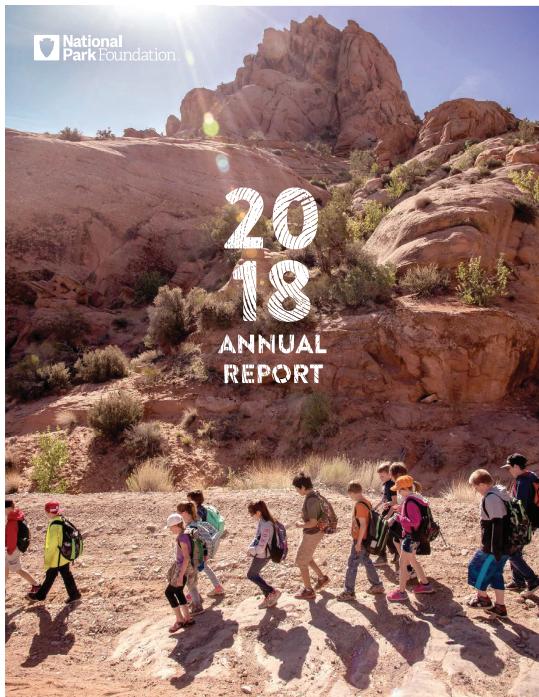
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OUR WORK

More than a century ago, ordinary citizens joined together to protect America's extraordinary natural and cultural treasures from encroaching threats. They understood these wonders had to be set aside and preserved for current and future generations. This radical idea, supported by private philanthropy, propelled the creation of the National Park System.

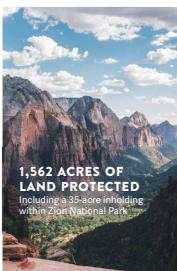
Since our inception in 1967, the National Park Foundation has proudly carried forth the revolutionary legacy of conservation and private philanthropy. Our focus on building strategic partnerships and growing the community of national park champions enables us to make transformative investments in priority projects in parks and programs across the country.

As the official nonprofit partner of the National Park Service, we remain resolute in our work to help protect these remarkable treasures and create the next generation of park stewards. Our unwavering commitment to our partnership ensures this cause will remain relevant and championed for all time.



PRESERVING OUR PAST

Private support and strategic partnerships enable us to safeguard our national treasures by making critical investments in successful conservation, preservation, and restoration initiatives.



► PROTECTED national parks by removing 185 acres of invasive plants and 83 tons of trash, reviving 70 acres of native habitat, and restoring 11 miles of waterways

► GRANTED \$50,000 to San Juan National Historic Site for disaster response equipment through the National Park Foundation Disaster Relief Fund



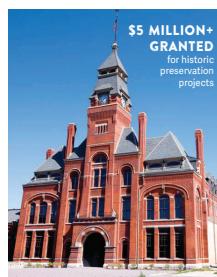
CELEBRATED THE RIVERS & TRAILS 50TH ANNIVERSARY



Provided 90 educational experiences supported by \$600,000 in funding



Engaged 4,000 participants at 25 river and trail sites



\$5 MILLION+ GRANTED for historic preservation projects

► SUPPORTED restoration of 22 historic structures including the Clock Tower at Pullman National Monument and the train depot at Grand Canyon National Park

► FUNDED accessibility improvements at four national parks, including the installation of signage, handrails, and fencing, rebuilding steps, and removing path safety hazards



Collected and analyzed 70,200 samples of water and soil



Gave 28 free kayak tours at Redwood National and State Parks



Figure 4.4. National Park Foundation 2018 Annual Report Sample Pages (National Park Foundation 2020a)

labeled “donate” or “support (National Park Foundation 2020b; National Parks Conservation Association 2020b).”

The target audience aligns with the mission statements of each different organization, but there is room to broaden the scope to include a larger variety of people.

- b. First Impressions:* The NPS homepage is not focused on one topic so it is hard to know where to look first. There is also nothing that is immediately apparent on the website related to conservation. The website seems more oriented towards tourism or very specific activities going on in the parks, although if viewers dig enough, they can find more information about conservation in the parks (National Park Service 2020a). On the NRSS webpage, there are several categories to explore so it can be overwhelming. It is unclear where to exactly look for information related to conservation because there seems to be no clear hierarchy of information (National Park Service 2019l). From a first glance, the NPS and NRSS webpages seem hard to navigate and it is unclear where

information related to biodiversity conservation could be easily found.

While the NPS, NPF, and NPCA focus on some aspect on tourism, the NPF and NPCA also heavily emphasize donating or supporting projects. On the NPF website, there is definitely an emphasis on support, however, the main donation portal just leads to a page where general donations can be made instead of directly supporting an activity, although there is an option to donate in memorium (National Park Foundation 2020b). The NPF website is also very dynamic and graphically pleasing, using a uniform color scheme and eye catching photographs (Appendix C). When navigating to the NPCA website, a sign up message appears to become a part of their newsletter and viewers have to exit out of it to access the home page (National Parks Conservation Association 2020b). It seems like the NPCA focuses on providing news on their webpage, but they also highlight their donate button at the top of the page.

c. Primary message: The NPS, NPCA, and NRSS all are very informative in their language on their websites by describing what they do and displaying certain activities that are going on in the parks (National Park Service 2020a, 2019l; National Parks Conservation Association 2020b). However, the NPS website focuses more on visit planning, and the NRSS focuses more on education (National Park Service 2020a, 2019l). The NPF and NPCA also both focus on procuring donations by encouraging visitors to give back to the parks (Figure 4.5) (National Park Foundation 2020b; National Parks Conservation Association 2020b).

	Informative	Visit Planning	Education	Donations
NPS	Dark Blue	Dark Blue	Light Blue	Light Blue
NRSS	Dark Blue	Light Blue	Dark Blue	Light Blue
NPF	Light Blue	Light Blue	Light Blue	Dark Blue
NPCF	Dark Blue	Light Blue	Light Blue	Dark Blue

Figure 4.5. NPS and Partners Primary Message Comparison
(Holloman 2019)

d. Website headings: The NPS has three main headings on its website: “Plan Your Visit, Learn & Explore, and Get Involved (National Park Service 2020a).” The NRSS has four main headings: “Home, What We Do, News, and Events (National Park Service 2019l).” The NPF has five main headings: “About the Foundation, Our Work, Explore Parks, Connect, and Support (National Park Foundation 2020b).” The NPCA has six main headings: “News & Resources, Issues, Parks, Our Impact, Get Involved, Give, and Donate (National Parks Conservation 2020b).” The NPS has the least number of headings and the NPCA has the most out of the websites studied. The NPF and NPCA make it clearer where to find information about their projects on their websites than the NPS and NRSS with the respective headings, “What We Do, Explore Parks, Issues, and Our Impact.”

e. Accessibility of biodiversity conservation information: Appendix D shows the website paths for each website studied and what headings lead to information. The NPS has 15 locations that contain

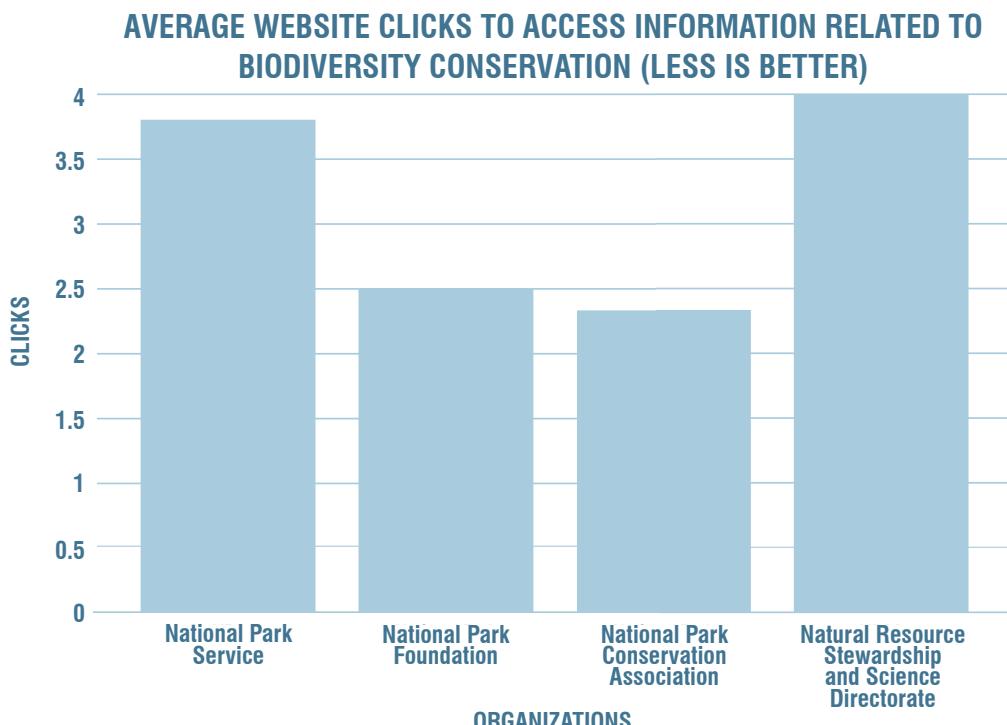


Figure 4.6. NPS and Partners' Average Website Clicks (Hollman 2019)

information related to conservation on their website with an average of 3.8 clicks to get through the different headings (National Park Service 2020a). The NRSS has three primary locations and it takes an average of 4 clicks to get through the website to find the related information (National Park Service 2019l).

The NPF has two primary locations where information can be found that take an average of 2.5 clicks to get to the relevant information (National Park Foundation 2020b). The NPCA has three locations where relevant

conservation information can be found that take an average of 2.33 clicks to gain access (National Parks Conservation 2020b). The NPS has a lot of information related to biodiversity conservation, but it is harder to find because it is more spread out than the other websites. Additionally, it takes almost twice as many clicks to navigate both the NPS and NRSS' websites compared to the NPF and NPCA's websites, making it even more tedious to click through to find information related to biodiversity conservation (Figure 4.6).

B. INTERMOUNTAIN REGION PARKS

Information in this section relates to the Intermountain Region parks selected for this study: Glacier, Yellowstone, Grand Teton, and Rocky Mountain parks. This section also compares each park's website to their primary partners to see the difference in how they communicate information to the public. The partners studied include: Glacier National Park Conservancy, Yellowstone Forever, Grand Teton Park Foundation, and Rocky Mountain Conservancy (see Appendix F for the full list of findings).

i. GOALS

The goals for each park stated in their foundation documents further articulate the goals of the National Park Service (National Park Service 2017b, 2017e, 2017c, 2013). Glacier states their goal is to preserve their scenic glacially carved landscape, Yellowstone's goal is to protect their geothermal wonders, Grand Teton wants to preserve the scenery of the Teton Range and Jackson Hole Valley, and Rocky Mountain focuses on preserving the southern Rocky Mountain character of its landscape (National Park Service 2017b, 2017e, 2017c, 2013). All the goals for the parks talk about preserving their local natural resources, wildlife and culture that

makes the park special for the public and future generations (National Park Service 2017b, 2017e, 2017c, 2013).

ii. PRIMARY CHALLENGES

While the parks have some issues in common, each park also has their own unique challenges (Figure 4.7). Glacier is facing issues with energy development and nearby land management (National Park Service 2017b). Yellowstone is dealing with protection of natural and cultural resources and visitor experience (National Park Service 2017e). Grand Teton is facing challenges with NPS business and workforce management and Rocky Mountain is facing issues with transportation and backcountry data and understanding (National Park Service 2017c, 2013).

Yellowstone and Grand Teton are both facing issues with infrastructure sustainability (National Park Service 2017e, 2013). Glacier, Grand Teton, and Rocky Mountain state climate change and visitation as some of the primary challenges they face in their foundation documents (National Park Service 2017b, 2017c, 2013). All the parks mention issues dealing with managing natural resources and visitors (National Park Service 2017b, 2017e, 2017c, 2013).

iii. GOVERNMENT FUNDING

Specific allocations for each park can be found in the *Budget Justifications and Performance Information* report the United States Department of the Interior (DOI) produces each year for the National Park Service (The United States Department of the Interior 2019). In the 2019 budget, the government allocated \$13.5 million to Glacier, \$34.4 million to Yellowstone, \$12.2 million to Grand Teton, and \$12.4 million to Rocky Mountain (The United States Department of the Interior 2019). Yellowstone receives the

most money from the DOI while the rest of the parks receive about the same amount. This makes sense because Yellowstone has nearly twice the number of employees and acreage than the other parks (Figure 4.8). Yellowstone, however, is the only park to provide budget information on their website with an allocation breakdown, with 9% going towards resource stewardship and the rest going towards park support, facility operations and maintenance, park protection, and visitor services (National Park Service 2019s).

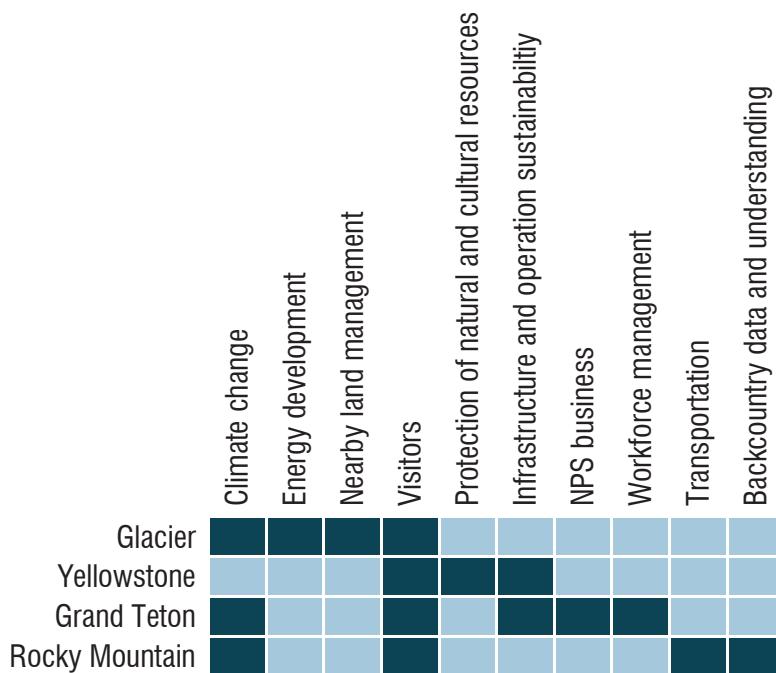


Figure 4.7. Intermountain Region Parks Primary Challenges Overlap (Hollman 2019)

iv. EMPLOYEES

The number of full-time employees for each park can also be found in the *Budget Justifications and Performance Information* report from the DOI (The United States Department of the Interior 2019). Glacier has 269 full-time employees, Yellowstone has 518 full-time employees, Grand Teton has 231 full-time employees, and Rocky Mountain has 239 full-time employees (The United States Department of the Interior 2019). Yellowstone has nearly twice as many employees than the other parks although the other numbers stay relatively the same, similarly to the parks budget (Figure 4.8).

v. TOTAL GROSS ACRES MANAGED

The total acres managed by each park can also be found in the *Budget Justifications and Performance Information* report from the DOI (The United States Department of the Interior 2019). Glacier manages 1,013,126 acres, Yellowstone manages 2,219,790 acres, Grand Teton manages 310,044 acres, and Rocky Mountain manages 265,807 acres (The United States Department of the Interior 2019). Yellowstone has twice the acreage that Glacier does, and Glacier has more than twice the acreage that Grand Teton and Rocky Mountain do. Glacier might receive the same amount of funding and staff as Grand Teton and Rocky Mountain due to the concentration of park resources and staff on the Going-to-the-

	Government funding (\$M)	# of Employees	Total Gross Acres	# of Visitors (per year)	Webpages Connected to Conservation
Glacier	\$13.5m	269	1,013,126	3 mil	5
Yellowstone	\$34.4m	518	2,219,791	4 mil	11
Grand Teton	\$12.2m	231	310,044	3.5 mil	5
Rocky Mountain	\$12.4m	239	265,807	4.5 mil	10

Figure 4.8. Intermountain Region Parks Comparison Graphic (Hollman 2019)

Sun Road (Figure 4.8) (National Park Service 2017b).

vi. VISITORS

Each park reports visitor statistics on their individual websites. Glacier receives about 3 million visitors per year, Yellowstone receives about 4 million, Grand Teton receives about 3.5 million, and Rocky Mountain receives about 4.5 million (National Park Service 2017a, 2019s, 2019f, 2019o). The parks average out on the higher end of park visitors per year, making up about 5% of total park visitors (National Park Service 2019a). Glacier gets the least amount of visitors of the parks studied here and Rocky Mountain gets the most visitors (Figure 4.8). This could possibly be attributed to the location of the parks in the United States.

vii. CONSERVATION INFORMATION

Not all parks issue reports that list biodiversity conservation information to compare, so this section only looks at what was directly available on their websites from headings without doing a search (see Appendix D). Only the information that was directly off the headings were included to follow the intended site path of the park websites. All the parks have information about their current planning projects and some type of news release that has access to general

information (National Park Service 2019g, 2020d, 2019e, 2019n)."

Glacier, Yellowstone, and Rocky Mountain parks highlight the Citizen Science program off their main headings (National Park Service 2019g, 2020d, 2019n). Yellowstone, Grand Teton, and Rocky Mountain parks highlight a vital signs report (National Park Service 2020d, 2019e, 2019n). Glacier and Rocky Mountain parks highlight projects from their research learning centers (National Park Service 2019g, 2019n). While Glacier is the only park that highlights the "Climate Friendly Parks Initiative," Grand Teton and Rocky Mountain parks do have sections highlighting environmental monitoring/factors (National Park Service 2019g, 2019e, 2019n). Yellowstone and Rocky Mountain parks also both highlight species specific management plans (National Park Service 2019d, 2019n). Because the parks are in the same region, it makes sense that they have overlapping website headings (Figure 4.8).

While the parks do have some sections in common, they also each have their own park specific information available on their websites. The parks vary on what information they offer the public related to conservation because each park customizes what information they

want to display. Yellowstone park has the most information on their website related to biodiversity conservation and they uniquely highlight strategic priorities. Wildlife and science publications, like the *Yellowstone Science Journal* and Yellowstone Reports directly feature biodiversity conservation (National Park Service 2019d). Rocky Mountain is the only park to highlight an invasive exotic species management plan and Grand Teton is the only park to highlight multi-use pathway research (National Park Service 2019n, 2019e). These headings are all park specific, so it makes sense that not every park has these. While there seems to be no direct correlation between conservation and other metrics between the parks, Yellowstone and Rocky Mountain have the most information available and they are the top visited parks that were studied (Figure 4.8).

viii. PRIMARY GUIDING DOCUMENTATION

The parks' guiding documentation are their foundation documents, which are based on the *Management Policies 2006* document (National Park Service 2006). Each of these documents contain information about specific park goals, ecosystems, and challenges (National Park Service 2017e). The goals section specifically highlights the significance of the park (or why

an area is important within a global, national, regional, and systemwide context), fundamental resources and values (merit primary consideration during planning and management processes), and interpretive themes (key stories or concepts visitors should understand after visiting the park) (National Park Service 2017e). The parks' specific goals, ecosystems, and challenges are discussed in *Chapter Two: Background*.

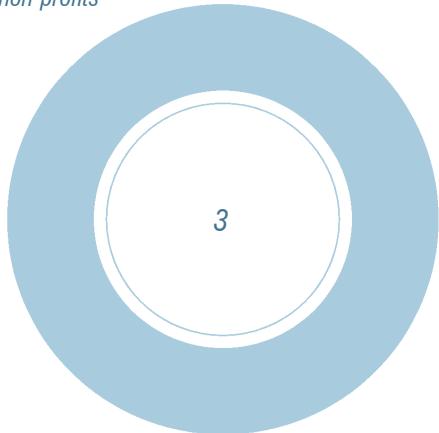
ix. PRIMARY PARTNERSHIPS

This section lists the primary partnerships on each park's website. While other partnerships may exist, only the ones that were highlighted on the official partner page were included for this study (Appendix D). The park partnerships were categorized by type to include indigenous organizations and communities, researchers and academia, business, government, non-profits, and philanthropy (Figure 4.26).

Some parks have more partnerships listed than others, and each park has a different makeup of partner sectors (Figure 4.9-4.12). Glacier only has non-profits listed, Yellowstone mostly has businesses listed, Grand Teton mostly has nonprofits listed, and Rocky Mountain has mostly government agencies listed (National Park Service 2019h, 2016b, 2018c, 2015b).

GLACIER PARTNERSHIPS

3 non-profits



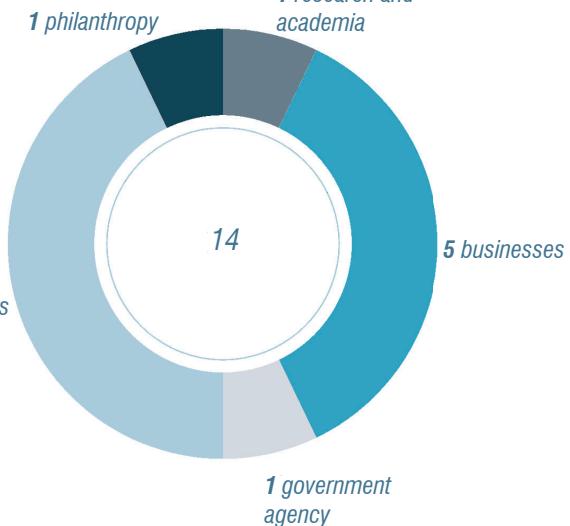
GRAND TETON PARTNERSHIPS

1 philanthropy

1 research and academia

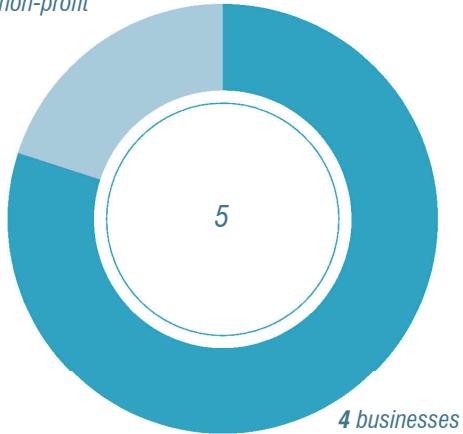
5 businesses

6 non-profits



YELLOWSTONE PARTNERSHIPS

1 non-profit



ROCKY MOUNTAIN PARTNERSHIPS

1 non-profit

1 research and academia

4

2 government agencies

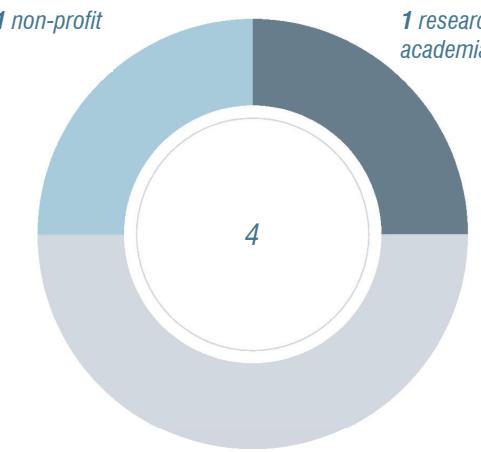


Figure 4.9-4.12. Primary Park Partnership Graphics: The above charts show the percentages of the partnerships highlighted by each of the parks. While other partnerships certainly exist these are the ones that are specifically mentioned on the partner page of each park's website (Hollman 2019).

Grand Teton and Rocky Mountain are the only parks to have researchers and academia, and governments (international, state, and federal) on their list, whereas Grand Teton and Yellowstone are the only parks to list business partners (National Park Service 2016b, 2018c, 2015b). Every park had at least one non-profit partner listed, but none of the parks had an indigenous organization or community listed (National Park Service 2019h, 2016b, 2018c, 2015b). There is some room for improvement to expand to other partnership sectors, or at least to highlight them on their website.

x. WEBSITE ANALYSIS

The Intermountain Region Parks and their partner's websites were examined for navigation ease and how information is communicated to the public (Appendix C).

a. Target Audience: The Intermountain

Region Park websites are geared more towards family travelers, while the partner websites are geared more towards donors or volunteers (National Park Service 2019g, 2020d, 2019e, 2019n; Glacier National Park Conservancy 2020; Yellowstone Forever 2020; Grand Teton National Park Foundation 2020; Rocky

Mountain Conservancy 2020). This was determined from website page headings. Yellowstone Forever, the Grand Teton National Park Foundation, and the Rocky Mountain Conservancy also were advertising park visitation on their home page in addition to raising financial support (Yellowstone Forever 2020; Grand Teton National Park Foundation 2020; Rocky Mountain Conservancy 2020). The target audience aligns with the purpose of the partners to support the parks and make the parks available to the public.

b. First Impressions: This section examines the homepage of each website to see what information immediately stands out to the viewer. Not surprisingly, the park websites are more focused on providing information to visitors, and the partner websites are more focused on securing financial support and getting visitors involved (National Park Service 2019g, 2020d, 2019e, 2019n; Glacier National Park Conservancy 2020; Yellowstone Forever 2020; Grand Teton National Park Foundation 2020; Rocky Mountain Conservancy 2020). The partner websites also

tend to be more graphically pleasing and easier to navigate than the park websites and have more information on them in general (Appendix C).

Glacier's website homepage is focused on providing information to tourists for the current season and trip planning (Appendix C). However, there is no readily apparent information regarding biodiversity conservation (National Park Service 2019g). Glacier National Park Conservancy, on the other hand, places an emphasis on donating to the parks and protecting Glacier in big bold letters at the top of their homepage (Glacier National Park Conservancy 2020). A visitor can donate, shop on their online store, or look through their list of projects (Appendix C). However, a visitor cannot directly donate to a specific project and they are not prioritized in any order on the page. There is a "2020 Project Funding Guide" for projects they are currently working on (separate PDF), but again no link to donate to specific projects (Figure 4.13) (Glacier National Park Conservancy 2020).

Yellowstone's website provides a fairly good overview of natural features and tourism on their homepage but offers nothing specific or immediately apparent about conservation efforts (Appendix C) (National Park Service 2020d). When navigating Yellowstone Forever's website, a pop-up to donate appears when a viewer first enters the site (Yellowstone Forever 2020). Their website seems to be more focused on the overall experience than just donating money, and they offer several different ways to get involved. (Appendix C). Yellowstone Forever also provides links to their own shop and presents several different ways to donate online to current prioritized projects shown in this list (Yellowstone Forever 2020). They also have a link to a summary document of all their park projects from 2018 on their website (Figure 4.14) (Yellowstone Forever 2020).

Grand Teton's homepage is mostly focused on participation activities for visitors (Appendix C). Again, nothing is clear about biodiversity management information (National Park Service



YELLOWSTONE FOREVER 2018 Park Projects

Yellowstone Forever partners with Yellowstone National Park to create opportunities for all people to experience, enhance, and preserve Yellowstone forever. As the park's official nonprofit partner, Yellowstone Forever helps fund priority projects in Yellowstone. These are the projects Yellowstone Forever is supporting in 2018.

WILDLIFE

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Native Fish Conservation

In recent years, Yellowstone's native cutthroat trout populations have declined significantly. Biologists determined the cause to be the introduction of several nonnative trout species, and especially the invasion of predatory lake trout in Yellowstone Lake. This precipitous loss of native trout is felt throughout the ecosystem, impacting predators such as bears, otters, ospreys, and eagles. Guided by the long-term Native Fish Conservation Plan, the National Park Service is leading a major effort to restore native fish populations to sustainable levels, with an emphasis on the continued, aggressive use of gillnetting boats on Yellowstone Lake. The overall intent is to ensure that native fish remain to support natural ecological function, native biodiversity, and sport fisheries.

Yellowstone Wolf Program

Since wolves were first reintroduced to Yellowstone National Park in 1995, millions of visitors have had the opportunity to view wolves in the wild. They have also been the subject of much controversy, with disagreement surrounding population size, impacts on the elk population, and how to best manage wolves. Wolf management continues to be a high priority issue for both the regional public and the National Park Service. Yellowstone Forever provides the support necessary to maintain the nationally acclaimed Yellowstone Wolf Project, which focuses on the research, monitoring, and management of wolves in Yellowstone. The project's research findings over the past 23 years have been crucial to formulating wolf management policy as well as contributing to an understanding of Yellowstone's entire ecosystem.

Yellowstone Wildlife Health Program

Because infectious diseases are more frequently being shared between humans, wildlife, and domestic animals, Yellowstone Forever started funding the Yellowstone Wildlife Health Program in 2007. Some diseases that currently impact or threaten Yellowstone wildlife include brucellosis (bison and elk), chronic wasting disease (elk and deer), white-nose syndrome (bats), and canine distemper (wolves and coyotes). In addition, many wildlife diseases are transmissible to humans, such as plague, hantavirus, West Nile virus, and rabies. The Wildlife Health Program integrates ecological understanding—like early detection through targeted surveillance—with management decision making. Further work is needed to develop a more comprehensive plan that will promote wildlife conservation and reduce disease risks to wildlife, park staff, visitors, and local communities.



Figure 4.14. *Yellowstone Forever 2018 Park Projects Sample Pages* (Yellowstone Forever 2020)

2019e). At first glance, the Grand Teton National Park Foundation's website does not seem as interactive as the other websites, but a looped video plays at the top of the screen that shows park scenery and wildlife while posing questions to prompt support (Appendix C). Park visitation information is provided at the bottom of the page, but it is not a focus. Their website also offers multiple ways to give and they offer information about research, conservation, and education under the option to donate to "Wild Treasure Campaign Priorities." Again, there is no option online to directly donate to a specific project, although viewers can leave a comment (Grand Teton National Park Foundation 2020). This organization seems more focused on a few key big ideas rather than individual projects compared to other partners (Grand Teton National Park Foundation 2020).

Rocky Mountain's website homepage is mostly focused on providing information to tourists for the current season with some information about pledging to protect the park (National

Park Service 2019n). However, there again is no information about biodiversity conservation on their front page (Appendix C). The Rocky Mountain Conservancy's homepage seems like a more basic website and is not as graphically oriented as the other partner websites, but they are the only partner website to list their "Join or Give" heading first (Appendix C). A viewer does have the option to donate to different projects, but the conservancy appears to emphasize more general projects rather than specific ones to focus on big picture ideas (Rocky Mountain Conservancy 2020). Overall, their website seems focused on getting people involved, whether it is through donating or attending a class that they sponsor (Rocky Mountain Conservancy 2020).

c. *Primary message:* The parks are more focused on helping people plan their trips and their partners are more focused on getting people involved through donations or support (National Park Service 2019g, 2020d, 2019e, 2019n; Glacier National Park Conservancy 2020; Yellowstone

Forever 2020; Grand Teton National Park Foundation 2020; Rocky Mountain Conservancy 2020). Yellowstone and Rocky Mountain parks, however, do seem more focused on getting people involved than the other parks by being more activity oriented (Figure 4.15) (National Park Service 2019g, 2020d, 2019e, 2019n).

d. Website headings: The parks are focused on learning about the parks and helping people plan their trips, while the partner websites are more focused on sharing their work and encouraging people to donate. Glacier, Yellowstone,

Grand Teton, and Rocky Mountain parks have the same three main website headings: “Plan Your Visit, Learn About the Park, and Explore (National Park Service 2019g, 2020d, 2019e, 2019n).” Glacier National Park Conservancy has five main website headings: “Our Work, Explore Glacier, Support Glacier, Shop, and Donate (Glacier National Park Conservancy 2020).” Yellowstone Forever has seven website main headings: “About Us, What We Do, Experience, News, Shop, Ways to Give, and Donate (Yellowstone Forever 2020).”

	Visit Planning	Learn	Get Involved	Donations	Park Support
Glacier	Dark Blue	Light Blue	Light Blue	Dark Blue	Light Blue
Glacier National Park Conservancy	Dark Blue	Light Blue	Light Blue	Dark Blue	Dark Blue
Yellowstone	Dark Blue	Dark Blue	Dark Blue	Light Blue	Light Blue
Yellowstone Forever	Dark Blue	Light Blue	Light Blue	Dark Blue	Dark Blue
Grand Teton	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue
Grand Teton National Park Foundation	Dark Blue	Light Blue	Light Blue	Dark Blue	Dark Blue
Rocky Mountain	Dark Blue	Light Blue	Dark Blue	Light Blue	Light Blue
Rocky Mountain Conservancy	Dark Blue	Light Blue	Dark Blue	Dark Blue	Dark Blue

Figure 4.15. Intermountain Region Parks Primary Message Comparison (Hollman 2019)

The Grand Teton National Park Foundation has six main website headings: “Who We Are, Achievements, Initiatives, News & Blog, Ways to Give, and Donate (Grand Teton National Park Foundation 2020).” The Rocky Mountain Conservancy has six main website headings: “Join or Give, Our Projects, Learn with Us, Work with Us, Get to Know Us, and Shop (Rocky Mountain Conservancy 2020).” The partners have more main website headings than the parks, with Yellowstone Forever having the most and Glacier National Park Conservancy having the least out of the websites analyzed. All the partners make it clearer than the parks where to find biodiversity conservation information with headings like “Our Work, What We Do, Achievements, and Our Projects.”

- e. *Accessibility of biodiversity conservation information:* Even though all the parks use a template from the Washington D.C. office, there is some flexibility in allowing the parks to post what is most relevant to their park. Appendix D shows the website paths for each website analyzed and what website

headings lead to conservation information. Glacier has five locations highlighting conservation on their website with an average of 3 clicks to get through the different headings (National Park Service 2019g). Glacier National Park Conservancy has two primary locations and it takes an average of 2 clicks to get through the website to find related information (Glacier National Park Conservancy 2020). Yellowstone has eleven locations where information can be found that take an average of 2.9 clicks to get to the relevant information (National Park Service 2020d). Yellowstone Forever has two locations where relevant conservation information can be found that take an average of 2.5 clicks to get through (Yellowstone Forever 2020).

Grand Teton has five primary locations where biodiversity conservation information can be accessed, and it takes an average of 2.8 clicks to get there (National Park Service 2019e). Grand Teton National Park Foundation has two locations to find the relevant information, taking an average of

AVERAGE WEBSITE CLICKS TO ACCESS INFORMATION RELATED TO BIODIVERSITY CONSERVATION (LESS IS BETTER)

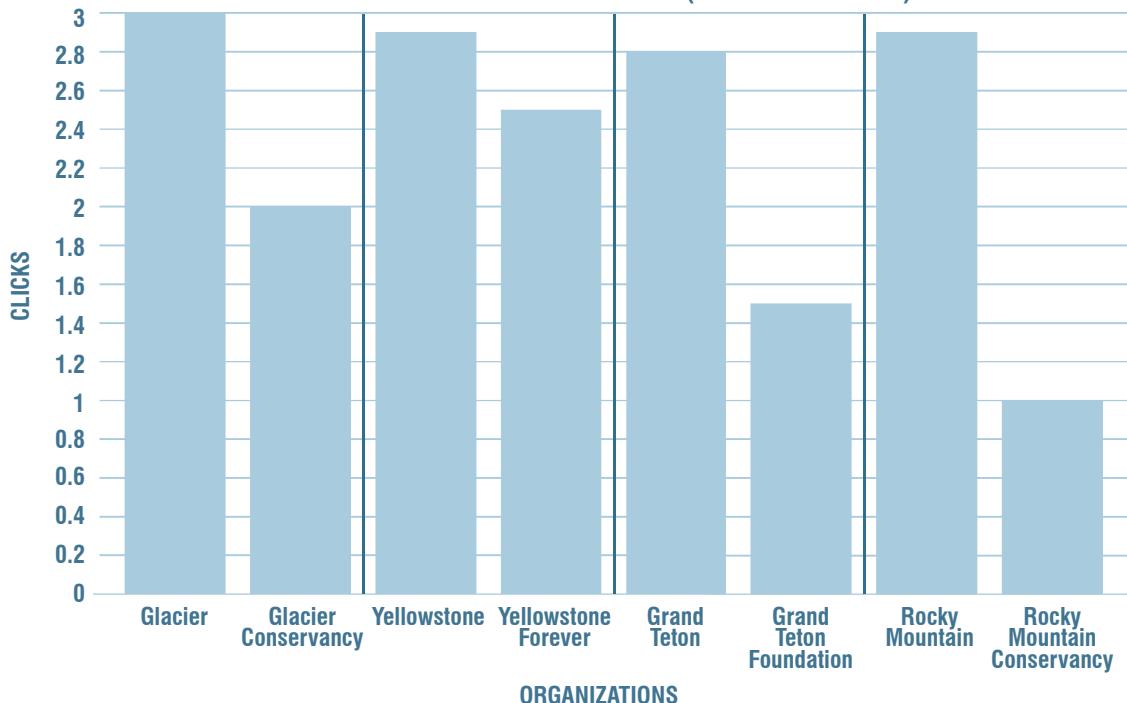


Figure 4.16. Intermountain Region Parks and Partners' Average Website Clicks (Hollman 2019)

1.5 clicks to access (Grand Teton National Park Foundation 2020). Rocky Mountain has ten locations to access information which take an average of 2.9 clicks (National Park Service 2019n). Rocky Mountain Conservancy only has one primary location where information can be found which only takes 1 click (Rocky Mountain Conservancy 2020).

The parks' website information related to biodiversity seems to be more spread out than their partners which have one or two locations to find related information. Yellowstone and Rocky Mountain parks have the most locations to find information with Glacier and Grand Teton parks having about half as much. The partners' websites make it easier

and clearer where to find information than the parks, with Rocky Mountain Conservancy being the most direct. The parks average between two to three clicks beyond the main page to access information whereas the partners average between one and three clicks (Figure 4.16).

There are several locations within each park's website to find information related to conservation, compared to one section for "Preserving Cultural Resources" in each park from "Learn About the Park" to "History & Culture (Appendix D). Natural resources could be consolidated in a similar way. There is also the potential to connect volunteer opportunities with specific projects in each park to make projects more visible (Appendix D).

C. PARKS CANADA AND AUSTRALIA

The information gathered in this section is for Parks Canada and Australia to compare to the National Park Service (NPS). Their primary documents and websites were studied to assess how different countries around the world prioritize biodiversity conservation (see Appendix F for the full list of findings).

i. GOALS

All the parks have a mission or vision statement that is stated on their websites (Parks Canada 2018c, Parks Australia 2020a, National Park Service 2019a). All the mission statements have something to do with protecting the natural resources for future generations; however Parks Canada and Australia emphasize protecting natural resources more than the National Park Service by focusing their language more on the protection of resources and expanding upon what this means (Parks Canada 2018c, Parks Australia 2020a, National Park Service 2019a). Parks Australia also emphasizes their support of the economy where the other parks do not (Parks Australia 2020a).

ii. CONSERVATION EFFORTS/PROJECT REPORTS

Parks Canada has two different primary reports that center around conservation, A

Natural Priority: A Report on Park Canada's Conservation and Restoration Program and Canadian Protected Area Status Report (Parks Canada 2018b; Government of Canada 2017). The first report is centered around forty-one key projects that the parks have done that focus on conservation (Figure 4.17) (Parks Canada 2018b). The protected area report is centered around the expansion of Parks Canada to ensure that all of the regions in Canada are represented (Government of Canada 2017). Parks Australia also has a yearly report sent out called the *Director of National Parks Annual Report* which focuses on reporting park performance and accountability for protecting natural resources (Figure 4.18) (Australian Government: Director of National Parks 2018).

While Parks Australia and Canada put out several summary reports, the only report that the National Park Service has officially done about conservation accomplishments is from the year 2017-18 and it is just a page on their website, not a full report (National Park Service 2018a). As far as ongoing projects, both Parks Canada and the National Park Service have a Citizen Science page centered around current projects listed on their website, and Parks Australia has a list of the current ongoing biodiversity conservation projects listed on

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Bison bison – Restoring bison to Waterton Lakes National Park		3
Gone crabbing – Restoring Keweenaw National Park Seashore		4
Hook, line, but not sinkin’ – Saving the fishing legacy of Kejimkujik National Park and National Historic Site		5
Our future forests – Restoring the Acadian forests of PEI National Park		6
A salmon’s return – Restoring habitat for salmon in Kootenay National Park		7
Action under water – Bringing wild salmon back to Fundy National Park*		8
Trail to 2019 – Restoring the trail network in Fundy National Park		9
Sparkling an interest in fire – Restoring the role of fire in eastern Canadian national parks		10
Preserving an emblem – Thistle conservation in Mingan Archipelago National Park Reserve		11
Adapting to climate change – Restoring wetland habitats in Cape Breton Highlands National Park		12
Dredging the shallows – Restoring riparian dynamics in Point Pelee National Park		13
Calm the waters – Reducing disturbance in the Saguenay-St Lawrence Marine Park*		14
Rejuvenating aquatic ecosystems – Restoring the lakes of La Mauricie National Park		15
Swimmers, timber and survival – Restoring the fishway at St. John River Canal National Historic Site*		16
Tidy horns – Conserving mountain caribou in the Great Bear Rainforest		17
From field to forest – Sprouting up old field succession in Bruce Peninsula National Park		18
The road to recovery – Wildlife eco-passages in Bruce Peninsula National Park*		19
Saving the savannah – Restoring a tree habitat in Point Pelee National Park		20
Diversifying diluted genes – Using conservation genetics to save trees in Point Pelee National Park*		21
Fire and ice – Restoring the frozen landscape in Churchill River Sustainable Development National Park		22
Recover and diversify – Restoring the open parkland of Riding Mountain National Park		23
Keeping it clear – Restoring Clear Lake in Riding Mountain National Park		24
Preserving prairie icons – Recovering species at Grasslands National Park*		25
Reconnecting grassland, bison and people – Ecosystem restoration in Prince Albert National Park...		26
Igniting restoration – Using fire to restore mountain park ecosystems		27
Two pines in one pine – Recovering whitebark and limber pine in national parks*		28
Conservation in the shade – Southern white cedar recovery in four national parks*		29
Rescue the fescue – Restoring grassland in Waterton Lakes National Park		30
Historic homecoming – Restroducing bison to Banff National Park*		31
Wildlife crossings – Building bridges for wildlife in Banff National Park		32
Guarding the fire – Restoring the boreal forest in Yoho National Park		33
Preparing success – Recovering species at Fort Verde/Rd Hill National Historic Site and Gulf Islands National Park Reserve*		34
Listening to the sea, looking to the future – Clam garden regeneration in Gulf Islands National Park Reserve		35
Ecosystem at the edge – Restoring riparian and coastal areas in Parks Canada National Park Reserve*		36
For the love of the land – Restoring land in Gull Islands National Park Reserve*		37
Keeping dunes dynamic – Restoring coastal dunes in Pacific Rim National Park Reserve*		38
Wild about wolves – Helping humans and wolves coexist in and around Pacific Rim National Park Reserve		39
Chiguar Til Incaid – Nurturing seabird to grow – Restoring kelp in Great Bear Rainforest Marine Conservation Area Reserve and Haida Heritage Site –		40
Liquor gull solution, or restoring balance – Eradicating invasive deer in Great Bear Rainforest Park Reserve and Haida Heritage Site –		41

* indicates the project has a species-at-risk focus

Parks Canada
Conservation and
Restoration Program

v

Diverse, yet standardized

An overview of Parks Canada’s Conservation and Restoration Program

Parks Canada Conservation and Restoration (CoRe) projects are located at the 38 national parks, national historic sites and national marine conservation areas in which they occur. The diverse projects we report here range from restoring forests to re-establishing grass; from recovering threatened whales to saving endangered plants; from reducing over-abundant moose to decreasing plentiful urchins; from mitigating invasive species threats to alleviating problems caused by roads. Different contexts, different ecosystems, different communities – and different collaborators.

Despite the ways in which CoRe projects differ from one and other, they also have much in common. CoRe projects are organized according to a set of methodological standards. They are designed to identify problems, collaborate with others, invest in solutions and realize achievements in a common manner. By following practical approaches to conservation and restoration, CoRe projects succeed in ways that engage and benefit society.

What's the issue?

Parks Canada identifies CoRe project problems as two-fold. First, in national parks we monitor ecological challenges – that is, an environmental threat or problem – by tracking changes with the degree of change reflecting good, fair or poor ecological integrity. CoRe projects typically prioritize restoration actions for ecosystems that are in poor or fair condition. Second, CoRe projects treat species-at-risk issues. These are typically identified in action plans published by the Government of Canada on the *Species at Risk Public Registry*. The action plans point to activities needed to protect and recover the species (e.g. increase population size, improve habitat), and so about one third of CoRe projects focus on these types of issues.

What's our approach?

To improve integration, communication and effectiveness among projects, CoRe promotes the use of consistent terminology and a standard approach to conservation planning and implementation – guidelines collectively known as the *Open Standards for the Practice of Conservation*. The Open Standards aim to ensure that CoRe conservation and restoration plans by applying a simple, transparent adaptive-management framework that improves team unity, project conceptualization, long-term efficiency and the assessment of conservation outcomes. A key expectation for CoRe projects is that they’re efficient, engaging and effective – principles espoused by Parks Canada and one primary reason success is based on evidence. CoRe projects define a priori what they aim to accomplish and how success will be measured. By registering accomplishments, Parks Canada objectively evaluates the relative success of CoRe projects on an annual basis.

What's been accomplished?

Summarized in this report are over 40 CoRe projects currently underway or recently finished. The diversity of conservation issues, approaches and accomplishments across the country is evident. Thirty-four percent of projects are recovering species at risk. Forty-one percent are managing invasive species. Prescribed, or controlled, fire is used in 20 percent of projects to manage species and ecosystems. Fifty-one percent involve transplanting or translocating species back into our protected heritage areas.

About half of all projects are collaborations with Indigenous communities or partners, providing invaluable contributions to their success. All projects engage stakeholders, partners, visitors or communities in a range of ways to engage and inform. Innovating, learning and adapting to simultaneously new conservation issues, project leaders have been able to achieve a national goal of meeting at least 60 percent of ecological targets – a success that will only continue to improve as we gain more experience in restoration.

As you read through the following project snapshots, our hope is that you learn something new about the challenges species and ecosystems face in protected heritage areas, what Parks Canada has done or is continuing to do to remedy these problems, and what we have learned or achieved along the way.

¹Kearnes et al. (2012). Ecological restoration for protected gear species: guidance and best practices (pp. 18–19).

iv

Parks Canada
Conservation and
Restoration Program

Saving the seedlings

Regenerating the forests of Terra Nova National Park

Find out more

What's the issue?

Terra Nova National Park faces an ecological challenge that's common across several parks – namely, a decline in forest health caused by too many hungry moose and too little fire. The predilection to eat is part to decisions of the past. First, moose were introduced to Newfoundland in the late 1800s. Since then, the population has exploded, reaching 100,000 animals. While moose are a natural part of the ecosystem, their旺盛 appetites are causing damage to forests. Some areas of the park, moose browsing is so intense that trees are simply not regenerating and forests have turned into open fields. Second, aggressive suppression of wildfire from the mid-1900s to the present has removed a natural process that's necessary for forest regeneration. Some forests have become over-mature and weaker as a result. Terra Nova is now taking action to remedy the consequences of these past decisions.

What's our approach?

CoRe, plan and execute a moose population reduction program to enable regeneration of hardwood and balsam fir seedlings. Plant native tree seedlings in areas where moose populations are being reduced. Use prescribed fire to restore a minimum of 200 hectares of overstocked spruce forest.

Collaborate with Memorial University, provincial government and First Nations to develop a moose reduction strategy.

What's been accomplished?

Reduced the moose population by 29 percent from 2013 to 2017, resulting in 25 percent less browsing on hardwood species, and increased densities of balsam fir seedlings (25 percent) and aspen (40 percent). CoRe has regenerated forests (2014–2017), covering 100 hectares of black spruce forests. Collaborated with Memorial University, provincial government and First Nations to develop a moose reduction strategy. Re-invented the Activity Centre in Newland Sound; established a Forest Health Pavilion and interpretive trail at Ochos Hill to educate Canadians about boreal forest health.

^{TOP} Aerial view of the Spruce Pond prescribed fire, part of a multi-hectare boreal forest restoration project.
^{BOTTOM} Platform on Ochos Hill, which is part of the Forest Health Pavilion built in 2017.

1

Parks Canada
Conservation and
Restoration Program

Figure 4.17. Parks Canada: A Natural Priority Sample Pages (Parks Canada 2018b)

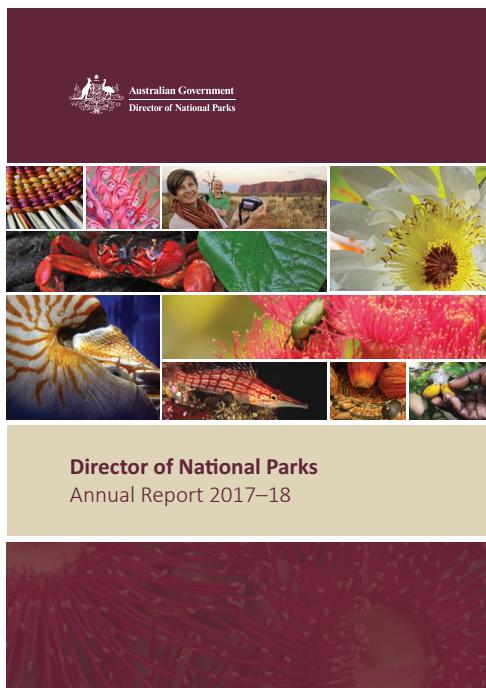
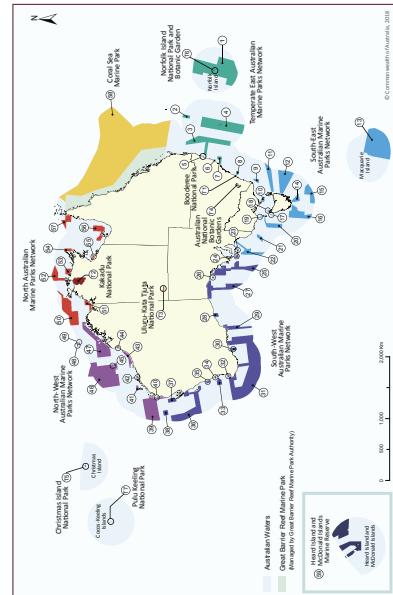


Figure 1: Location of Commonwealth parks and reserves which are the responsibility of the Director of National Parks in 2017–18



iv Director of National Parks | Annual Report 2017–18

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2

Table 2: Parks Australia's non-financial performance results for 2017–18 and our ways of working

Goals	Performance Indicator	Result
Resilient places and ecosystems	Populations of threatened and significant species are increasing.	Achieved
	Populations of priority invasive species are reduced.	Partially achieved
	New management plans for Australian Marine Parks in effect and implemented.	Achieved
	Increase the knowledge base for long term adaptive management of the marine parks.	Partially achieved
Multiple benefits to traditional owners	Increase in the numbers of Indigenous employees and/or contractors directly or indirectly providing park services.	Achieved
Admiring Destinations	Maintain or improve the level of visitor satisfaction and number of visitors.	Achieved
	Proportion of park management plans in place.	100 per cent
Cross cutting activities	Timeliness of response to incoming ministerial correspondence items, ministerial submission, question time briefs, parliamentary questions on notice, senator estimates questions on notice and public enquiries to the Community Information Unit.	Satisfactory
	Achieve a risk maturity of 'Advanced' in the annual Comcover Risk Management Benchmarking Survey.	Achieved
	Number of externally reportable breaches of the Public Governance, Performance and Accountability Act 2013.	No breaches
	Increase in net return from commercial operations and activities listed in DNP Charges for Commonwealth Parks.	Achieved

Ways of working	
Evidence based management	Science, research and traditional knowledge are used to make management decisions.
Ecologically sustainable use	Parks Australia acts to enhance Australia's social and economic well-being through ecologically sustainable use of our places, through awareness of our own environmental footprint.
Partnerships and co-investments	Partnerships and working together with our stakeholders to support delivery of innovative programs that achieve our goals.
Responsive organisation	Parks Australia is an efficient and effective agency with a proud and motivated workforce, supported by efficient business systems.

Figure 4.18. Director of National Parks Annual Report 2017-18 Sample Pages
(Australian Government: Director of National Parks 2018)

their website under each park (Parks Canada 2019e; National Park Service 2018b; Australian Government: Department of Agriculture, Water and the Environment 2020b).

iii. ORGANIZATIONAL CHARTS

Parks Canada's parks department is overseen by the Minister of the Environment and then the Chief Executive Officer, breaking down further into different directors and chiefs (Figure 4.19) (Parks Canada 2007, 21). Parks Australia is overseen by the Director of National Parks which breaks down into different branches, including a Park Island and Biodiversity Science Branch (Figure 4.20) (Australian Government: Director of National Parks 2018, 26). Comparatively, the National Park Service is overseen by a director which further breaks down into other deputy directors (Figure 4.21) (National Park Service 2019j). Each park has a director or group of directors that oversee their parks (Figure 4.19-4.21). Parks Canada and Australia both have an environmental or biodiversity focus at the head of their organizational structure for their parks where the National Park Service does not, although the NRSS director is part of their overall hierarchy.

iv. VISITORS

Parks Canada and Australia vary on how many

visitors they receive each year. Parks Canada received 20,096,236 visitors from 2018-19 and Parks Australia received 1,473,108 visitors from 2017-18 (Parks Canada 2019d; Australian Government: Director of National Parks 2018). The National Park Service received 318,211,833 visitors from 2018-19 (National Park Service 2019a). The National Park Service receives quite a few more visitors than their international counterparts, but they also have more area to administer and more parks. Visitor count may be a part of the reason why the international parks have more resources devoted to conservation efforts since they are dealing with smaller crowds of people which puts less stress on the park environment (Figure 4.22).

v. VOLUNTEERS

All the park organizations receive help from volunteers that help to support the parks. Over 6,000 people volunteered at Parks Canada in 2012 (Waithaka et al. 2012). The Conservation Volunteers Australia said they had about 100,000 volunteers in Parks Australia in 2019 (Northern Territory Tourism NT 2020). The National Park Service reported that they had around 240,000 volunteers in 2017 (Repanshek 2017). According to these statistics, the National Park Service has more volunteers than the others, but they also have more park

PARKS CANADA

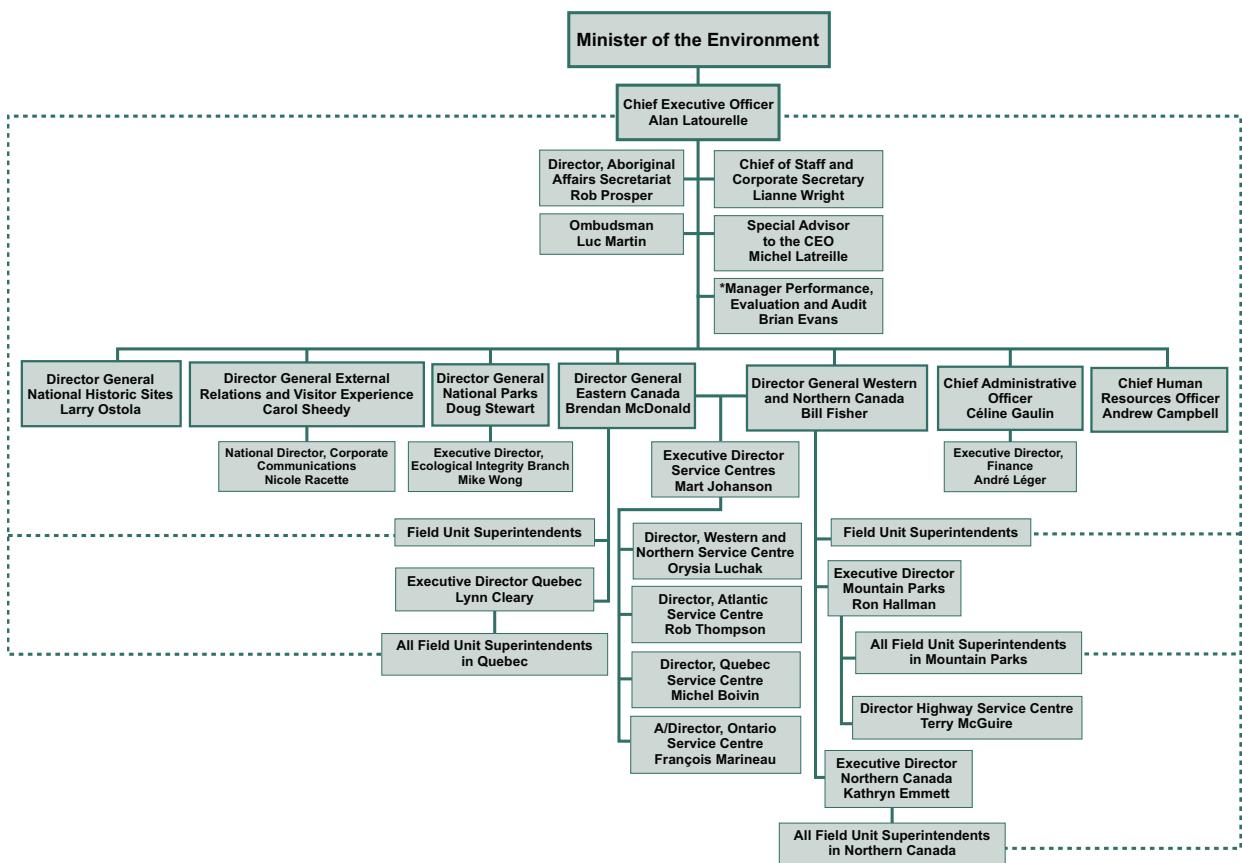


Figure 4.19. Parks Canada Organizational Chart (Parks Canada 2007, 21)

PARKS AUSTRALIA

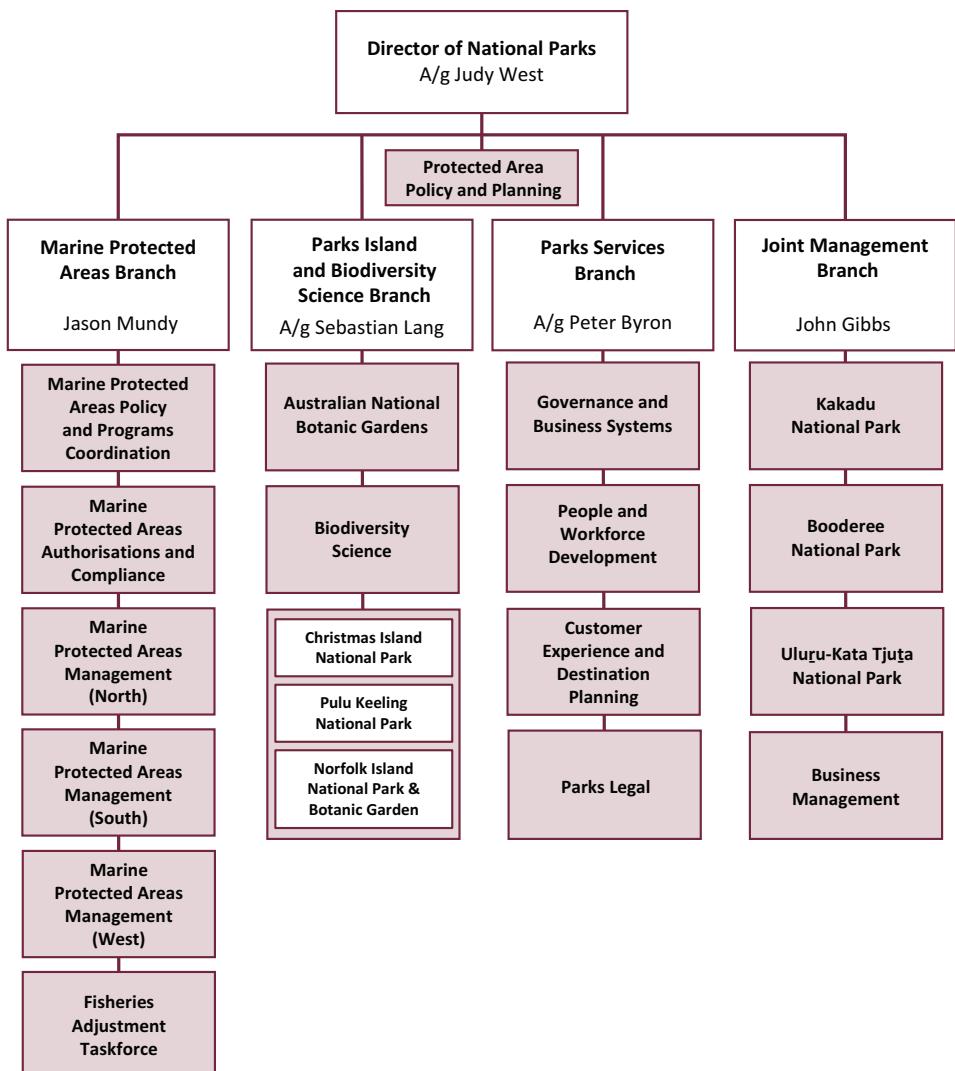
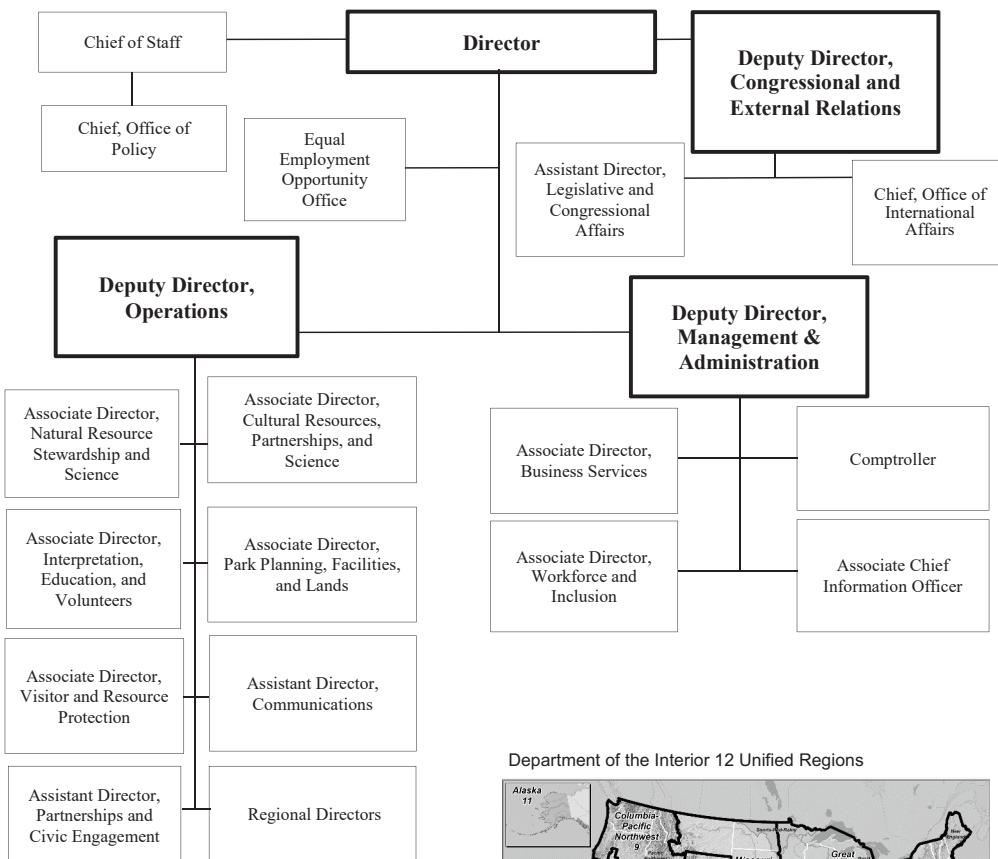


Figure 4.20. Parks Australia Organizational Chart (Australian Government: Director of National Parks 2018, 26)

NATIONAL PARK SERVICE



Department of the Interior 12 Unified Regions



Figure 4.21. National Park Service Organizational Chart (National Park Service 2019j)

acreage and more parks. However, all the parks have more volunteers than they do full-time employees. This trend shows how reliant parks are on volunteers to help support their efforts (Figure 4.23).

vi. BUDGET (% DEDICATED TO CONSERVATION)

The information in this section was collected by reviewing the budgets of each park and determining what percentage of their total budget is dedicated to conservation. To compare the budgets, any category that specifically mentioned protecting natural resources, preservation, stewardship or protection, was included. Parks Canada spent 87% of their budget protecting and preserving Canada's natural and cultural heritage (Parks Canada 2019c). Parks Australia put 20% of their total budget towards conserving, protecting, and sustainably managing Australia's biodiversity, reducing Australia's greenhouse gas emissions and adapting to climate change, and supporting reliable, sustainable, and secure operations of energy (Australian Government: Department of Agriculture, Water and the Environment 2019).

The National Park Service put 0.06% of their total budget towards resource stewardship, park protection, park support, national

recreation and preservation, construction program management & operations, management planning, and land acquisition and state assistance (The United States Department of the Interior 2019). Parks Canada and Australia dedicate a much higher percentage than the National Park Service of their overall budget to protecting natural resources. However, the way each national park organizations' budgets are broken down is completely different as evidenced by the different language they use above, so it is hard to directly compare (Figure 4.24).

vii. EMPLOYEE DEPARTMENTS (% DEDICATED TO CONSERVATION)

The information in this section was determined by reviewing the job organization structure for each country and categorizing them by their relevance to conservation or environmental management (Appendix E). Any job title that mentioned preservation, stewardship, environment, or protection was included. Parks Canada has 17.6% of their departments dedicated to resource protection and Parks Australia dedicates 62.29% of their employee departments to resource protection (Government of Canada 2019; Australian Government: Department of Agriculture, Water and the Environment 2020a).

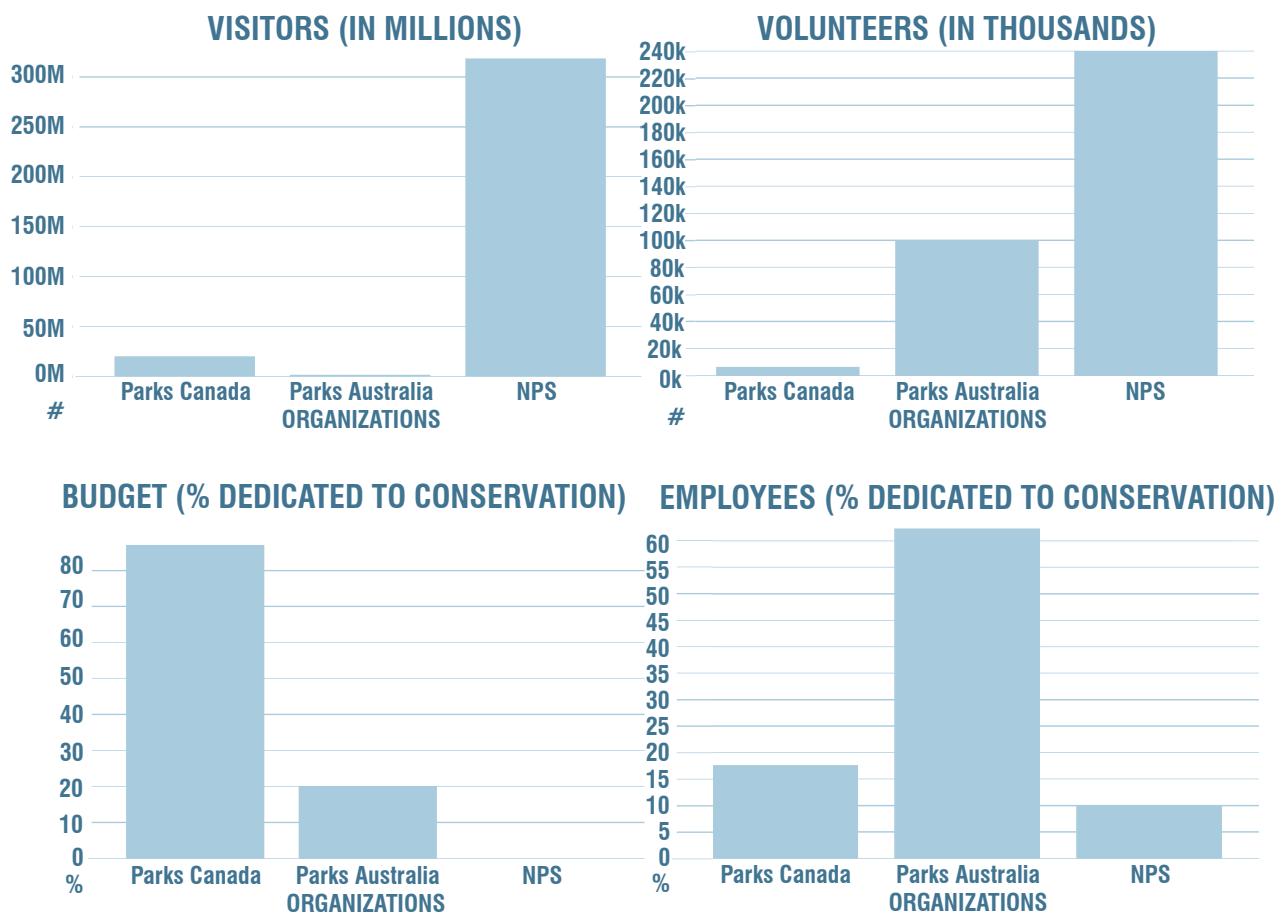


Figure 4.22-4.25. Parks Canada, Parks Australia, and National Park Service Comparison Charts (Hollman 2019)

The National Park Service dedicates 9.9% of their jobs to resource protection (National Park Service 2019a). While the National Park Service and Parks Canada are more similar in this category, Parks Australia has many more departments dedicated to natural resources (Figure 4.25). However, this may be because Parks Australia is under the Department of Agriculture, Water, and the Environment so it makes sense that they would have more employees dedicated to resource protection

(Australian Government: Department of Agriculture, Water and the Environment 2020a).

viii. PRIMARY GUIDING DOCUMENTATION/ POLICY (RELATED TO CONSERVATION)

Every national park organization is guided by some type of government act and plan or strategy that all the parks follow. Parks Canada was created under the Canada National Parks Act which protects Canada's national parks (Parks Canada 2018a). Their *National Park*

System Plan was developed in 1997 and it was created to “protect a representative sample of each of Canada’s landscapes (Parks Canada 1997, 1).” This plan emphasizes the importance of protecting Canadian landscapes in each region and identifying key areas of expansion for the parks (Parks Canada 1997).

Parks Canada also uses the *CMP: Open Standards for the Practice of Conservation* to “improve integration, communication, and effectiveness among projects” by using “consistent terminology and a standard approach to conservation planning and implementation (Parks Canada 2018b).” Their approach is: 1) Conceptualize 2) Plan Actions and Monitoring 3) Implement Actions and Monitoring 4) Analyze, Use, Adapt 5) Capture and Share Learning (Parks Canada 2018b).

Parks Australia’s Environment and Biodiversity Conservation Act of 1999 “provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places (Australian Government: Department of the Environment and Energy 2019).” They have two main management plans that guide resource protection: *Australia’s Biodiversity Conservation Strategy 2010-2030* and the *Director of*

National Parks Corporate Plan 2019-2023 (Australian Government: Department of the Environment and Energy 2019; Australian Government: Department of Agriculture, Water and the Environment 2018).

Park Australia’s biodiversity conservation strategy describes their “vision, shared goals and objectives in managing nature in both urban and non-urban settings, and sets a framework for government, non-government and community action to care for nature in all our many environments (Australian Government: Department of the Environment and Energy 2019, 3).” The corporate plan lays the groundwork for their vision of “outstanding natural places that enhance Australia’s well-being” and presents management strategies for protecting the parks (Australian Government: Department of Agriculture, Water and the Environment 2018, iii).

As discussed previously, the National Park Service is guided primarily by the *Management Policies 2006* document, but also follows the Organic Act of 1916 and the Endangered Species Act of 1973 which both focus on natural resource protection (National Park Service 2019a). Every national park organization has some sort of guiding

documentation related to conservation. However, both Parks Canada and Australia have documents that mention conservation specifically in their titles. Parks Canada's strategies center around a regional approach that looks at the parks as a whole system and focus on region-wide protection of Canadian landscapes. Parks Australia has the newest strategies and plans compared to the others that get updated on an annual basis. When talking to the National Park Service staff, they said that they were due for a new revision of their management policies document, but it is not a priority right now.

ix. PRIMARY PARTNERSHIPS

This section lists the primary partnerships on each park's website. While other partnerships may exist, only the ones that were highlighted on the official partner page were included for this study (Appendix D). Parks Australia and the National Park Service also highlighted key partnership projects which were included in the count. The park partnerships were categorized by type to include indigenous organizations and communities, researchers and academia, business, government, non-profits, and philanthropy as identified by the Australian Government (Australian Government 2020c). The value of each sector can be seen

in Figure 4.26. Having a variety of partnerships brings different strengths to solving the complex problems the parks face (Australian Government 2020c).

Each park has a different variety of partnerships with a focus on different sectors (Figure 4.27-4.29). Parks Canada and Australia mostly have businesses listed, while the National Park Service lists more government and non-profit organizations (Parks Canada 2019b; Australian Government: Department of Agriculture, Water and the Environment 2020c; National Park Service 2019m). The National Park Service is the only national park organization studied here that does not list any indigenous organizations and communities or businesses on its official website (National Park Service 2019m). The research and academia sector also is not particularly strong in any of the parks (Parks Canada 2019b; Australian Government: Department of Agriculture, Water and the Environment 2020c; National Park Service 2019m). There is room for growth in each of the national park organizations.

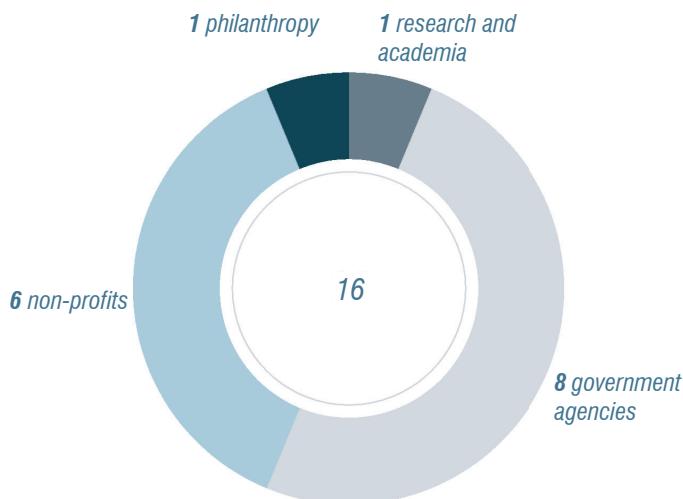
x. WEBSITE NOTES/ANALYSIS

The National Park Service, Parks Canada, and Parks Australia's websites were examined for navigation ease and how information is

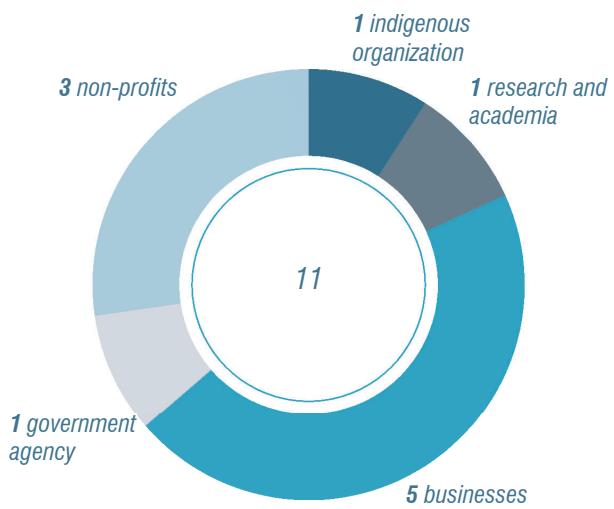


Figure 4.26. The Value of Partnering (Australian Government 2020c)

NPS PARTNERSHIPS



PARKS CANADA PARTNERSHIPS



PARKS AUSTRALIA PARTNERSHIPS

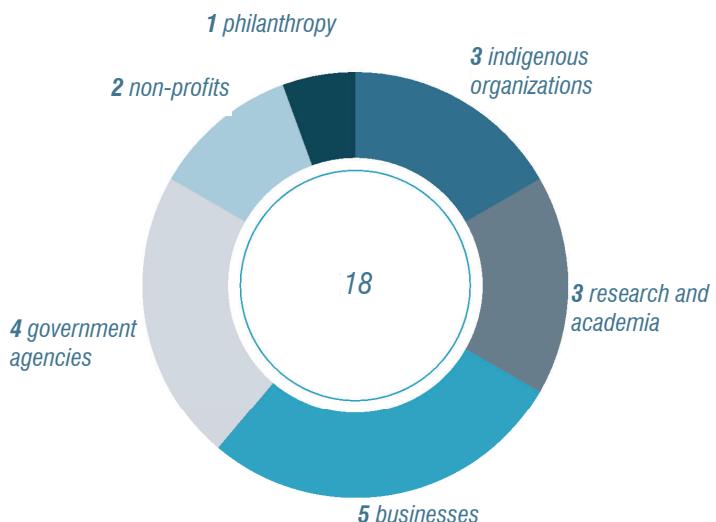


Figure 4.27-4.29. National Park Partnership Graphics: The above charts show the percentages of the partnerships highlighted by each of the different countries. While other partnerships certainly exist these are the ones that are specifically mentioned on the partner page of each organization's website (Hollman 2019).

communicated with the public (Appendix C). Summary graphics of this section can be seen in Figure 4.32-4.33 (pg. 110-111).

a. Target Audience: All the websites are geared toward families and travelers, but Parks Canada's website looks like it is geared more towards a young adult audience and the National Park Service emphasizes several kids' activities (Parks Canada 2020; Parks Australia 2020b; National Park Service 2020a). This finding was determined from the promotional images and language used on their websites (Appendix C). The target audience aligns with their missions to make the parks available to the public.

b. First Impressions: This section examines the homepage of each website to see what information immediately stands out to the viewer. Parks Canada and Australia both emphasize conservation from their homepage, whereas the National Park Service is more focused on news and visitor opportunities (Parks Canada 2020; Parks Australia 2020b; National Park Service 2020a). Parks Canada and Australia's websites also have

more information on their homepage than the NPS (Appendix C).

Parks Canada's website focuses on visitation and protecting local ecosystems with a larger goal of preserving regional biodiversity. The website is clearly organized and provides links to six key topics in the park, one of which is science and conservation (Parks Canada 2020). Parks Australia has two sides of its website, one that focuses on travel and a corporate side that focuses on policy and management, including information on the act that formed the park and links to conservation projects for each park (Parks Australia 2020b). The official website provides information on the six key parks that make up Parks Australia, the rest are managed by each region (Parks Australia 2020b). As mentioned previously, the National Park Service website is focused on current activities going on in the parks, with no information about conservation currently being highlighted (National Park Service 2020a).

c. Primary message: All the parks focus on visit planning, but the National Park Service and Parks Australia's websites are more informative about what is currently going on in their parks than Parks Canada's website (Parks Canada 2020; Parks Australia 2020b; National Park Service 2020a). Also, Parks Canada and Australia both emphasize conservation more than the National Park Service and have direct headings of where to find information related to conservation from their homepage (Appendix D) (Parks Canada 2020; Parks Australia 2020b; National Park Service 2020a). Parks Canada and the National Park Service, however, both promote more learning and discovery than Parks Australia's website (Figure 4.30) (Parks Canada 2020; Parks

Australia 2020b; National Park Service 2020a).

d. Website headings: The parks all have different headings on their websites (Appendix D). Parks Canada has nine main website headings: “Introduction, Find a national park, Plan your visit, Science and conservation, Protecting species, Research in national parks, National parks system plan, Creating new national parks, and Reservations (Parks Canada 2020).” Parks Australia has four main website headings: “National Parks, Marine Parks, Corporate, and About (Parks Australia 2020b).” The National Park Service has three main website headings: “Plan Your Visit, Learn & Explore, and Get Involved.”

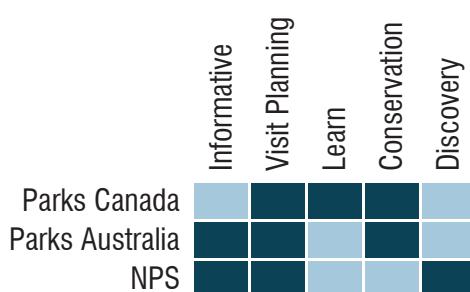


Figure 4.30. Parks Canada, Parks Australia, and NPS Primary Message Comparison (Hollman 2019)

Parks Canada's website is the clearest when it comes to finding conservation information because they have a website heading called “Science and conservation.” Parks Australia's is not as direct, but once the corporate website is reached, the information is easily accessible. While the National Park Service has the least number of

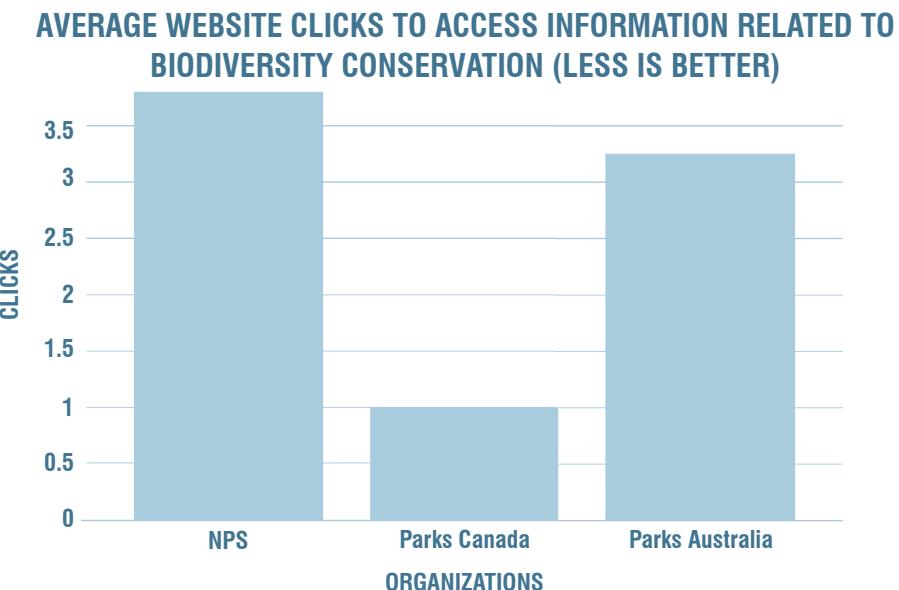


Figure 4.31. Parks Canada, Parks Australia, and NPS Average Website Clicks (Hollman 2019)

headings, it also has the most sub-headings out of all the parks, making it more difficult to easily access information than the other parks.

- e. *Accessibility of biodiversity conservation information:* All the parks provide different levels of accessibility to conservation information on their websites. Appendix D shows the website paths for each website analyzed and what website headings lead to information. Parks Canada has their information related to conservation in three different locations on their website with an average of 1 click to get to the information (Parks Canada 2020). Parks Australia has four locations to find conservation information and it takes an average of 3.25 clicks to access the information

(Parks Australia 2020b). The National Park Service has fifteen locations that show information related to conservation on their website with an average of 3.8 clicks to get through the different headings (Figure 4.31) (National Park Service 2020a). The National Park Service has more locations because and their information is more spread out compared to Parks Canada and Australia which makes information on the National Park Service website less accessible (Parks Canada 2020; Parks Australia 2020b; National Park Service 2020a). Where Parks Canada has a section dedicated to conservation, Parks Australia breaks up its website into two parts with one side focusing on travel and the other side focusing on management (Parks Canada 2020; Parks Australia 2020b).

COMPARATIVE ANALYSIS OF WEBSITES FOR PARKS CANADA, PARKS AUSTRALIA & THE NPS RELATED TO BIODIVERSITY CONSERVATION

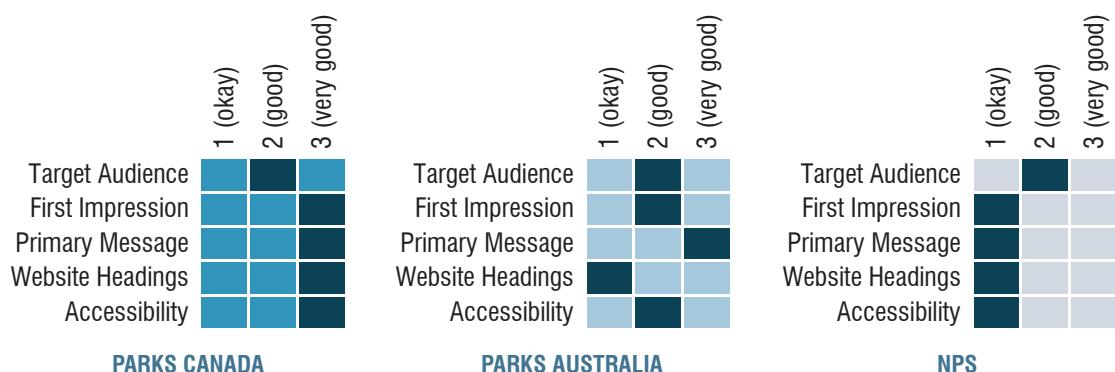


Figure 4.32. Comparative Country Website Analysis Chart: The value of each section was determined by doing a comparative estimate of the websites from the findings (Hollman 2019).

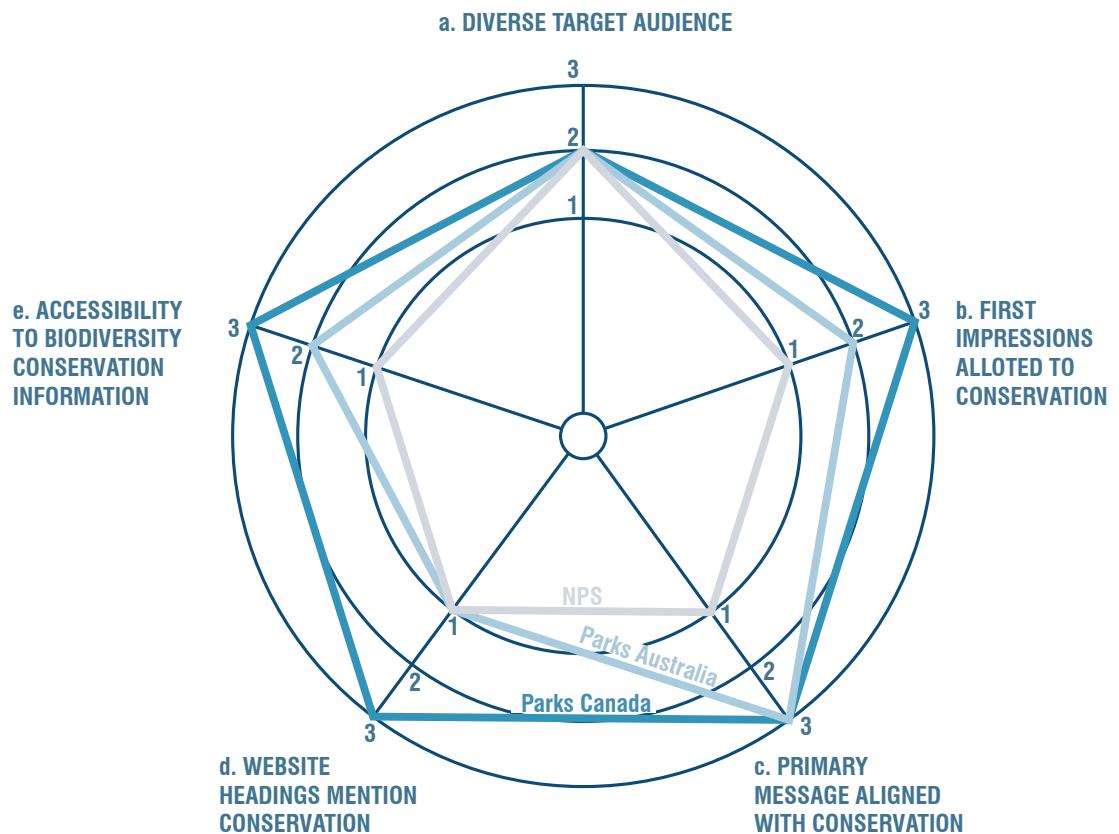


Figure 4.33. Comparative Country Website Analysis Graphic: The higher the number, the better the score. Overall Parks Canada scored the highest relative to biodiversity conservation and the NPS scored the lowest (Hollman 2019).

III. DOCUMENT ANALYSIS FINDINGS

A. NATIONAL PARK SERVICE

When it comes to providing information about biodiversity conservation projects, the National Park Foundation (NPF) and National Parks Conservation Association (NPCA) were more successful than the National Park Service (NPS) and the National Resource Stewardship and Science Directorate (NRSS). This can be attributed to many factors. For example, the NPF and NPCA make it clear on their website where to find their projects and they have searchable lists of projects that viewers can look through, unlike the NPS and NRSS. When it comes to reporting information, there seems to be no easy way to navigate through the NPS and NRSS reports that is user-friendly. The NPF and NPCA both have reports that summarize their yearly accomplishments and present them to the public in a way that is easy to understand in a clean, graphic format.

When comparing their websites, the NPF and NPCA both make it clear where to find information related to biodiversity conservation by providing sections on their websites where viewers can easily navigate through their projects for review. The NPS and NRSS have a lot of good information related to biodiversity conservation on their websites, but it takes almost twice as long to find than on their

partners' websites. This means that the NPS and NRSS websites are more tedious to look through.

B. INTERMOUNTAIN REGION PARKS

Comparing the Intermountain Region parks provided valuable information about how the parks work individually, together, and how they could learn from their partners and each other. An important finding was discovering the similarities and differences between parks in the same region. Comparing the primary challenges the parks are facing from their foundation documents shows the overlap between the parks. This includes issues dealing with climate change, visitors, and infrastructure. This supports the need to look at issues regionally between parks to compare what each park is doing to combat these challenges to save other parks time and money.

When it comes to partnerships, the parks could focus on expanding their relationships to meet all the needs that were discussed in Figure 4.26. Even though the parks do have more partners than they list on their partner page, there is still room for growth.

The parks could also learn other lessons from their partners' websites related to biodiversity conservation projects. One key lesson is connecting sponsorship to specific projects. Both Rocky Mountain Conservancy and Yellowstone Forever offer great examples of displaying what projects they are working on that currently need donations and allowing users to donate to those projects directly. The national parks could do something similar by connecting fundraising to specific projects which could allow people to directly support the projects they want. The parks could also follow the examples of Yellowstone Forever and Glacier National Park Conservancy when it comes to summarizing accomplishments to the public in an annual report.

C. PARKS CANADA AND AUSTRALIA

Overall, Parks Canada and Australia have a stronger connection to biodiversity conservation than the National Park Service, as evidenced by their reports, park organization, budget allocations, employee dedication, policy, partnerships, and website structures. There are a few key takeaways from both of these park organizations about how they communicate with the public and their partners, and how they present themselves online through their websites and guiding policies.

1. Both Parks Canada and Australia have a strong connection to biodiversity conservation in their management documents. Parks Canada's *National Park System Plan* focuses on looking at landscapes at a regional scale to protect the ecological integrity of their parks. Parks Australia's *Australia's Biodiversity Conservation Strategy 2010-2030* and *The Director of National Parks Corporate Plan 2019-2023* both focus on conservation to protect the natural landscapes that make up the continent of Australia.
2. Parks Australia identifies key park partnerships and categorizes them by type to include indigenous organizations and communities, researchers and academia, business, government, non-profits, and philanthropy. Both Parks Canada and Australia have a variety of partnerships listed on their websites that includes the majority of these sectors, whereas the National Park Service's partners listed on their website is more concentrated.
3. When it comes to reporting projects related to biodiversity conservation, both Parks Canada and Australia put out summary reports that highlight their work related

to resource management, which is not something the National Park Service currently does.

4. Parks Canada and Australia's websites are both more accessible and user-friendly than the National Park Service's website when it comes to biodiversity conservation projects. From their main website headings, both Parks Canada and Australia make their conservation efforts more accessible by having less clicks on their websites related to conservation projects than the National Park Service website. Parks Canada even has a heading dedicated to conservation, making it even easier to find.

KEY TAKEAWAYS FOR THE NPS

- Both their partners and Parks Canada and Australia **prioritize biodiversity conservation projects** on their websites by making them more accessible and consolidated than the NPS website
- Some of their partners **provide a way to search** through projects by type
- Parks Australia **identifies key partnership sectors** that include indigenous organizations and communities, businesses, and research and academia sectors
- Some of their partners **connect donating and volunteering opportunities** to specific projects
- Both their partners and Parks Canada and Australia **have clear headings** on their websites related to biodiversity conservation
- Both their partners and Parks Canada and Australia **provide an annual summary document** of park accomplishments

IV. INTERVIEW SUMMARY

Five separate interviews of key park staff from the National Park Service were conducted for this research. The interviews occurred on different days at different times. All participants had a knowledge of how biodiversity conservation works in the park, whether at the local park level or at a national scale. It is important for the research to have insider knowledge of the National Park Service in addition to the document analysis conducted to help propose a strategy that will be beneficial and applicable to the parks. Another benefit of the interviews is to check data that has been collected with what the experts in the park service know.

The following section pulls out key ideas from each interview and summarizes the answers for each question to protect the interviewees' anonymity (Appendix G). The main findings from the interviews will be discussed at the end of the chapter to show how they are relevant to the proposed strategy.

Q1. Balancing tourism and biodiversity conservation is a stated goal of the National Park Service. In your experience, how is this accomplished?

Summary: This is a challenge and will always be a challenge. Both are critical, it is not possible to provide for visitor's needs without protecting the parks' natural resources. Visitor use management guidelines, the Organic Act, the Endangered Species Act, and the NPS *Management Policies 2006* document, along with other laws and policies, mandate the protection of natural resources at the highest level. However, this does not make it easy to accomplish as individual parks are facing different levels of impacts on their natural resources because of the unprecedented rise in visitation that many of the parks were not prepared for. It is important for the parks to utilize their partnerships to think about and develop planning at a larger scale.

Q2. When a conflict arises between tourism and biodiversity conservation, how is it typically resolved?

Summary: The governing body of the NPS prohibits actions that would damage natural resources. One person said that while there

seems to be a dual mandate of the mission, preservation and resource protection is paramount. Resource protection always takes the higher priority. Some examples are trying to figure out how to separate people and wildlife, how to accommodate large groups of people transportation wise, and the potential use of a reservation system. Usually with anything that would impede on natural resources, an environmental assessment or impact statement would need to be done to justify the reasoning. Park managers and their partners conduct the necessary analysis to determine the impacts to decide whether any action can take place. In some parks, interdisciplinary teams will meet and come to agreements as a group when confronted with a potential conflict.

Q3. In your experience, do you see biodiversity conservation being a high enough priority compared to tourism management within the NPS?

Summary: This is something that the parks ask themselves daily and strive to achieve. The parks are a public agency and are responsive to what the public expects of the park service and they strive to interpret the several laws in place to protect biodiversity at the park level. This can look different for different parks and

can vary between interest groups. Different political environments can also influence decisions about protecting resources. One park staff member said they wished there was more funding allocated to biodiversity conservation, but the Secretary of the DOI oversees the priorities for the park service, of which visitor management has a lot of support for right now.

The way parks manage resources has also changed over time. The parks used to fill out NEPA documents, but now they focus more on Environmental Impact Statements. Typically, however, protecting resources takes precedence in any project, but it is not always easy to know where to draw the line. Sometimes, protecting biodiversity does get lost because it is hard to accomplish everything that needs to be done. It is important to the parks, though, that the public is involved in the process. One interviewee said the parks do a good job communicating information about protecting resources to the public, especially compared to other agencies.

Q4. What biodiversity conservation guidelines/standards currently exist for the NPS and how are the guidelines/standards applied in your park?

Summary: The NPS in general answers to the Organic Act, but there are other laws specifically that relate to resource protection such as the Endangered Species Act, Migratory Bird Act, NEPA, the Clean Water Act, and several other laws, policies, director's orders, and regulations that impact individual parks. Any time the parks propose something, they need to answer to these guiding laws and look at any resources that may be impaired such as animals, plants, critical habitats, or the quality of water.

Specifically, all the park staff called attention to the *Management Policies 2006* document as the standard all the parks look to for guidance when it comes to biodiversity conservation and resource protection. However, this document is not always specific, especially when it comes to individual park resources. Parks then have their own individual documents based off this document and any other local laws that apply. If the parks are ever unclear about anything, they move to other guidelines and then eventually up to the office in Washington D.C. where they have a conversation with the specialists about how to move forward.

Q5. When parks are conducting biodiversity conservation projects, how are they documented?

Summary: Different factors influence the way that data is collected and managed such as the type of project, how the project is designed, and who is involved in the research. However, data is typically managed at the park level which results in some flexibility in how data is collected and managed. Typically, if the parks are conducting a project, they produce a plan to study the proposal and provide a completion report. If outside researchers are conducting their own work, they would have a research and collecting permit which requires a study plan or completion report. There is a set of standards to be met in terms of data quality and control set by the NRSS that regulates data collection. This data is stored at the park level through the Inventory and Monitoring Program. Any reports that generate data, from the park or researchers, typically ends up in IRMA. If someone wants to find information, using IRMA and the Inventory and Monitoring Program would be the primary source. However, people might need to contact the parks for specific information.

Research done outside of the parks with other agencies is documented under the specific act that governs the research (such as the Endangered Species Act). Additionally, park conservancies have their own way of sharing

information that is separate from the park service. One interviewee stated that collecting and managing data between parks presents a big challenge because there is not always a uniform way to share data, especially when other government agencies are factored in. While these agencies may be talking to each other, there are different ways to share information. However, the parks are working on specific projects that are looking into how to better collect and share data.

Q6. How do you make documented biodiversity conservation projects accessible/available online to the public?

Summary: Before data can be shared, the NPS needs to make sure that the information meets the standards set by the NRSS but also provide flexibility for parks because each park has their own needs and unique natural resources (e.g. bird species vs. coral reef). The data shared also needs to meet certain public standards to ensure security, access, and quality of the data before it can be sent out. There is also the protection of resources to consider when deciding what information to be made public to make sure certain data does not get into the wrong hands (like poaching a specific species).

The public has access to several databases that contain this information such as IRMA, the Inventory and Monitoring Program, Research Permits, PEPC, and EIS documents. PEPC and EIS are both resources that allow the public to comment and weigh in on projects that are currently being processed. The information available depends on the type of project and who is involved. For example, projects done with universities could also be published in a journal or shared with an interagency team. If people really want to know about a specific topic, they can reach out to the park service and ask.

Q7. In what ways do you think the documentation of biodiversity conservation projects could be better communicated or disseminated to the public?

Summary: This is something the parks are currently working on and know they can always improve. The parks are currently working on ways that they can better communicate scientific findings to the public to help people understand what the parks are doing to protect resources. One interviewee said it is important to communicate projects to the public because visitors will protect what they love and if they do not know the resources the parks have or

how fragile they are, they may not realize how important it is to protect those resources. One way the parks try to communicate important information is through press releases, but it is important to be strategic about what is communicated so it makes sense to the general public.

Another thing the parks are doing is trying to make their website and databases more user friendly to make them more accessible to the public. An interviewee pointed out that even three years ago, the website was more focused on individual parks and visitation. Now, they are working to make the website show more information on the system about resources and biodiversity and there is a lot of room for improvement in this area. One staff member said it would be good if there was a standardized way to upload projects in one place on their website and to access information because there are so many outlets available right now. A few staff members also talked about the importance of improving communication broadly between parks and with other outside agencies to better utilize their existing connections. One staff member mentioned the idea of issuing an annual parks report that can be given to the public that documents all the projects the park service has been working on.

Q8. How are biodiversity conservation projects, whether in terms of existence and research results, shared across parks?

Summary: One interviewee mentioned that it is a challenge when it comes to sharing information with parks across the country, especially with limited staff and sources. The NRSS helps on the front end by connecting parks and sharing information to make sense of it. There is a lot of coordination when it comes to monitoring similar issues which can happen organically if there are common issues between parks. While one interviewee mentioned that there is no formal way to share information, others mentioned that the parks have their own way of communicating through an internal website. The website the park staff primarily use for this is called "Inside NPS." This website allows people to connect with other groups with similar interests and communicate important announcements.

There is also a back end of the NPS website which offers more information with programs such as the Inventory and Monitoring network than what is available to the public. Information can also be shared through conferences (less common with more limited budget to travel), workshops, information put out by the

Washington D.C. office about notable projects, special teams, work groups, newsletters, or other publications. One staff member said that in their region, the regional staff send out an annual report, but it is internally published and typically only includes projects the regional staff is directly involved in. There seemed to be some discrepancy here with access staff has to specific data or communication channels, so it is unclear if everyone uses the internal park website to communicate information.

Q9. In what ways do you think the documentation and communication of biodiversity conservation projects could be improved between the parks?

Summary: The consensus was that there is always room for improvement and the park service is always striving for better ways to share information. The park service side of communication can be improved similarly to public communication methods by making information more accessible and easier to find for staff members. One interviewee proposed that more networking could be established for researchers across parks within a region. Another interviewee stated that newsletters and the Inside NPS website could be better improved upon to communicate between

parks nationally and regionally. The way that parks communicate with their partners and share findings could also be improved. One interviewee also mentioned the possibility of bi-annual meetings within their network to talk about projects and common goals.

Q10. Are partners like the NPS' Natural Resource Stewardship and Science Directorate being used to communicate biodiversity conservation efforts on a regional basis? If so, how?

Summary: The NRSS is making it a priority to raise awareness and make biodiversity conservation efforts more accessible at a regional level. They make this information available through workshops, work groups, calls, websites, and more. The parks also can reach out to the NRSS if they need expertise. Regional communication happens all the time at the NRSS level, but how that is accomplished depends on the projects and who is involved. One of the main pillars of the NRSS is to enhance stewardship science access and engagement by providing usable information about natural resources to the public and park managers. The NRSS is striving to do this through implementation of information on their website and through the application of standards.

Q11. Who coordinates the financial and/or management efforts supporting biodiversity conservation projects between the NPS, conservancies, foundations and other partners? Do you see any emerging trends regarding this relationship?

Summary: All the interviewees said that this relationship can go both ways. For the National Park Service, the NRSS is at the head of coordinating these financial efforts. The NRSS works with the parks to identify what their needs are and work to make conservation a higher priority. Parks can also coordinate at their own level, and typically parks put together a request and take that to their financial partners to sponsor them. Typically, bigger parks have bigger “friend” groups to support projects and the amount of support varies between parks. However, their partners can also approach parks with a proposal if they have a project that they have the funding for. Parks can also apply for funding from the national level where the parks compete to win grants. This process can be very competitive, and it can be hard for the parks to receive all the funding they need. Trends in this relationship are moving toward dealing with broader issues and focusing more on these partnerships by working together and communicating to

better manage resources and focus more on conservation projects. Additionally, more volunteers and partnerships are emerging that the park service can become involved with to help support natural resources.

Q12. Who decides how to prioritize biodiversity conservation projects related to education, preservation, scientific research, and maintenance?

Summary: At the highest level, priorities are determined through the Director's Office through the administration or Congress. At the next level, the NRSS Natural Resources Priority group helps to prioritize this information before sending it out to the parks. At the park and regional level, the park superintendent of each park or regional director could be deciding these priorities. What these priorities are also depends on what funding efforts are available and what each park is currently focusing on and how they can allocate money from sources like their recreation fees.

Q13. Do you think the park service mission is adequately represented on the NPS website?

Summary: The interviewees agreed that there is always room for improvement, especially

when it comes to website functionality and content. One interviewee said that the park service can take for granted a lot of things like that the public knows more than they do and that visitors will treat the park well with general goodwill. There should be more awareness about things like access and appropriate use in the parks, such as wildlife viewing. People come to the parks assuming that the resources are intact, but the quality of these resources and communicating how that influences the visitor's experience could be improved.

Q14. How does your park prioritize the information that is displayed on your website?

Summary: The NRSS said that there are two main ways information is prioritized. 1) public need or interest and 2) information identified as a priority in the NRSS communications department. The NRSS said when prioritizing this information for the public it is important to think about what stories can be told and how they can be compelling. The website format itself is dictated by the Washington D.C. office for individual parks to use and upload information to. One interviewee stated that they think the website is confusing and there is not as much staff dedicated to working on the website as there are working on other social

media accounts. It is challenging for the parks to prioritize information because there is a lot of information out there and interest in parks, and they must figure out how to display that information in a cohesive way while targeting different audiences. One staff member stated that they try to upload information in a way so that it does not need to be updated on the time, and their research center partners are better about providing more recent information.

Q15. Do you think better communication about biodiversity conservation projects to the public can increase volunteerism? If so, would the overall benefit be worth the extra coordination effort? Does this depend on the scale of volunteerism or public support?

Summary: All the interviewees agreed that better communication about biodiversity conservation projects to the public could increase volunteerism and that the efforts would be worth it depending on the scale of the project. The primary goal of the park service in their communication with the public is to inspire visitors to get involved or help in some way. People can only protect what they value, so it is important to communicate the value of the parks through protection of natural resources. Volunteers are some of the best communication

vectors the parks have because they care a lot about the parks, and they learn a lot from their experiences.

Coordination of volunteers happens at all levels in the park service. At the national level, initiatives like the Citizen Science program encourage all the parks to get involved and share information. At the local level, park partners that specialize in utilizing social media to help raise awareness about volunteer opportunities can help. However, there are not a lot of places within the park service that connect volunteers, so there is opportunity to engage with the public and get more people involved. Additionally, some of the parks need to have more resources in place to support the growing number of volunteers, because it takes a lot of time and effort to properly train them. One interviewee mentioned the potential for the park website to be better utilized to empower the public to help and get involved. They also mentioned the importance of working at a landscape level and capitalizing on partnerships to help organize the volunteers.

V. INTERVIEW FINDINGS

It was important for the credibility of the research that the document analysis and interview findings complement each other to ensure the data being collected reflected what the park service is trying to convey through their website and documents. The interviewees hit on several key sources that were part of the document analysis, such as the *Management Policies 2006* document being the primary guideline for the parks and the focus of the parks to protect natural resources, despite their limited staff and funding.

The interviews further solidify the need for this research because the interviewees stated that there is need for improvement in the regional communication network between the parks, their partners, and with the public, especially on the National Park Service website. They also stated that they are making it a priority to raise awareness and make biodiversity conservation efforts more accessible at a regional level. At the end of the interview, all the staff members also agreed that better communication about biodiversity conservation projects to the public could increase volunteerism.

When it comes to how natural resources are protected or data is shared, there are different strategies when it comes to each park, and

what is prioritized depends on several different factors, such as the political climate, type of project, how the project is designed, and who is involved in the research. Therefore, the results can also vary depending on the type of project and who is involved. Most of the time, the answers came down to “it varies.” For example, regional communication between parks is coordinated by the National Resource Stewardship and Science Directorate, but it depends on the projects and who is involved for how that information gets shared.

It was also important to learn about how the parks internally communicate with each other. New insights about the existence of websites such as “Inside NPS” were key to learning what tools the parks use to share information with each other. There are several other ways information is shared such as through conferences, workshops, information put out by the Washington D.C. office about notable projects, special teams, work groups, newsletters, or publications. All this information is important to know to inform the strategy by using communication tools the park service already has and strengthening them.

While the park staff helped solidify findings from the document analysis and provide

notable insight, they also gave some great suggestions for how to improve upon the current way biodiversity conservation projects are communicated. The staff mentioned that collecting and managing data between parks presents a big challenge because there is not always a uniform way to share data. To improve how information is shared at a park scale and with their partners, they could establish a better network for key stakeholders across parks within a region. They also said they could improve the way that newsletters and “Inside NPS” are used to make communication easier between parks.

To improve how information is shared with the public, the interviewed park staff said that utilizing other parks, outside agencies, and their partners to share information could be better capitalized on to get information out to the public. They also stressed the importance of being strategic with sharing data to make sure that people do not get overwhelmed with information. Another interviewee mentioned the idea of issuing an annual parks report to the public that documents all the projects the park service has accomplished in a year. Overall, the park staff agreed there could be a better implemented network to share biodiversity conservation projects.

DISCOVERIES

- “**Inside NPS**” is the main channel the park staff use to communicate with each other where information can be shared between parks
- **Park staff agreed that better communication about projects could increase volunteerism**

STAFF IDEAS

- **Improve communication regionally** between the parks & public
- **Establish a better network for stakeholders** across parks within a region and include outside agencies, capitalizing on their existing networks
- **Issue an annual report** that summarizes park accomplishments from throughout the year



CHAPTER FIVE: PROPOSED STRATEGY



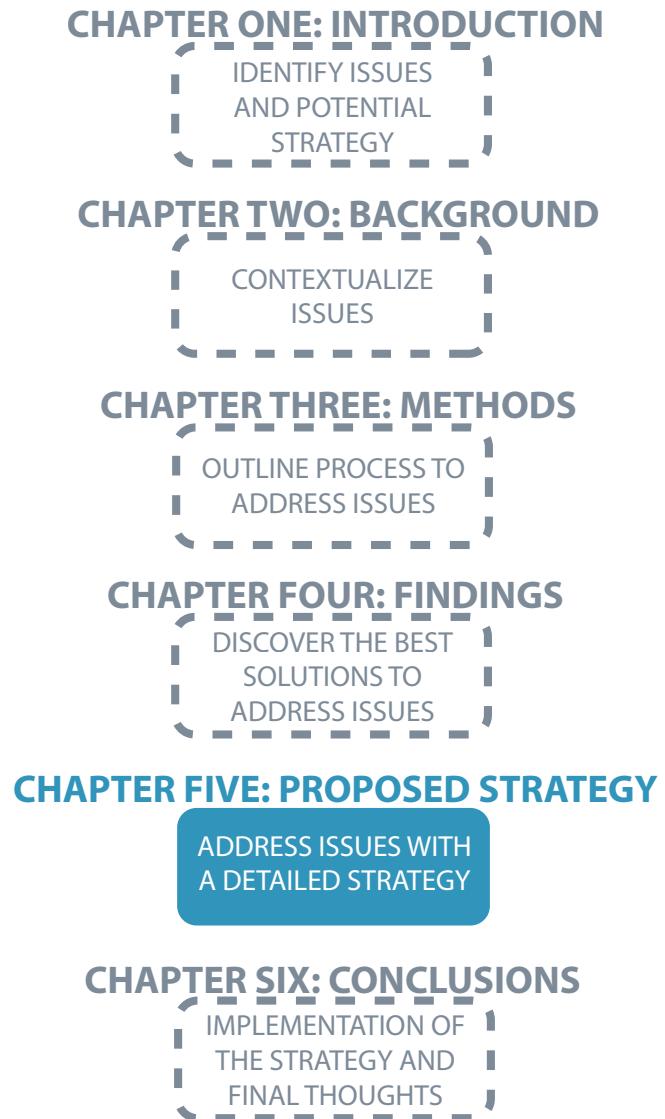


Figure 5.1. Project Organization Diagram (Hollman 2019)

I. PROPOSED STRATEGY

This chapter addresses the identified issues in *Chapter One: Introduction* with a detailed strategy for the National Park Service, focusing on the Intermountain Region (Figure 5.1). The strategy is based on the findings from the methods and further analysis. This chapter is divided into two key focus areas: a National Park Service (NPS) Communication Network and a National Park Service (NPS) Public Communication Strategy. The proposed communication network is an online portal that connects the National Park Service with key stakeholders and the public, while offering a way to prioritize projects by region and type. The network focuses on improvements the parks can make between key stakeholders to better share information, and the public communication strategy focuses on how to better share this information with the public and update the NPS website to be clearer about communicating biodiversity conservation.

It is important to have a strategy for how the parks can improve communication with each other to have a standardized way of sharing important findings with the public. The network section includes a partnership organizational structure, a connectivity diagram, and a scenario of how the network will help improve the communication of projects between key

sectors using the new network. The public communication strategy section takes this information and provides examples of how this new network can share findings with the public on the National Park Service website and through an annual report. Collectively, the chapter expands upon the previously identified objectives (Figure 5.2):

Park Organization

- (a) **Coordinate** at a regional scale to achieve common goals
- (b) **Organize** projects by type and location
- (c) **Promote** stronger communication between partners and the NPS by creating a user-friendly network

Public Dissemination

- a) Clearly **inform** the public about biodiversity projects in the parks utilizing the NPS website
- (b) **Advocate** for biodiversity by highlighting key projects and results
- (c) **Connect** conservation projects to volunteers and donors

The following sections detail this strategy.

IDENTIFIED ISSUES

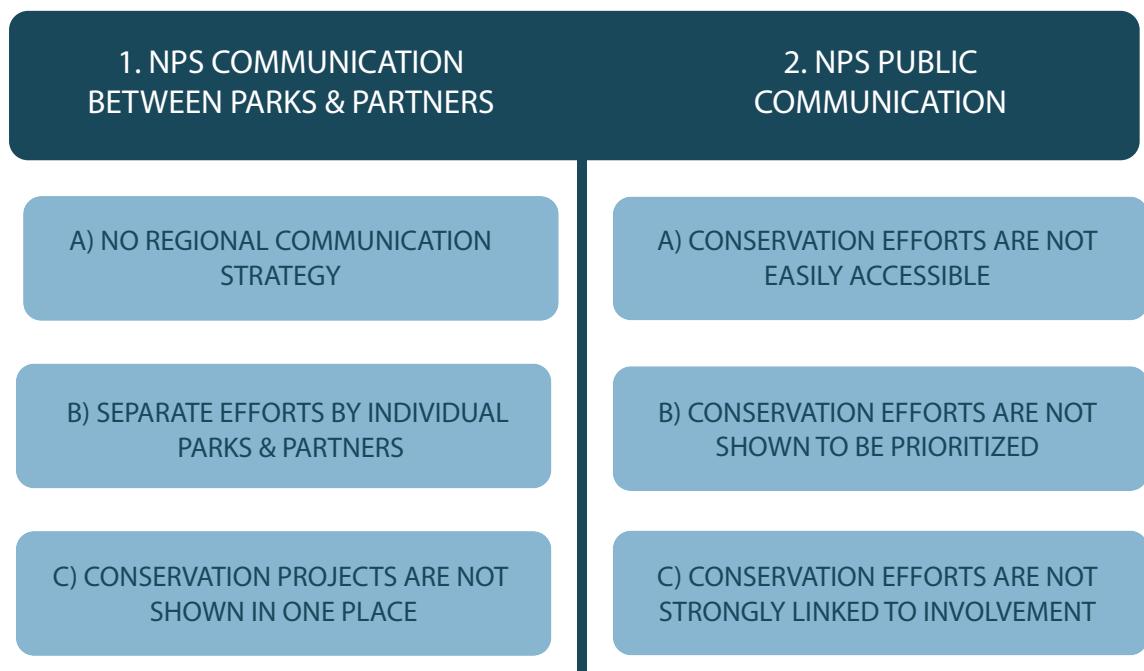


Figure 5.2. Identified Issues and Strategy Goals Developed from Findings (Holloman 2019)

STRATEGY GOALS DEVELOPED FROM FINDINGS



1. NPS COMMUNICATION BETWEEN PARKS & PARTNERS

2. NPS PUBLIC COMMUNICATION

A) **COORDINATE** AT A REGIONAL SCALE
TO ACHIEVE COMMON GOALS

B) **ORGANIZE** PROJECTS BY TYPE
& LOCATION

C) **PROMOTE** STRONGER COMMUNICATION
WITH A USER-FRIENDLY NETWORK

A) CLEARLY **INFORM** THE PUBLIC ABOUT
PROJECTS ON THE NPS WEBSITE

B) **ADVOCATE** FOR BIODIVERSITY BY
HIGHLIGHTING KEY PROJECTS & RESULTS

C) **CONNECT** CONSERVATION PROJECTS
TO VOLUNTEERS AND DONORS

II. NPS REGIONAL COMMUNICATION NETWORK

A. SETTING UP THE NETWORK

Based off the findings, the parks could follow the example of Parks Canada and Australia to have a clearer regional focus in their parks regarding biodiversity conservation management and communication. To accomplish this, a regional network can be created that focuses on communication between parks, their partners, and the public that organizes and prioritizes projects.

Biodiversity conservation projects can be a part of this network once it has been created. A regional focus can start at the highest level nationally and trickle down to the local park level. The *Management Policies 2006* document could be updated to reflect this strategy, especially since it is currently about fifteen years out of date. Mandating a regional focus through policy will help create change more quickly in the park service, which is critical to protect the parks' valuable natural resources.

The National Park Service (NPS) is already divided into seven regions: Alaska, Intermountain, Midwest, National Capital, Northeast, Pacific West, and Southeast (Intermountain Region GIS Program Office 2003). According to the findings, however, there is not a strong focus on communicating projects regionally that occur across

multiple park boundaries. A new regional communication network that focuses on connecting projects in these seven regions could help parks that are facing similar issues be able to communicate their projects and findings with each other more easily. This is important so parks are not missing out on important information that other parks in the same region are finding and wasting resources.

Right now, the parks utilize several different methods of communication to share information regionally. One of the main ways the parks communicate with each other is with the "Inside NPS" website where park staff can share information. This report proposes that the "Inside NPS" website be updated to include a regional communication network set up for parks and key stakeholders to share information in their specific region. Instead of only sorting projects by park, projects can be sorted by region to better connect similar ideas or issues that individual parks are facing that could be relevant to other parks. This would save the parks the time of sorting through countless projects in dispersed locations and allow easier access to information regionally.

After identifying the need for the network, it is important to discuss who should be involved

in the network. Based off the findings, every park should have partners that fit into the following sectors: indigenous organizations and communities, researchers and academia, business, government, non-profits, and philanthropy (Australian Government 2020c). The current network can be expanded to have a more diverse group of partnerships. The network should encourage cross-communication between these partners, park personnel, the general public, educators, and volunteers for the benefit of all. Getting all these people and organizations plugged into a network will make accessing and sharing information easier for everyone involved.

Of course, having the parks and their partners post all the projects they accomplish would be overwhelming without some structure. There needs to be a system in place that organizes and prioritizes projects that people can search through that is more user-friendly than current systems like the Integrated Resource Management Applications portal (IRMA). A search function should also be included so that people can easily look for specific information if they are interested in a certain topic. From the finding based off key NPS partners, the parks could separate their projects by type and priority. There are a few categories that stood

out in the findings which parks could use to organize their information: History and Culture, Visitor Experience, Education and Stewardship, Biodiversity Conservation, and Parks of Tomorrow (Appendix H). The following is a list of projects that could be included:

- *History & Culture:* Projects that protect, preserve, research or share information about human history and cultural resources including indigenous communities
- *Visitor Experience:* Projects that enhance visitor experiences to increase safety, improve access, and create opportunities for visitors
- *Education & Stewardship:* Projects that promote understanding and appreciation to develop citizen stewards of the parks
- *Biodiversity Conservation:* Projects relating to wildlife, geology, vegetation, science and education to preserve the natural resources that make up the national parks
- *Parks of Tomorrow:* Cutting edge projects that focus on how to deal with outside factors influencing the parks such as: climate change, technological trends, land use, green energy, political agendas, and more

The proposed network connects the National Park Service with key stakeholders and the public and prioritizes projects by type (Figure 5.3). To convey their projects in a way that is easy to understand and shows how the network is beneficial for all key stakeholders involved over time, the parks should also have a way to summarize and share past and current projects, and key ongoing research findings. An example is provided for how different stakeholders would access the network in a scenario. This report also further details an example of how the general public might access the network, specifically focusing on current biodiversity conservation projects through a public oriented website mock-up and annual report mock-up.

EXISTING INTERNAL COMMUNICATION NETWORK

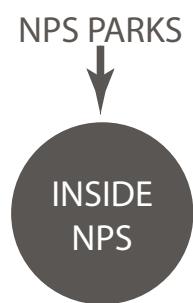
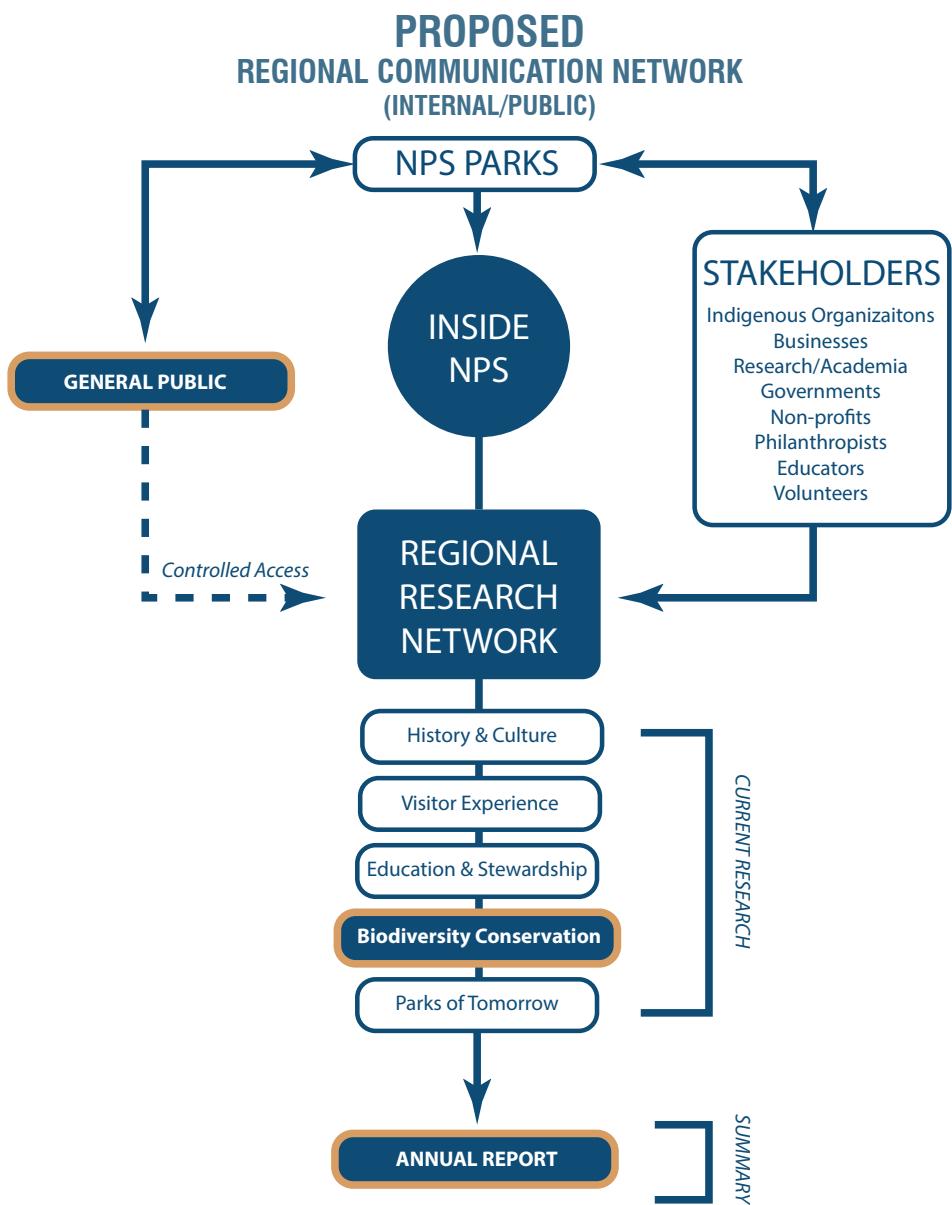


Figure 5.3. Existing vs. Proposed Communication Network for the NPS: This graphic highlights the current use of the “Inside NPS” website and the proposed regional network that would connect national park staff with the general public and key stakeholders. This network will contain research projects centered around five key identified areas from the findings: “Wildlife & Wilderness, Visitor Experience, Cultural Treasures, Education, and Scientific Research (Hollman 2019).”



EXISTING STAKEHOLDER CONNECTIVITY

B. REGIONAL NETWORK CONNECTIVITY

One of the key ideas of the network is that it would improve connectivity between the National Park Service (NPS) staff and key stakeholders made up of educators, donors, partners, researchers, volunteers, and the public. Their roles are described as follows:

- Educator: a teacher in a classroom setting
- Donor: a financial sponsor of the park
- Partner: someone who is officially partnered with the NPS
- Researcher: a scientist sponsored by the parks or their partners
- Volunteer: a member of an official park volunteer organization
- Public: anyone interested in the parks

Instead of directly contacting national park staff, taking up their valuable time and energy, the regional communication network intercepts all these different stakeholders and connects them with each other directly. The connection between stakeholders improves as they can not only access other people in their group (i.e. researchers with researchers) but connect with other groups (i.e. researchers with donors) without having to go directly through the park service (Figure 5.4). Public communication is also improved, allowing the public to contribute.

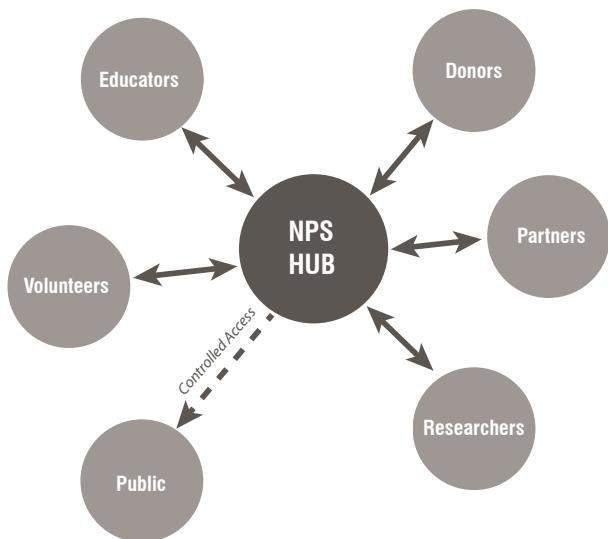
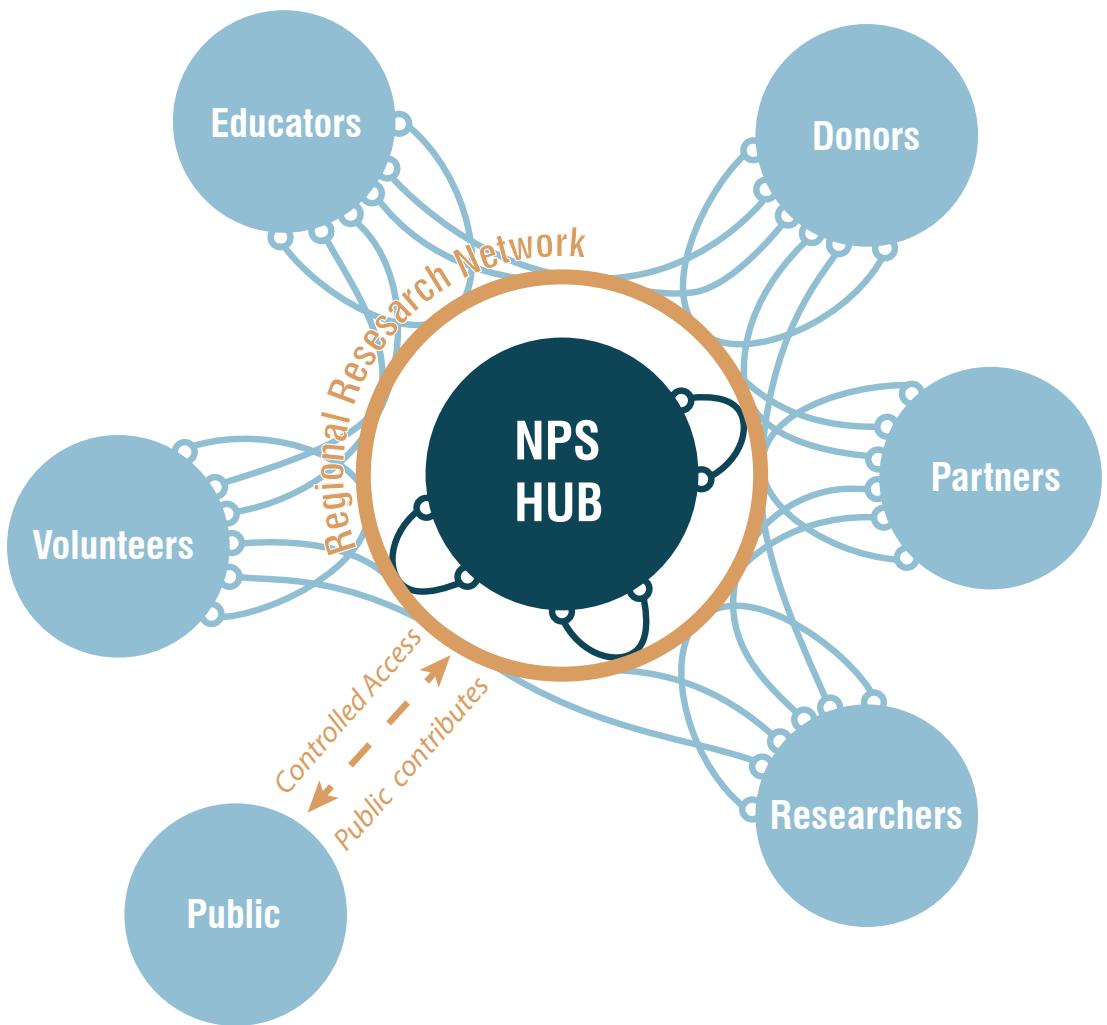


Figure 5.4. Existing vs. Proposed Stakeholder Connectivity: The proposed regional communication network demonstrates how the existing communication strategy is improved upon, as well as the possible connections that could result from the network's implementation (Hollman 2019).

PROPOSED STAKEHOLDER CONNECTIVITY



C. PROPOSED SCENARIO

With a connected regional research network, everyone could interact in one place. The following proposed scenario shows how the new network could be utilized by multiple stakeholders which ties into what they would see on the following pages (Figure 5.5).

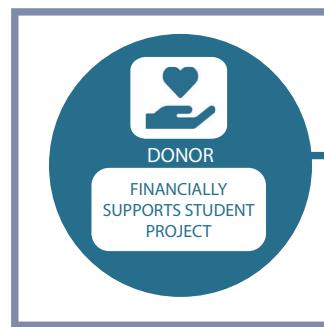
First, a **researcher** works on a project for the park service about Whitebark Pine health that is uploaded to the network (Figure 5.7). Then, a **nonprofit partner** sees and supports further research (Figure 5.9). A **teacher** also sees the project and talks about it in her classroom where a **student** hears about it and tells their **family** (Figure 5.10). **The family** then finds the project online and they volunteer (Figure 5.11).

The Crown of the Continent Research

Learning Center sees the report and assesses Whitebark Pine health in **Glacier** (Figure 5.12).

The NPS then sees multiple projects happening and sets up an Intermountain Region Citizen Science project (Figure 5.13). **Financial sponsors** see the project online and support it (Figure 5.9). Last, **volunteers** in all the different parks see the project and help collect data, resulting in new management policies for Whitebark Pine health in the region (Figure 5.11).

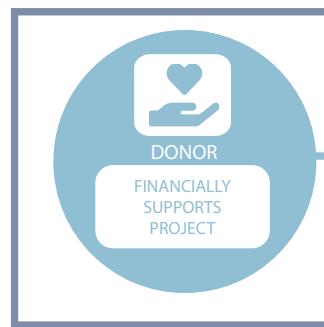
ROCKY MOUNTAIN



GLACIER



INTERMOUNTAIN REGION



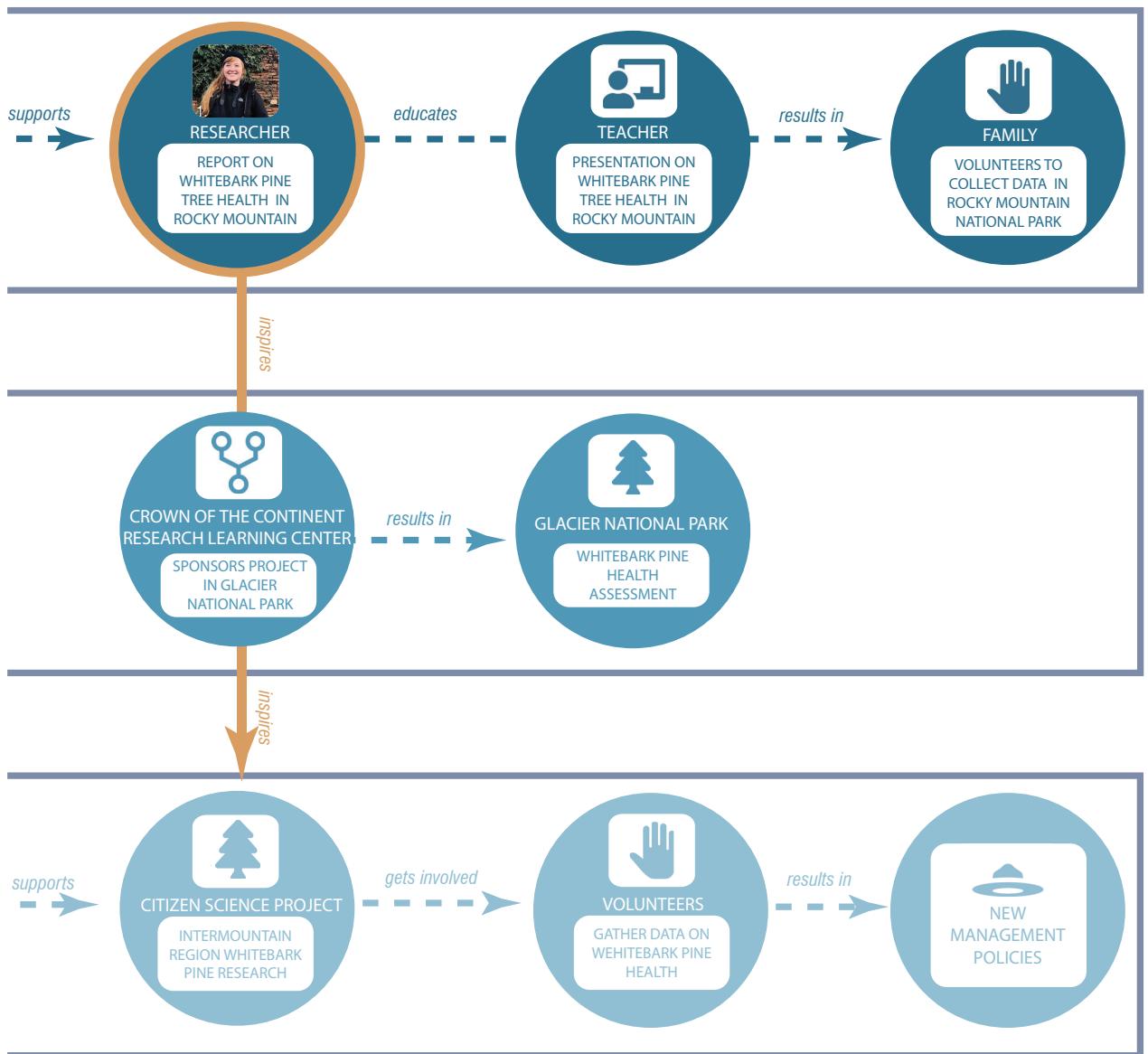


Figure 5.5. Scenario Diagram (Hollman 2019)

To better illustrate how the Figure 5.5 scenario works, website mock-up pages (Figure 5.6-5.13, pg. 148-151) have been prepared to graphically depict what each networked stakeholder would see in the Regional Research Network website. These mock-up pages include a homepage, project upload screen, researcher page, donor page, educator page, volunteer page, partner page, and an NPS park page (Figure 5.6-5.13). The webpages only contain necessary scenario information and partially depict the entire proposed website. The information displayed on the webpages is based off findings from this report and serves as an example since the “Inside NPS” website is not publicly accessible. The internal network website would allow users:

- to see projects prioritized regionally
- to search projects by type
- to communicate easily between stakeholders

For implementation purposes by the NPS, the content itself and the ideas here could be transferred to the actual website.

The following paragraphs provide a synopsis of the rationale behind each mock-up webpage targeting a specific viewer type. Paragraph numbers are keyed to the number found in the upper right corner of each mock-up webpage.

1. Homepage: The homepage could allow users to select their region and a portal to allow access to specific pages (Figure 5.6). The homepage could also take viewers to a login screen with a username and password.

2. Upload a Project: After logging in, the researcher has an option to connect to the NPS. Under that page they could submit a completed project (Figure 5.7). The requirements for uploading a project could be the same as they currently exist in the IRMA portal under the “National Park Service Research Permit and Reporting System Requirements to Submit an Application (National Park Service 2020b).” Additional requirements could include uploading a photo and a brief project description.

3. Researcher Page: After uploading a project and getting approval from the NPS, the researcher in the scenario would be able to see their work on the researcher homepage (Figure 5.8). The researcher page could include access to research needs in the region by project type and current priorities, along with a search function if they want to find a specific project or park. There could also be an opportunity for researchers to connect with the NPS, partners, donors, volunteers, other researchers, and educators through a communication channel.

4. Donor Page: From the scenario, the donor for the project in Rocky Mountain and the region would have access here (Figure 5.9). The donor page could include access to donor needs in the region by project type and current priorities, along with a search function if they want to find a specific project or park. There could also be an opportunity for donors to connect with the NPS, partners, other donors, volunteers, researchers, and educators through a communication channel.

5. Educator Page: From the scenario, the teacher would see the project in Rocky Mountain here (Figure 5.10). The educator page could include access to classroom materials from the region by project type and current classroom priorities, along with a search function if they want to find a specific project or park. There could also be an opportunity for educators to connect with the NPS, partners, donors, volunteers, researchers, and other educators through a communication channel.

6. Volunteer Page: From the scenario, the family for the project in Rocky Mountain and the volunteers for the Citizen Science project would have access here (Figure 5.11). The volunteer page could include access to volunteer needs in the region by project type and current

priorities, along with a search function if they want to find a specific project or park. There could also be an opportunity for volunteers to connect with the NPS, partners, donors, other volunteers, researchers, and educators through a communication channel.

7. Partner Page: From the scenario, the Crown of the Continent Research Learning Center would see the project in the Rocky Mountains here (Figure 5.12). The partner page could include access to featured regional projects and project priorities in their park, along with a search function if they want to find a specific project. There could also be an opportunity for partners to connect with the NPS, other partners, donors, volunteers, researchers, and educators through a communication channel.

8. NPS Park Page: From the scenario, the NPS parks would be controlling the content on the webpages from here (Figure 5.13). The NPS page could include access to featured regional projects and project priorities in their park, along with a search function if they want to find a specific project. There could also be an opportunity for the parks to connect to other parks in their region and set priorities for their partners, donors, volunteers, researchers, and educators through a management system.

The screenshot shows the 'Select Your Region' page. At the top, there is a banner with the text 'INSIDE NPS' over a background image of mountains. Below the banner, there is a red 'MOCK UP' watermark. A navigation bar at the top has tabs for 'Alaska', 'Intermountain', 'Midwest', 'National Capitol', 'Northeast', 'Pacific West', and 'Southeast'. Below the navigation bar, there is a section titled 'Select Your Login' with six circular icons representing different user types: Researcher (checkmark), Donor (hand holding heart), Educator (computer monitor), Volunteer (hand), Partner (key and lock), and NPS Parks (tree). Each icon has a small orange circle with a number from 3 to 8 indicating its sequence.

Figure 5.6-5.13. "Inside NPS" Website Scenario Mock-Up (Hollman 2019)

The screenshot shows the 'INTERMOUNTAIN REGION UPLOAD A PROJECT' page. At the top, there is a banner with the text 'INTERMOUNTAIN REGION' and 'UPLOAD A PROJECT' over a background image of a forest. Below the banner, there is a red 'MOCK UP' watermark. A navigation bar at the top has tabs for 'SEARCH' and 'MENU' with a notification badge '2'. Below the navigation bar, there is a section titled 'Submit a Project' with a large input field for 'Project Title' and a placeholder 'Enter Here'. To the left of the input field is a button labeled 'UPLOAD RELEVANT PHOTO HERE'. Below the input field, there is a text area for 'Write brief project description here'. To the right of the input field, there is a list of form fields with their respective placeholder texts:

Project Title:	Enter Here
Purpose of Study:	Enter Here
Summary of proposed field methods and activities:	Enter Here
National Park in which you wish to apply for a permit:	Enter Here
Study start and end dates:	Enter Here
Identification of any federal funding agencies:	Enter Here
Location of activity in the park:	Enter Here
Method of access:	Enter Here
Names of co-applicants:	Enter Here
If you are collecting specimens, contact information of repositories:	Enter Here
A copy of the study proposal:	Upload Here
A copy of all peer reviews:	Upload Here

for academic purposes only

National Park Service

INTERMOUNTAIN REGION RESEARCHER NETWORK

MOCK-UP

SEARCH MENU 3

Research Needs by Project Type

Biodiversity Conservation 

Visitor Experience 

History & Culture 

Education & Stewardship 

Parks of Tomorrow 

Current Research Priorities

2.  Whitebark Pine Health

Assist with student research currently being conducted about the health of whitebark pine.

3.  Grizzly Bears Encounters

Help the Glacier Conservancy research Grizzly bear habitats in the region.

4.  Retake Photography

Help research the effectiveness of recorded landscape change via repeated photographs.

5.  Elk Herd Monitoring

Help park staff research the protection of elk herds in the parks.

Connect

 NPS

 Partners

 Donors

 Volunteers

 Researchers

 Educators

National Park Service

INTERMOUNTAIN REGION DONOR NETWORK

MOCK-UP

SEARCH MENU 4

Donor Needs by Project Type

Biodiversity Conservation 

Visitor Experience 

History & Culture 

Education & Stewardship 

Parks of Tomorrow 

Current Donor Priorities

2.  Grizzly Bears Encounters

Help support the Glacier Conservancy with their study on Grizzly bear habitats in the region.

3.  Whitebark Pine Health

Support student research currently being conducted about the health of whitebark pine.

4.  Active Trails Program

Support the Active Trails Program which promotes healthy lifestyles and protects trail resources.

5.  Next Generation Fund

Learn about how you can help support this fund created to connect youth with nature.

Connect

 NPS

 Partners

 Donors

 Volunteers

 Researchers

 Educators

for academic purposes only

 National Park Service

INTERMOUNTAIN REGION EDUCATOR NETWORK

MOCK-UP

SEARCH MENU 5

Classroom Materials by Project Type

Q Search

Biodiversity Conservation



Visitor Experience



History & Culture



Education & Stewardship



Parks of Tomorrow



Current Classroom Priorities

Q Search



2. Retake Photography

Teach your class about recorded landscape change via repeated photographs.



3. Elk Herd Monitoring

Educate your students about the importance of protection of elk herds in the parks.



4. Whitebark Pine Health

Learn about current research being conducted about the health of whitebark pine.



5. Every Kid Outdoors

Talk to your classroom about how to get involved in our Every Kid Outdoors program.

Connect



NPS



Partners



Donors



Volunteers



Researchers



Educators

 National Park Service

INTERMOUNTAIN REGION VOLUNTEER NETWORK

MOCK-UP

SEARCH MENU 6

Volunteer Opportunities by Project Type

Q Search

Biodiversity Conservation



Visitor Experience



History & Culture



Education & Stewardship



Parks of Tomorrow



Current Volunteer Priorities

Q Search



2. Retake Photography

Volunteer to help record landscape change via repeated photographs.



3. Whitebark Pine Health

Help collect data about the health of whitebark pine our region.



4. Active Trails Program

Volunteer to support the Active Trails Program in your local park!



5. Elk Herd Monitoring

Help collect data that will protect the elk herds in the parks.

Connect



NPS



Partners



Donors



Volunteers



Researchers



Educators

National Park Service

SEARCH **MENU** **7**

INTERMOUNTAIN REGION PARTNER NETWORK

MOCK-UP

Featured Regional Projects

1. 2. 3. 4. 5.

Retake Photography Elk Herd Monitoring Whitebark Pine Health Active Trails Program

Project Priorities in Your Park

6. 7. 8. 9.

Grizzly Bear Encounters Mountain Goat Study Native America Speaks A Botanist's Dream

Connect

NPS Partners Donors Volunteers Researchers Educators

National Park Service

SEARCH **MENU** **8**

INTERMOUNTAIN REGION NATIONAL PARK SERVICE NETWORK

MOCK-UP

Featured Regional Projects

1. 2. 3. 4. 5.

Glacial Meltwater Study Elk Herd Monitoring Factors Affecting the Wilderness Experience Whitebark Pine Health

Project Priorities in Your Park

6. 7. 8. 9.

Common Loon Project Grizzly Bears Encounters Fire Fueled Finds Summer Youth Initiative

Website Interaction

Park Connect Partner Priorities Funding Priorities Volunteer Priorities Research Priorities Educator Priorities

for academic purposes only

III. NPS PUBLIC COMMUNICATION STRATEGY

A. NATIONAL PARK SERVICE REGIONAL COMMUNICATION NETWORK PUBLIC WEBSITE

The network should include the general public to make the National Park Service (NPS) more transparent and provide a way for park visitors to have easier access to information. Similar to how the National Park Service has a front and back end to their website, there could be a section of the existing park service website that serves as the general public end of the network. Having a front and back end would allow the park service to control what information is shared with the public while giving other groups access, and not overload them with information or share sensitive data.

It would be beneficial for the park service to utilize their existing public website to include access to this network since this is a platform that park visitors are already familiar with. The network page could be accessed from the National Park Service website homepage off the main headings, under “Learn & Explore (Appendix D).” Additionally, when viewers go to each park’s individual website, there could be a new tab called “Regional Research Network” under the heading “Learn About the Park” which would have a link to the new regional homepage where people could get connected with current research projects that are going on

and be able to support them (Appendix D). It is important that the public side of this network includes the same priorities and categorizations of projects as the back end, as well as a searchable function to make the data more easily accessible and easier to share.

From the findings, it takes nearly twice as long as all the other websites studied to access biodiversity conservation projects on the National Park Service website, whether through the main channel or individual parks. If the website had a section called “Featured Work” and “Current Projects,” then information would be more accessible and easier to sort through. Especially if viewers wanted to donate or volunteer, it would be easier to identify projects that need immediate attention and it would take less time to access.

The proposed regional communication network could provide easy access to previous project categories mentioned and better connect biodiversity conservation with other projects across multiple categories. The regional network could provide access to each region with a page detailing the parks that are in that region, research projects organized by type, featured work, and ways to get involved. This will allow viewers to see how research is

being conducted that affects the parks at a larger scale, providing information from all the different stakeholders at a regional level. The projects will also promote public involvement, by providing access to volunteer and donor portals under each project.

While the envisioned website would focus more on regional efforts between parks facing similar issues, there could also be a section that takes the viewer to individual park pages that would provide information about park specific projects. So, if viewers were interested in one park, specific park projects could be found on one page in addition to the regional pages. This provides the option for the general public to find projects to support through a regional search or a specific park website page. Providing exposure to projects on multiple pages could lead to more awareness and financial support. The park pages could provide access to park specific projects organized by type, featured work, and ways to get involved. This could allow viewers to see how projects are being conducted that affect the parks at an individual scale, providing information on projects from all the different stakeholders at the park level.

The following sample pages detail an envisioned website that focuses on the

Intermountain Region and shows an example of how the public side of the communication network could be implemented (Figure 5.15-5.21). A hand icon with a number is included on the webpages to show the website path. The following pages are based in reality off existing projects and reports, but the figures and text serve only as an example unless cited. Following this template, regional pages for each website and park could be created. The example also focuses on biodiversity conservation projects, although there are other opportunities to connect to additional project types, identified by the organizational structure.

B. MOCK-UP WEBSITE PAGES

1. Network homepage:

Found on the NPS website under “Learn & Explore” with access to each region’s homepage

2. Regional homepage:

Provides access to parks, projects, featured work, and getting involved

3. Park homepage:

Includes the park’s nickname, purpose, projects, featured work, and getting involved

4. Park projects:

Showcases different partners and groups involved in projects at the park level

5. Park featured work:

Highlights key partners and groups involved in projects while providing the opportunity to volunteer or donate, along with related projects

6. Regional projects:

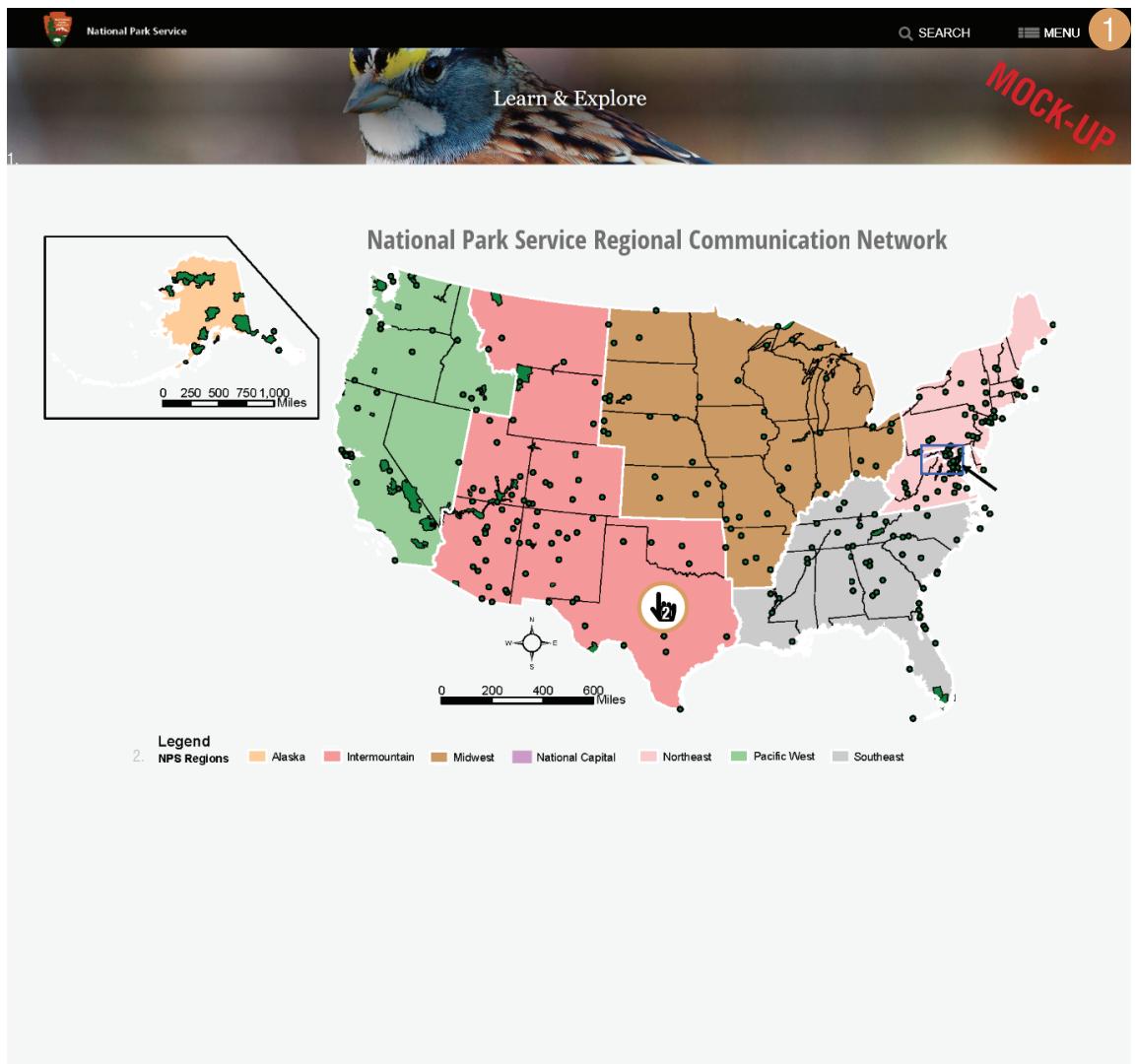
Showcases different partners and groups involved in projects at the regional level

7. Regional featured work:

Highlights key regional parks, partners and groups involved in projects, while providing the opportunity to volunteer or donate



Figure 5.14. Website Path Diagram (Hollman 2019)



for academic purposes only

Figure 5.15-5.21. Intermountain Region Public Website Mock-Up (Hollman 2019)

Alaska

Intermountain

Midwest

National Capitol

Northeast

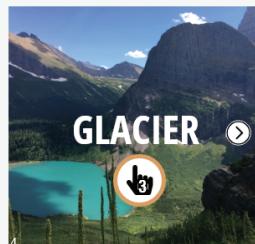
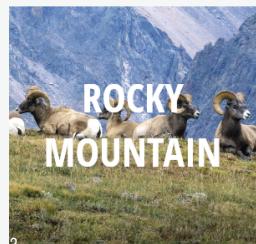
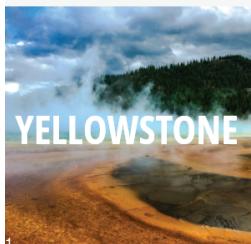
Pacific West

Southwest

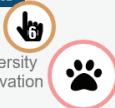
Our Parks

MOCK-UP

Search

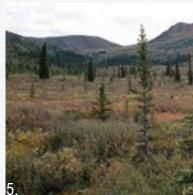


Our Projects

Biodiversity
ConservationVisitor
ExperienceHistory &
CultureEducation &
StewardshipParks of
Tomorrow

Search

Featured Work



5. Retake Photography

Volunteer to take photos for the USGS to record landscape change via repeated photographs.



6. Elk Herd Monitoring

Help support conservation and protection of elk herds in the Intermountain Region parks.



7. Active Trails Program

Support the Active Trails Program which promotes healthy lifestyles and protects trail resources.

8. Next Generation
Fund

Learn about how you can help support this fund created to connect youth with nature.

Get Involved

Volunteer

Citizen
Science

Donate

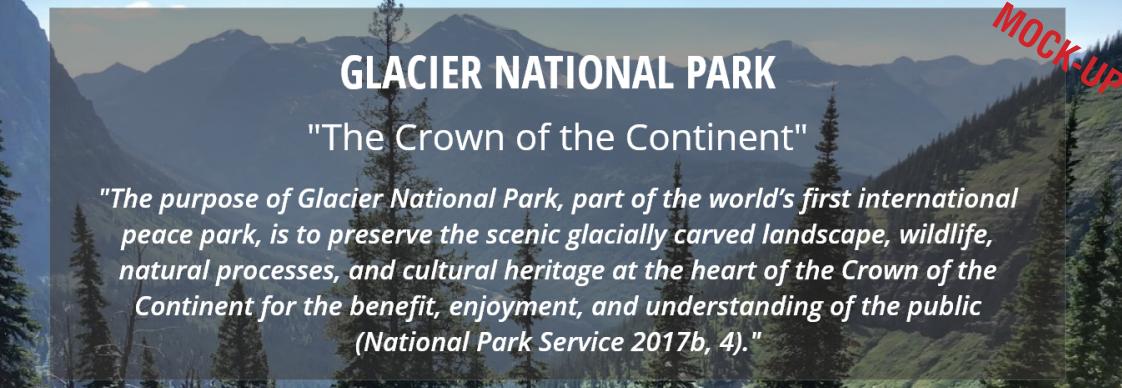


Partners



Researchers





GLACIER NATIONAL PARK

"The Crown of the Continent"

"The purpose of Glacier National Park, part of the world's first international peace park, is to preserve the scenic glacially carved landscape, wildlife, natural processes, and cultural heritage at the heart of the Crown of the Continent for the benefit, enjoyment, and understanding of the public (National Park Service 2017b, 4)."

1.

MOCK-UP

Our Projects

- | | | | | | |
|---|--|---|---|--|---|
|  Biodiversity Conservation |  Visitor Experience |  History & Culture |  Education & Stewardship |  Parks of Tomorrow |  |
|---|--|---|---|--|---|

Search

Featured Work

Glacier Conservancy
Room to Roam:
Grizzly Bear Encounters



Citizen Science
Common Loon Project



Crown of the Continent Research Learning Center
Fire Fueled Finds



Glacier Conservancy
Glacier Summer Youth Initiative

Get Involved

- | | | | | |
|---|---|--|---|---|
|  Volunteer |  Citizen Science |  Donate |  Partners |  Researchers |
|---|---|--|---|---|

FOUNDATION DOCUMENT

MOCK-UP

GLACIER NATIONAL PARK

BIODIVERSITY CONSERVATION

Projects relating to wildlife, geology, science and education to preserve the natural resources that make up the national parks



1. High Country:
Mountain Goat Study



2. A Botanist's
Dream



3. Room to Roam:
Grizzly Bear Encounters



VISITOR EXPERIENCE

Projects that enhance visitor experiences to increase safety, improve access, and create opportunities for visitors



4. Swiftcurrent
Accessible Trail



5. Respond to
Increased Visitor-
Wildlife Encounters



6. Preventative
Search & Rescue



HISTORY & CULTURE

Projects that protect, preserve, research or share information about human history and cultural resources including indigenous communities



7. Fire Fueled
Finds



8. Native America
Speaks



9. Cultural Resources
Internship



EDUCATION & STEWARDSHIP

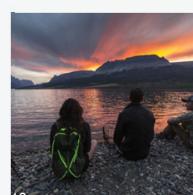
Projects that promote understanding and appreciation to develop citizen stewards of the parks



10. Glacier Summer
Youth Initiative



11. Professional
Development for
Teachers

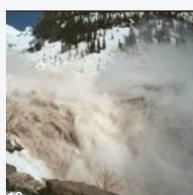


12. Glacier
Podcasts



PARKS OF TOMORROW

Cutting edge projects that focus on how to deal with outside factors influencing the parks such as: climate change, technological trends, land use, green energy, political agendas, and more



13. Glacier's
Avalanche Cycles



14. Social Media
Summit



15. Destruction & Discovery:
Exploring Fire's Impact



ROOM TO ROAM: GRIZZY BEAR ENCOUNTERS

MOCK-UP



GLACIER NATIONAL PARK CONSERVANCY

Room to Roam: Grizzly Bear Population Encounters

"Authentic wildlife viewing in Glacier is a bucket list item for many visitors. This grant will provide additional wildlife staff to curate safe, meaningful experiences for the public. This investment will also act as a force multiplier by allowing for the training of additional volunteers who can further expand this important work (Glacier National Park Conservancy 2020)."

[VOLUNTEER](#)[DONATE](#)

RELATED PROJECTS IN GLACIER



2. Citizen Science
Common Loon Project



3. Glacier Conservancy
Lynx Population
Habitat Study



4. Glacier Conservancy
High Country:
Mountain Goat Study



5. Crown of the Continent
Research Learning Center
A Botanist's Dream

RELATED PROJECTS IN THE INTERMOUNTAIN REGION



6. Yellowstone Forever
Abundance of Grizzlies



7. Grand Teton Foundation
Grizzly Bear and Human
Interaction



8. Continental Divide
Research Learning Center
Black Bear Population



9. Crown of the Continent
Research Learning Center
Bears, Berries, and Bees

MOCK-UP

INTERMOUNTAIN REGION

BIODIVERSITY CONSERVATION

Projects relating to wildlife, geology, science and education to preserve the natural resources that make up the national parks



1. Elk Herd Monitoring



2. Grizzly Bear Studies



3. Aspen Age Distribution

VISITOR EXPERIENCE

Projects that enhance visitor experiences to increase safety, improve access, and create opportunities for visitors



4. Active Trails



5. Factors Affecting the Wilderness Experience



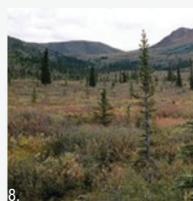
6. Regional Transportation Planning

HISTORY & CULTURE

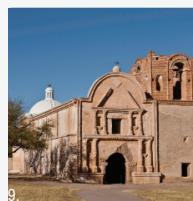
Projects that protect, preserve, research or share information about human history and cultural resources including indigenous communities



7. Prehistoric Human Migration



8. Retake Photography



9. American Latino Heritage Fund

EDUCATION & STEWARDSHIP

Projects that promote understanding and appreciation to develop citizen stewards of the parks



10. Every Kid Outdoors



11. Next Generation Fund



12. Strong Parks, Strong Communities

PARKS OF TOMORROW

Cutting edge projects that focus on how to deal with outside factors influencing the parks such as: climate change, technological trends, land use, green energy, political agendas, and more



13. Subalpine Forest Fires and Climatic Variation



14. Glacial Meltwater Study



15. Dragonfly Mercury Project



ELK HERD MONITORING

MOCK-UP



GLACIER NATIONAL PARK CONSERVANCY

The linnii Initiative: Monitoring Impacts of Elk Herds

"Research into the potential impacts needs to be completed of restoring native bison back into Blackfeet tribal lands. This project represents the second year of a three-year research effort to determine any impacts on existing habitat including the elk population of the reintroduction of bison (Glacier National Park Conservancy 2020)."

[VOLUNTEER](#)[DONATE](#)

CONTINENTAL DIVIDE RESEARCH LEARNING CENTER

Effects of Elk Herbivory

"Elk graze plant material and browse on woody twigs and bark with the potential to cause detriment to vegetation especially where elk are unnaturally abundant. Thus knowledge of how the park's large elk population affects vegetation both above and below ground is important for resource managers to understand (National Park Service 2008)."

[VOLUNTEER](#)[DONATE](#)

YELLOWSTONE FOREVER

Yellowstone Wildlife Health Program

"Some diseases that currently impact or threaten Yellowstone wildlife include brucellosis (bison and elk) and chronic wasting disease (elk and deer). Further work is needed to develop a comprehensive plan that will promote wildlife conservation and reduce disease risks to wildlife, park staff, visitors, and local communities (Yellowstone Forever 2020)."

[VOLUNTEER](#)[DONATE](#)

C. ANNUAL REPORT

In addition to providing the parks with a better way to communicate projects regionally on their website, it is also important to consider how to provide a summary document for the regions with a review of accomplishments of the park service to the public. Based on findings from this report, there are several good examples from park partners and other countries to stimulate ideas. The parks could improve how they share their findings with the public and their partners by having an annual report that provides summaries from each region of key projects between the National Park Service (NPS) and key stakeholders since there is no overarching summary report on completed projects that currently exists at this scale.

The following description and report mock-up were derived from the examples in the findings (Appendix I). The report could begin with the park mission statement and progress to an overview of the regional network and map. Next, there could be a page that breaks down the project types, followed by information organized by region. This could include a list of all the parks in that region with a map. It could also detail similar challenges the parks are facing and how they are working together to overcome them. Next, there could be a

year-in-numbers summary which graphically represents the number of engaged partners, number of people participating in park events and activities, hours of service contributed and number of volunteers, amount of money raised in total, and a breakdown of the number of projects and money raised by project type. Following the summary, featured projects could be called out and sorted by project type containing the following information: title and photo of project, description of the issue, what the approach is, what has been accomplished, and what partners and parks were involved. A following section could detail a list of future and ongoing research by project type to allow a place for the park service to update the public and their partners about projects needing funding or other forms of support. Each regional report section would end with a list of featured partners and donors, thanking those involved with the projects.

An annual report could encourage more people to be involved in the network if they knew how their support was making a difference. It could also encourage continued support from people who were already involved. For example, if a person is passionate about native fish conservation, they could use the network to donate to a project that Yellowstone Forever

was sponsoring. An annual report could allow them to see how their contribution made a difference and see the result of the project in a larger context. Maybe by donating to a native fish conservation project, Yellowstone is free of invasive species that were harming the local wildlife and they were able to use a method that a researcher in another park developed to carry out the process using donations. The donor could also see that they helped raise 20 million dollars for the region as a whole and know that they helped make a difference. Connecting visitor support to real results is crucial to maintaining their interest, instead of just donating to a project and assuming that the work gets done.

An annual report could not only be beneficial for the public but could also enable parks to share their findings with each other and their stakeholders to show the value of the network and the projects they have accomplished and to consolidate key findings. This allows all the people involved to collaborate and share their findings and see the big picture and the impact that they all have together. The next several pages detail how an annual report could be completed for the Intermountain Region, with a focus on biodiversity conservation projects.

The following pages are based in reality from existing projects and reports, but the figures and text serve only as an example with any quoted text being cited (Figures 5.22-5.31). Following this template, report pages for each of the regions of the National Park Service could be created. There are also other opportunities to elaborate on the other project types identified in this chapter. The following sample pages provide some detail of the report mock-up, and the table of contents shows an example of all the different sections that could be included in a full report document (Figures 5.22-5.31).

D. MOCK-UP ANNUAL REPORT PAGES

Cover

Table of Contents

Introduction: *Mission Statement, Regional Network Overview, & Research Project Types*

Intermountain Region

Year in Numbers: *engaged partners, people participating, hours of service, amount of money raised, breakdown of projects and money raised*

Featured Work

Elk Herd Monitoring
(Biodiversity Conservation Project Example)

Future and Ongoing Projects Support Network

Regional Communication Network Year in Review

A summary report on cutting edge research in the National Park Service

2022



MOCK-UP

table of contents

Introduction

- Our Mission
- Our Regional Network
- Our Projects

Regions

Alaska [pg. 2]

- Year in Numbers
- Featured Work
 - History & Culture
 - Visitor Experience
 - Education and Stewardship
 - Biodiversity Conservation
 - Parks of Tomorrow
- Future and Ongoing Projects
- Support Network

Intermountain [pg. 22]

- Year in Numbers
- Featured Work
 - History & Culture
 - Visitor Experience
 - Education and Stewardship
 - Biodiversity Conservation
 - Parks of Tomorrow
- Future and Ongoing Projects
- Support Network

Midwest [pg. 42]

- Year in Numbers
- Featured Work
 - History & Culture
 - Visitor Experience
 - Education and Stewardship
 - Biodiversity Conservation
 - Parks of Tomorrow
- Future and Ongoing Projects
- Support Network



National Capital [pg. 62]

- Year in Numbers
- Featured Work
 - History & Culture
 - Visitor Experience
 - Education and Stewardship
 - Biodiversity Conservation
 - Parks of Tomorrow
- Future and Ongoing Projects
- Support Network

Northeast [pg. 82]

- Year in Numbers
- Featured Work
 - History & Culture
 - Visitor Experience
 - Education and Stewardship
 - Biodiversity Conservation
 - Parks of Tomorrow
- Future and Ongoing Projects
- Support Network

Pacific West [pg. 102]

- Year in Numbers
- Featured Work
 - History & Culture
 - Visitor Experience
 - Education and Stewardship
 - Biodiversity Conservation
 - Parks of Tomorrow
- Future and Ongoing Projects
- Support Network

Southeast [pg. 122]

- Year in Numbers
- Featured Work
 - History & Culture
 - Visitor Experience
 - Education and Stewardship
 - Biodiversity Conservation
 - Parks of Tomorrow
- Future and Ongoing Projects
- Support Network

Conclusions



our mission

“to advance the collaboration and communication between parks, their partners, and the public to support the mission of the National Park Service.”

MOCK-UP

our regional network

Connecting projects across the regions of the United States:

Alaska

Intermountain

Midwest

National Capital

Northeast

Pacific West

Southeast

our projects

History & Culture: Projects that protect, preserve, research or share information about human history and cultural resources including indigenous communities

Visitor Experience: Projects that enhance visitor experiences to increase safety, improve access, and create opportunities for visitors

Education & Stewardship: Projects that promote understanding and appreciation to develop citizen stewards of the parks

Biodiversity Conservation: Projects relating to wildlife, geology, vegetation, science and education to preserve the natural resources that make up the national parks

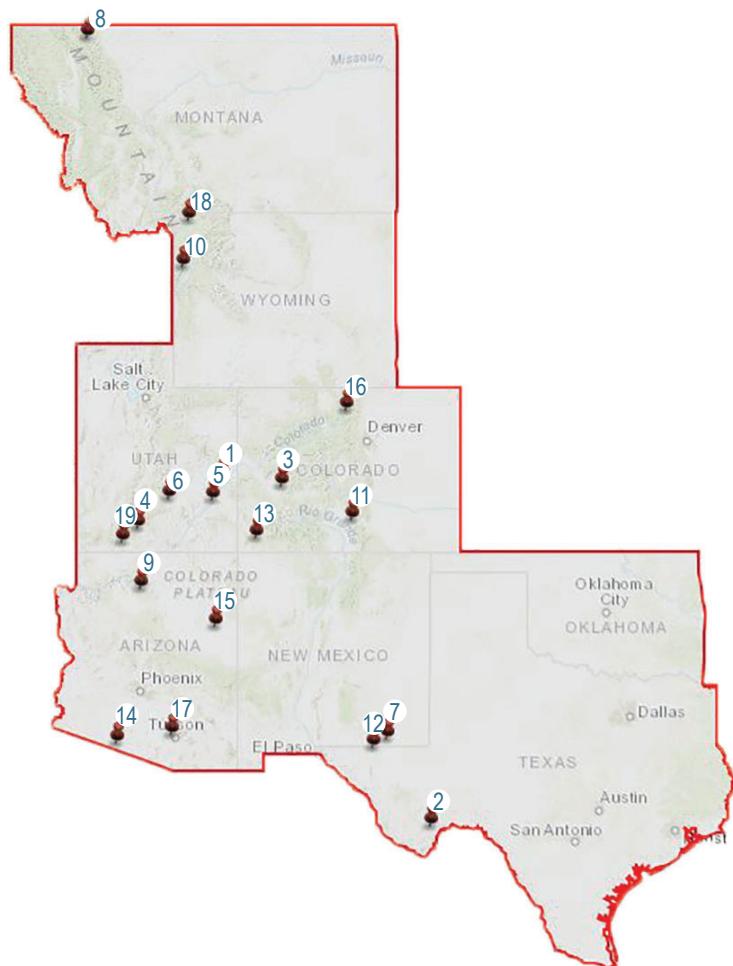
Parks of Tomorrow: Cutting edge projects that focus on how to deal with outside factors influencing the parks such as: climate change, technological trends, land use, green energy, political agendas, and more



intermountain region

MOCK-UP

"The Intermountain Region (IMR) of the National Parks Service (NPS) is the largest region within the service. This region is visited by over 42 million people annually. It covers eight states which include Montana, Wyoming, Utah, Colorado, Arizona, New Mexico, Oklahoma and Texas. Nineteen of the country's National Parks can be found in this region. Within this region you could consider a trip to one of the most-visited natural attractions and one of the Wonders of the World, the Grand Canyon. Explore hundreds of caves at Carlsbad Caverns. Step back in time and see the living quarters of the Ancestral Pueblo people featuring more than 4000 cliff dwellings at Mesa Verde (ESRI, 2020)."



1. Arches National Park (UT)
2. Big Bend National Park (TX)
3. Black Canyon of the Gunnison National Park (CO)
4. Bryce Canyon National Park (UT)
5. Canyonlands National Park (UT)
6. Capitol Reef National Park (UT)
7. Carlsbad Caverns National Park (NM)
8. Glacier National Park (MT, WY)
9. Grand Canyon National Park (AZ)
10. Grand Teton National Park (WY)
11. Great Sand Dunes National Park (CO)
12. Guadalupe Mountains National Park (TX)
13. Mesa Verde National Park (CO)
14. Organ Pipe Cactus National Park (AZ)
15. Petrified Forest National Park (AZ)
16. Rocky Mountain National Park (CO)
17. Saguaro National Park (AZ)
18. Yellowstone National Park (ID, MT, WY)
19. Zion National Park (UT)

1.



year in numbers

MOCK-UP

history & culture

\$4,262,334 raised
130 Projects funded



532 partners engaged



6.

visitor experience

\$6,587,625 raised
200 Projects funded



163,896 people participated in park events & activities



7.

education & stewardship

\$5,189,454 raised
170 Projects funded



186,360+ hours of service contributed by 12,216 volunteers



8.

biodiversity conservation

\$2,725,968 raised
78 Projects funded



\$20 million raised total



parks of tomorrow

\$1,568,974 raised
48 Projects funded



5.



featured projects

MOCK-UP

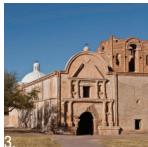
history & culture



Prehistoric
Human
Migration,
pg. 25



Retake
Photography,
pg. 26



American Latino
Heritage Fund,
pg. 27

visitor experience



Active Trails,
pg. 28



Factors Affecting
Wilderness
Experience,
pg. 29



Regional
Transportation
Planning,
pg. 30

education & stewardship



Every Kid
Outdoors,
pg. 31



Next Generation
Fund,
pg. 32



Strong Parks,
Strong
Communities,
pg. 33

biodiversity conservation



Elk Herd
Monitoring,
pg. 34



Grizzly Bear
Studies,
pg. 35



Aspen Age
Distribution,
pg. 36

parks of tomorrow



Sub-alpine
Forest Fires,
pg. 37



Glacial Meltwater
Study,
pg. 38



Dragonfly
Mercury Project,
pg. 39



What's the issue?

Elk are a keystone species in the Intermountain region. It is important to study how these species interact in the parks in order to protect them. It is also important to understand the impact that these species has on the parks. Several of the parks and their partners are tracking elk herds to understand how to reintroduce them into certain habitats, to learn what impacts grazing has on ecosystem health, and to discover cures for certain diseases that impact the species and those around them.

What's our approach?

- Work regionally to communicate findings to other parks
- Conduct long-term research efforts to more effectively understand impacts
- Develop a comprehensive plan that promotes wildlife conservation and reduces disease risks to wildlife, park staff, visitors, and local communities

What's been accomplished?

- Phase one of the linii Initiative in Glacier NP has been completed and the three-year project is currently in its second phase.
- Current studies in Rocky Mountain show that elk negatively impact willow and aspen trees.
- Early detection and targeted surveillance of certain elk herds have helped direct management decisions in Yellowstone NP.

Who is involved?

- Glacier National Park Conservancy
- Yellowstone Forever
- Rocky Mountain Conservancy
- Grand Teton National Park Foundation
- Continental Divide Research Learning Center
- Crown of the Continent Research Learning Center



future and ongoing projects

history & culture

It is important for the National Park Service to protect both the natural and cultural resources that make their parks unique. That's why we are on a mission to partner with local indigenous organizations and communities in the Intermountain Region. If you or someone you know is interested please contact us on our research network website.

visitor experience

The parks are always striving to provide our visitors with an inclusive and accessible experience for all. That's why we are always working on improving our trail networks with the Active Trails program. Look for ways you can be involved on our research network website!

education & stewardship

Last year we had more students than ever sign up for the Summer Youth Initiative program to educate the park stewards of tomorrow about the value of the parks. Sign up your kid today for the adventure of a lifetime on our research network website!

biodiversity conservation

Grizzly bear habitats are being threatened across the Intermountain Region. New studies are being conducted to examine their habitats, populations, diets, and level of human interaction to examine the best strategies to protect this threatened species. You can help by donating to these projects on the research network website.

parks of tomorrow

With several of the parks dealing with climate change in the Intermountain Region, our park scientists are gearing up to build off of existing reports that look at avalanche cycles and fire impact across the parks. Be on the lookout for ways you can get involved in your local park!



our support network

MOCK-UP

"Public-private partnerships have strengthened the National Park System since its inception. The future of our national heritage hangs in the balance. As the ravages of natural and human disasters, heavy use, and limited resources impact our parks, the task before us is great. Our work is made possible through the resolute commitment of impassioned national park champions who understand the need to enhance and expand the efforts of the National Park Service. We gratefully acknowledge the many individuals, foundations, and corporations whose vision and contributions help protect our parks and connect people to all they have to offer (National Park Foundation 2018, 15)."

featured partners

- Continental Divide Research Learning Center
- Costa Rican Parks
- Crown of the Continent Research Learning Center
- Delaware North
- Glacier National Park Conservancy
- Glacier Institute
- Glacier National Park Volunteer Associates
- Grand Teton Association
- Grand Teton National Park Foundation
- Interagency Grizzly Bear Team
- Jackson Hole Wildlife Foundation
- Jenny Lake Rangers Fund
- Medcor at Yellowstone
- The Murie Center
- National Park Conservation Association
- National Park Foundation
- National Park Partners
- National Trust for Historic Preservation
- Rockefeller Senior Associates
- Rocky Mountain Conservancy
- Tatra National Parks
- Teton Science Schools
- University of Wyoming NPS Research Station
- Xanterra Parks & Resorts
- Yellowstone Forever
- Yellowstone Park Service Stations

featured annual contributors

\$1,000,000+

Mr. Jones	Evian Tooley
The Adams Family	John and Sara Smith

\$25,000+

The Espinozas	The Raupp Estate
D.J. Johnson	Becker Foundation

\$100,000+

Sarah Hollerman	Catherine Heigel
Savannah Johnson	The Johnsons

\$10,000+

The Vonderwoltz	The Schwab Fund
The Campanelli Family	Jo and Li Hark

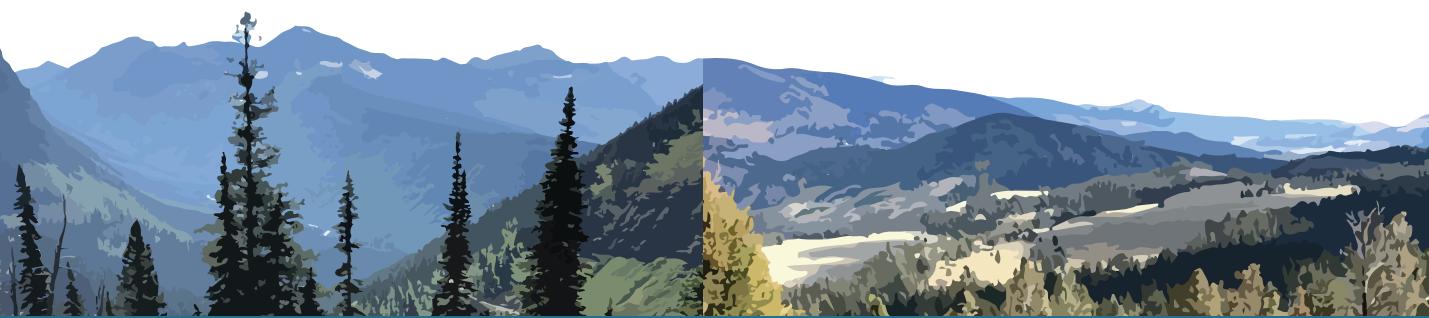
\$50,000+

The Tylers	Louise Chapman
Anonymous (10)	The Zhongs

\$5,000+

Juling Chao	Mary Edwards
Dhrumli Ghandi	The Ghallaghers





CHAPTER SIX: CONCLUSIONS



NPS BENEFITS



PARTNER BENEFITS



PUBLIC BENEFITS



Figure 6.1. Benefits for Those Involved in the Network: NPS benefits, partner benefits, and public benefits (Hollman 2019).

I. CONCLUSIONS

After an extensive review of how biodiversity conservation is communicated, it is important to reflect on what the outcomes of this report mean for the National Park Service, their partners, and the public. With improvements to communication between key stakeholders, everyone benefits (Figure 6.1). This report focuses on the Intermountain Region with biodiversity conservation projects at the center to provide context for the proposed strategy and protect the natural resources of the national parks. This chapter reviews the most important outcomes from the research and proposed strategy for future consideration by the National Park Service. Future research and reflections on the project are reviewed to stimulate discussions about how to improve communication between the National Park Service, their partners and the public and provide guidance on how to move forward with the research.

II. PROJECT LIMITATIONS

The findings of this study are limited to the Intermountain Region with a focus on studying communication of biodiversity conservation projects. Within the allowed time and feasibility constraints it is impossible to:

- Consider every issue that the parks are facing in every geographic region in the United States. The research provides a thorough background of the main issues and goals of the selected parks, but more research could be gathered if time allowed.
- Consider every online outlet that the parks use to communicate in every geographic region in the United States. The research seeks to provide a thorough understanding of how the parks present themselves online but emphasizes how biodiversity conservation projects are communicated between the parks, their partners, and the public. More online communication devices beyond websites could be studied if time allowed.

• Consider viewpoints beyond the number of National Park Service staff interviewed, or beyond their extent of expertise or familiarity. The research seeks to provide a thorough understanding of how the parks are managed, but with an emphasis on the staff's knowledge of biodiversity conservation projects and communication. More staff, in addition to park partners, could be interviewed if time allowed.

Even with these constraints, the report is successful in answering the original research questions and conducting a thorough investigation to reach the desired outcome.

III. FUTURE RELATED RESEARCH

There are many ways this project could be expanded upon. First, additional research could examine different parks in the Intermountain Region to represent different scales to see how the results would differ with less popular parks. Other biodiversity conservation projects outside of those sponsored by the National Park Service or their partners could also be included in future data. Future research could also expand beyond the Intermountain Region to analyze how other national parks in different regions manage and disseminate their biodiversity conservation projects between parks, their partners, and the public.

Another way the project could be advanced is looking at different methods of communication between the National Park Service and the public beyond their website to include communication devices such as brochures, magazines, social media, or other electronic forms of communication. Additionally, other countries could be analyzed to ascertain new information about how biodiversity conservation projects are conveyed to the public to contribute more examples to the study. To expand on the proposed communication network, the other identified project categories could also be researched in more depth to make the network more detailed.

IV. BROADER IMPACT

This report states the need for better protection of natural resources in the national parks, in which landscape architects can better serve as contributors and advocates. In a time of budget shortfalls, this report assists with current park efforts to improve communication by documenting the existing structure of the National Park Service, key partners, and other countries' national park organizations to propose a new communication strategy that is user-friendly and accessible to key stakeholders. The goal of the project was to answer the research question:

How can a communication strategy be created for the National Park Service that coordinates biodiversity conservation information at a regional level between parks and organizes/prioritizes conservation projects to the public in a way that is easily accessible or understood from an outsider's perspective?

One answer is the proposed National Park Service Regional Communication Network that strengthens communication between the National Park Service, their partners, and the public by providing a way for all stakeholders involved to share information with each other in one place. It also makes biodiversity conservation projects a priority by elevating project visibility to promote sponsorship and volunteerism from visitors to protect the parks' natural resources.

The National Park Service can consider incorporating the findings of this report into their regional communications strategy. The report also sets up a way for other regions and project types to be further explored to expand the application of the network beyond the Intermountain Region.

V. MOVING FORWARD

At the end of the project timeline, feedback was received from the National Park Service interviewee pool on the draft of the proposed strategy with ideas for how it could move forward. The final report has been sent out to National Park Service staff to be circulated and implemented at their discretion. For actualization of the project, the researcher recommends that the Office of Communications and Natural Resource Staff utilize this report.

The first thing mentioned by the park staff was that the current structure of the National Park Service website does not allow monetary donations to be collected, only volunteers can be solicited. To apply the entire regional communication strategy, the National Park Service would either need to change their policy for requesting donations, as this report provides the many benefits of doing so, or they could link the regional network to an external website that is not directly under the National Park Service. For example, the National Park Foundation could sponsor the website and a link could be provided on the National Park Service website.

In addition, the National Park Service would need to go beyond including the national parks to include all the National Park Service units in each region. These changes could be implemented in future applications of the regional communication network website and annual report while keeping the integrity of the proposed strategy. The network provides the park service with a base template that can be adjusted to their needs as they see fit.

VI. FINAL THOUGHTS

The proposed regional communication network allows biodiversity conservation projects to be a part of the bigger picture when it comes to sharing information between parks.

The National Park Service faces a seemingly insurmountable challenge trying to balance visitor needs, logistics, infrastructure maintenance, funding, paid personnel/volunteer management, resource protection, research activities, and coordinating internal and external communications in multiple parks at multiple scales.

The parks **need a better way to communicate research projects regionally**, especially when it comes to biodiversity conservation projects as the current information on the National Park Service website is hard to find and not very user-friendly.

The proposed National Park Service Regional Communication Network helps address this need by:

- Providing **regional organization**
- Creating an **improved internal communication system** built off an existing platform
- Incorporating opportunities to **increase partnerships**
- Organizing research projects in a way that is **easily accessible and user-friendly** for the public
- Making projects visible to promote visitor support through **donors and volunteers**
- Summarizing research in an annual report to **make progress clear**
- Promoting **protection of biodiversity**



APPENDICES



APPENDIX A | REFERENCES

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Figure 5.9.2. Grizzly Bear Encounters. “Grizzly bear in Sperry Basin.” Photograph. Accessed February 27, 2020. <https://glacier.org/wp-content/uploads/2019/07/2020-Project-Funding-Guide-WEB.pdf>

Figure 5.9.3. Whitebark Pine Health. “Field technicians examine mature cones of a whitebark pine tree.” Photograph. 2018. Accessed March 6, 2020. <https://www.nps.gov/im/gryn/whitebark-pine.htm>

Figure 5.9.4. Active Trails Program. Kish, Dawn. Untitled photograph of kid climbing on rocks. Accessed February 27, 2020. <https://www.nationalparks.org/our-work/programs/active-trails>

Figure 5.9.5. Next Generation Fund. Rocky Mountain Conservancy. Untitled photograph of a park ranger and kid. Accessed February 27, 2020. <https://rmconservancy.org/our-projects/>

Figure 5.10.1. “Inside NPS” Website Heading. Hollman, Shelby. Untitled photograph of Glacier National Park. 2019.

Figure 5.10.2. Retake Photography. Viereck, Leslie A. “Image from the Denali Repeat Photography Project.” Photograph. 2001. Accessed February 27, 2020. <https://www.nps.gov/articles/park-changes-over-time.htm>

Figure 5.10.3. Elk Herd Monitoring. Sexton, Donnie. “Bison and Elk.” Photograph. Accessed February 27, 2020. <https://glacier.org/scientific-research/>

Figure 5.10.4. Whitebark Pine Health. “Field technicians examine mature cones of a whitebark pine tree.” Photograph. 2018. Accessed March 6, 2020. <https://www.nps.gov/im/gryn/whitebark-pine.htm>

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Figure 5.11.2. Retake Photography. Viereck, Leslie A. “Image from the Denali Repeat Photography Project.” Photograph. 2001. Accessed February 27, 2020. <https://www.nps.gov/articles/park-changes-over-time.htm>

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Figure 5.12.2. Retake Photography. Viereck, Leslie A. “Image from the Denali Repeat Photography Project.” Photograph. 2001. Accessed February 27, 2020. <https://www.nps.gov/articles/park-changes-over-time.htm>

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2020. <https://www.nps.gov/rlc/crown/high-country-citizen-science-project.htm>

Figure 5.12.8. Native America Speaks. Glacier National Park Conservancy. Untitled photograph of Native American dancing. Accessed February 27, 2020. <https://glacier.org/wp-content/uploads/2019/07/2020-Project-Funding-Guide-WEB.pdf>

Figure 5.12.9. A Botanist's Dream. Sladek, Melissa. Untitled photograph of woman weeding vegetation. Accessed February 27, 2020. https://www.nps.gov/articles/botanist_dream.htm

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Figure 5.13.2. Glacial Meltwater Study. Westfall, J. "Scientists on an inflatable boat collect environmental data and a lake core from Pipit Lake." Photograph. Accessed February 27, 2020. <https://www.nps.gov/articles/alpine-lakes-glaciers-and-benthic-invertebrates.htm>

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Figure 5.16.7. Active Trails Program. Kish, Dawn. Untitled photograph of kid climbing on rocks. Accessed February 27, 2020. <https://www.nationalparks.org/our-work/programs/active-trails>

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Figure 5.17.2. Glacier Conservancy Room to Roam: Grizzly Bear Encounters. "Grizzly bear in Sperry Basin." Photograph. Accessed February 27, 2020. <https://glacier.org/wp-content/uploads/2019/07/2020-Project-Funding-Guide-WEB.pdf>

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Figure 5.18.11. Professional Development for Teachers. Frank, Jacob W. “Teacher Workshop.” Photograph. Accessed February 27, 2020. <https://glacier.org/education/>

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Figure 5.18.14. Social Media Summit. National Park Service. “iPhone sunset.” Photograph. Accessed February 27, 2020. <https://glacier.org/education/>

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Figure 5.20.5. Factors Affecting the Wilderness Experience. National Park Service. "Volunteers distributed a survey, camera, and journal to hikers at trailheads." Photograph. Accessed February 27, 2020. <https://www.nps.gov/articles/factors-affecting-the-wilderness-experience.htm>

Figure 5.20.6. Regional Transportation Planning. Herbert, Neal. Untitled photograph of entrance traffic. Accessed February 27, 2020. <https://www.yellowstone.org/what-we-do/current-projects/visitor-experience/>

Figure 5.20.7. Prehistoric Human Migration. National Park Service. Untitled photograph of human migration. Accessed February 27, 2020. <https://www.nps.gov/articles/prehistoric-human-migration.htm>

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Figure 5.20.9. American Latino Heritage Fund. National Park Foundation. Untitled photograph of historic building. Accessed February 27, 2020. <https://www.nationalparks.org/our-work/programs/programs-connect>

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Figure 5.20.11. Next Generation Fund. Rocky Mountain Conservancy. Untitled photograph of a park ranger and kid. Accessed February 27, 2020. <https://rmconservancy.org/our-projects/>

Figure 5.20.12. Strong Parks, Strong Communities. National Park Foundation. Untitled photograph of hands shaking. Accessed February 27, 2020. <https://www.nationalparks.org/our-work/programs/strong-parks-strong-communities>

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Figure 5.27.1. History & culture. National Park Foundation. Untitled photograph of historic building. Accessed February 27, 2020. <https://www.nationalparks.org/our-work/programs/programs-connect>

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Figure 5.27.4. Biodiversity conservation. Murphy, Tom. Untitled photograph of grizzly bears in Yellowstone. Accessed February 27, 2020. <https://www.yellowstone.org/what-we-do/current-projects/wildlife-wonders-wilderness/>

Figure 5.27.5. Parks of tomorrow. National Park Forest. Untitled photograph of a burning forest. Accessed February 27, 2020. <https://www.nps.gov/rlc/continentaldivide/climate.htm>

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Figure 5.28.2. Retake Photography. Viereck, Leslie A. “Image from the Denali Repeat Photography Project.” Photograph. 2001. Accessed February 27, 2020. <https://www.nps.gov/articles/park-changes-over-time.htm>

Figure 5.28.3. American Latino Heritage Fund. National Park Foundation. Untitled photograph of historic building. Accessed February 27, 2020. <https://www.nationalparks.org/our-work/programs/programs-connect>

Figure 5.28.4. Active Trails. Kish, Dawn. Untitled photograph of kid climbing on rocks. Accessed February 27, 2020. <https://www.nationalparks.org/our-work/programs/active-trails>

Figure 5.28.5. Factors Affecting the Wilderness Experience. National Park Service. “Volunteers distributed a survey, camera, and journal to hikers at trailheads.” Photograph. Accessed February 27, 2020. <https://www.nps.gov/articles/factors-affecting-the-wilderness-experience.htm>

Figure 5.28.6. Regional Transportation Planning. Herbert, Neal. Untitled photograph of entrance traffic. Accessed February 27, 2020. <https://www.yellowstone.org/what-we-do/current-projects/visitor-experience/>

Figure 5.28.7. Every Kid Outdoors. National Park Service. Untitled photograph of hand in water. Accessed February 27, 2020. <https://www.nationalparks.org/our-work/campaigns-initiatives>

Figure 5.28.8. Next Generation Fund. Rocky Mountain Conservancy. Untitled photograph of a park ranger and kid. Accessed February 27, 2020. <https://rmconservancy.org/our-projects/>

Figure 5.28.9. Strong Parks, Strong Communities. National Park Foundation. Untitled photograph of hands shaking. Accessed February 27, 2020. <https://www.nationalparks.org/our-work/programs/strong-parks-strong-communities>

Figure 5.28.10. Elk Herd Monitoring. Sexton, Donnie. "Bison and Elk." Photograph. Accessed February 27, 2020. <https://glacier.org/scientific-research/>

Figure 5.28.11. Grizzly Bear Studies. Murphy, Tom. Untitled photograph of grizzly bears in Yellowstone. Accessed February 27, 2020. <https://www.yellowstone.org/what-we-do/current-projects/wildlife-wonders-wilderness/>

Figure 5.28.12. Aspen Age Distribution. National Park Service. Untitled photograph of aspen trees. Accessed February 27, 2020. <https://www.nps.gov/articles/aspen-age-distribution.htm>

Figure 5.28.13. Subalpine Forest Fires. National Park Forest. Untitled photograph of a burning forest. Accessed February 27, 2020. <https://www.nps.gov/rlc/continentaldivide/climate.htm>

Figure 5.28.14. Glacial Meltwater Study.

Westfall, J. "Scientists on an inflatable boat collect environmental data and a lake core from Pipit Lake." Photograph. Accessed February 27, 2020. <https://www.nps.gov/articles/alpine-lakes-glaciers-and-benthic-invertebrates.htm>

Figure 5.28.15. Dragonfly Mercury Project.

National Park Service. Untitled photograph of volunteers. Accessed February 27, 2020. <https://www.nps.gov/subjects/citizen-science/environmental-change.htm>

Figure 5.29.1. Have You Herd? National Park Service. Untitled photograph of elk in Rocky Mountain. Accessed March 3, 2020. <https://www.nps.gov/romo/learn/nature/elk.htm>

Figure 6.1. Benefits for Those Involved in the Network. Hollman, Shelby. 2020. Graphic in Adobe Illustrator.

Figure 6.1.1. NPS Benefits: Improved Communication. Priyanka from the Noun Project. "Network." Graphic. Accessed February 27, 2020. <https://thenounproject.com/>

Figure 6.1.2. NPS Benefits: Increased

Volunteerism. Coquet, Adrian from the Noun Project. "Volunteer." Graphic. Accessed February 27, 2020. <https://thenounproject.com/>

Figure 6.1.3. NPS Benefits: Increased

Sponsorship. Cresnar, Gregor from the Noun Project. "Money." Graphic. Accessed February 27, 2020. <https://thenounproject.com/>

Figure 6.1.4. Partner Benefits: Improved

Communication. Priyanka from the Noun Project. "Network." Graphic. Accessed February 27, 2020. <https://thenounproject.com/>

Figure 6.1.5. Partner Benefits: Increased

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Visibility. Synstad, Knut M. from the Noun Project. "Visibility." Graphic. Accessed February 27, 2020. <https://thenounproject.com/>

Figure 6.1.7. Public Benefits: Improved Accessibility. Creative Art from the Noun Project. “Accessibility.” Graphic. Accessed February 27, 2020. <https://thenounproject.com/>

Figure 6.1.8. Public Benefits: Increased Opportunity. Sergey, Shmidt from the Noun Project. “Share.” Graphic. Accessed February 27, 2020. <https://thenounproject.com/>

Figure 6.1.9. Public Benefits: Increased Knowledge. Made x Made from the Noun Project. “Knowledge.” Graphic. Accessed February 27, 2020. <https://thenounproject.com/>

Table 1. Analysis of variance by park type, 1990-2008. Schuett, Michael A., Le Lena, and Steven J. Hollenhorst. 2010. “Who visits the US National Parks? An analysis of park visitors and visitation: 1990-2008.” World Leisure Journal, 52(3): 205, Table 2.

APPENDIX C | EXISTING WEBSITE ANALYSIS

The following are screenshots of the websites studied in *Chapter 4: Findings* to show an example of each existing website's homepage as seen during the time of this report. The websites included here are as follows:

- National Park Service [225]
- National Resource Stewardship and Science Directorate [226]
- National Park Foundation [227]
- National Park Conservation Association [229]
- Yellowstone National Park [230]
- Yellowstone Forever [232]
- Grand Teton National Park [234]
- Grand Teton National Park Foundation [235]
- Rocky Mountain National Park [238]
- Rocky Mountain Conservancy [239]
- Glacier National Park [241]
- Glacier National Park Conservancy [242]
- Parks Canada [245]
- Parks Australia [246]

**"A Nobler, Higher Spirit"**

Follow the incredible life and legacy of Harriet Tubman, the famed conductor on the Underground Railroad and champion of civil rights.

**Those Who Served**

Reflect on the service of our military preserved in national parks and how veterans and their families can enjoy their public lands today.

**This Month's National Park Getaway**

Venture to the Sonoran Desert to get a glimpse into the lives of ancient communities that thrived at Casa Grande Ruins National Monument.

**Hawaii Voices of Science**

Through audio stories, immerse yourself in the sounds of nature and follow along with people conserving Hawaii's precious natural resources.

**Laying the Stones of Progress**

Learn what we do to tackle the maintenance backlog in parks to improve your experience and preserve these special places.

**National Park News**

Find the latest news and events, search for images and videos, and discover facts and figures about the national parks.

**Photos, Videos, Webcams & More**

Explore the national parks through multimedia. Search for photos, videos, webcams, and audio files on any topic.

*75th Anniversary
American Parks*

The national park community welcomes you! Together we can celebrate these special places and ensure they exist forever.



Last updated: November 1, 2019





Natural Resource Stewardship and Science Directorate

[Home](#) [What We Do](#) [News](#) [Events](#)

The Natural Resource Stewardship and Science Directorate (NRSS) provides scientific, technical, and administrative support to national parks for the management of natural resources. NRSS develops, utilizes, and distributes the tools of natural and social science to help the National Park Service (NPS) fulfill its core mission: the protection of park resources and values.

NRSS provides leadership and expertise to ensure understanding, awareness, representation, and stewardship of the natural resources of the NPS so that they remain unimpaired for future generations.

With staff located in Fort Collins and Lakewood, Colorado, and Washington, D.C., NRSS includes the following programs and offices:



Air Resources Division



Biological Resources Division



Climate Change Response Program



Environmental Quality Division



Geologic Resources Division



Inventory & Monitoring Division



National Natural Landmarks Program



Natural Sounds & Night Skies Division



Natural Resource Office of Communication



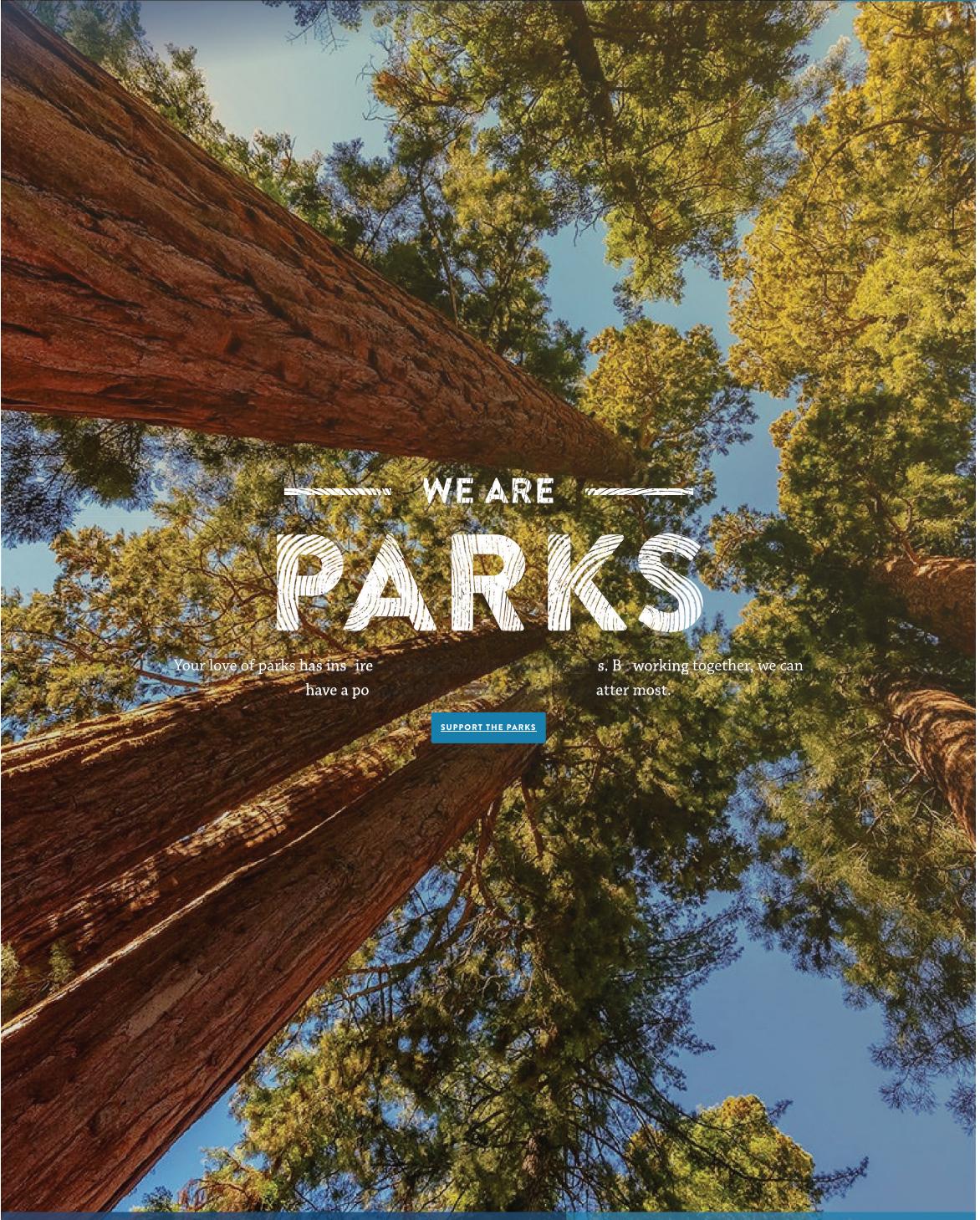
Research Learning Centers



Water Resources Division



Explore Nature



WE ARE PARKS

Your love of parks has inspired us to have a po

s. By working together, we can do our most.

[SUPPORT THE PARKS](#)

Sequoia and Kings Canyon National Parks

INFO



Search for a Park



OUR WORK

The natio

The N

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KEEP PARKS WITHIN THEIR REACH

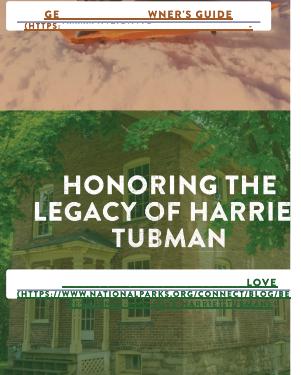
CELEBRATING OVER 50 YEARS OF PARKS. IT'S TIME TO REACH NEW HEIGHTS. JOIN US AS WE CELEBRATE OUR 50TH ANNIVERSARY BY REACHING NEW HEIGHTS AND CREATING A FUTURE WHERE ALL KIDS CAN REACH THEIR FULL POTENTIAL.

<https://www.nationalparks.org/our-work/campaigns-initiatives/open-outdoors-kids>



National Park Foundation

EXPLORE WINTER WONDERS IN PARKS



HONORING THE LEGACY OF HARRIE TUBMAN



CELEBRATING OVER 50 YEARS

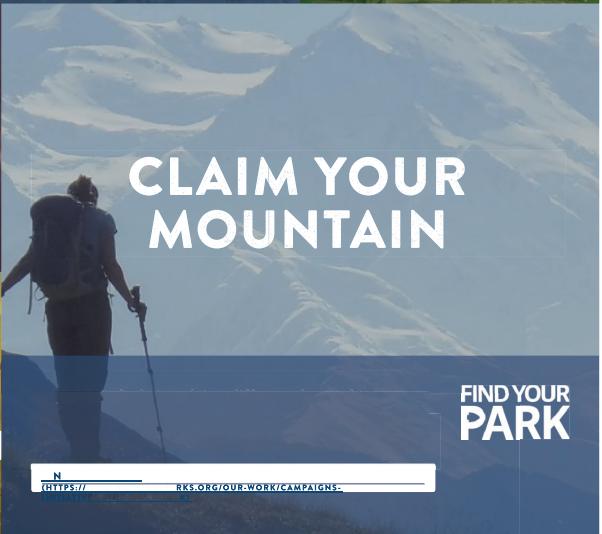
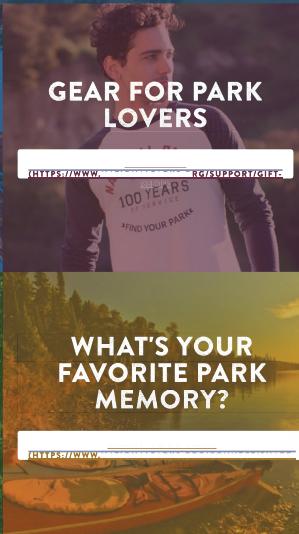
GEAR FOR PARK LOVERS

CLAIM YOUR MOUNTAIN

OUR IMPACT IN PARKS

WHAT'S YOUR FAVORITE PARK MEMORY?

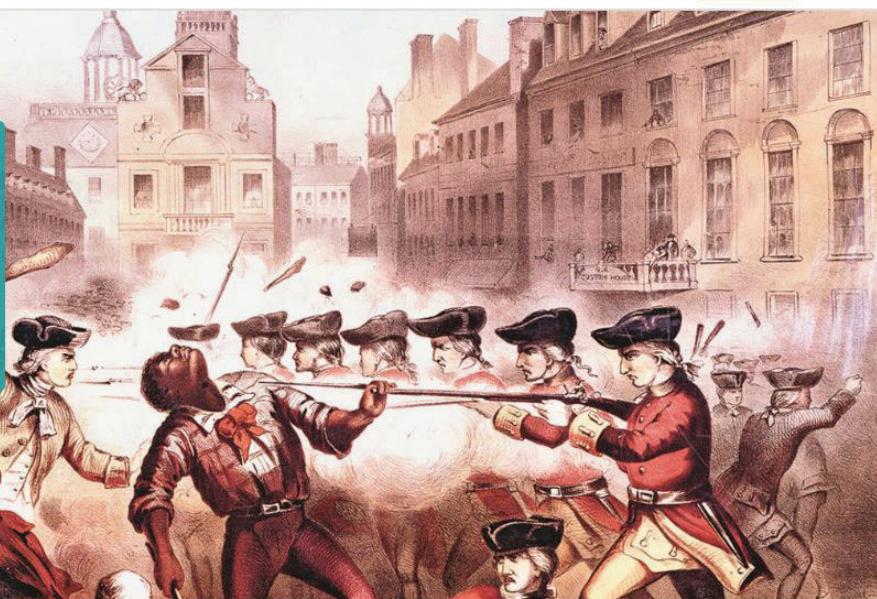
FIND YOUR PARK



[About Us](#) Search [News & Resources](#)[Issues](#)[Parks](#)[Our Impact](#)[Get Involved](#)[Give](#)[DONATE](#)

ACCIDENTAL HERO

Crispus Attucks is believed to be the first casualty of the American Revolution, but 250 years later, it's still difficult to untangle fact from myth.

[READ MORE](#)COURTESY OF THE BOSTONIAN SOCIETY

OUR MISSION

We're protecting and enhancing America's National Park System for present and future generations.

PRESS RELEASE

Supreme Court Hears Landmark Case on Appalachian Trail Protections

Feb 2020

The National Parks Conservation Association stands against the influx of irresponsible development on our public lands.



BLOG POST

Love Is in the Parks

Feb 2020 | By Katherine McKinney DeGroff

5 NPCA staff members share their national park love stories.

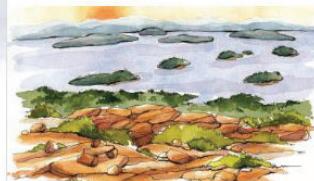


MAGAZINE ARTICLE

Capturing Acadia

Winter 2020 | By Jennifer Lawson

An artist's view of Maine's famous national park.

[MORE NEWS](#)[Sign up for NPCA email updates](#)

Constant Change

On March 1, 1872, Yellowstone became the first national park for all to enjoy the unique hydrothermal wonders. This is such a dynamic place that every visit to Yellowstone brings new sights, sounds, and memories.



Climate Change

Yellowstone's climate is changing. A continued rise in temperature will fundamentally alter the ecosystem.



Sedimentation and Erosion

The erosion of rock and the deposition of geologic material has created some stunning landscapes.



Glaciers

Glaciers sculpted the volcanic landscape of Yellowstone.

Visit Yellowstone

An amazing experience awaits you here. Yellowstone is a seasonal park, so plan your visit by learning about the current conditions, operating seasons and hours, road conditions, lodging and eating options, and available activities.



Things To Do

Explore all the different things there are to do in the park.



Webcams

Watch Old Faithful erupt or see the Upper Geyser Basin, Mount Washburn, Yellowstone Lake, and some of the park entrances.



Park Roads

Check the status and seasonal closing dates of park roads.



Play in the Snow

Winter is a magical time to explore Yellowstone by skis, snowshoes, snowmobile, or snowcoach.



Explore in Winter

Ready to brave the cold? Check out this information for planning a winter visit.

Understand Yellowstone

Yellowstone is as wondrous as it is complex. The park is at the heart of the Greater Yellowstone Ecosystem, where nature and culture abound. Here are just a few highlights for you to learn about the park.

**European Americans Arrive**

In the late 1700s, fur traders traveled the Yellowstone River in search of Native Americans with whom to trade.

**River Otter**

The most aquatic of the weasels in the park.

**Collections**

The Heritage and Research Center houses Yellowstone's extensive museum collection, archives, and research library.

**Fountain Paint Pot**

Explore this popular thermal area where you can see the four major types of hydrothermal features.

**Bobcat**

One of the elusive cats of Yellowstone.

Preserve Yellowstone

The National Park Service works to preserve Yellowstone for the enjoyment, education, and inspiration of all people. We are not alone in this endeavor—park partners, volunteers, and visitors all help. Learn how to [get involved](#).

**Energy Conservation**

Yellowstone National Park is the largest consumer of energy in the National Park Service.

**Modern Management**

Managing the national park has evolved over time and dealt with some complex issues.

**Work With Us**

Search for jobs with the National Park Service or companies that operate in the park.

Last updated: November 1, 2019

CONTACT THE PARK

Mailing Address:

PO Box 168
Yellowstone National Park, WY 82190-0168

Phone:

307-344-7381



[JOIN OUR EMAIL LIST](#)[ABOUT US](#) [WHAT WE DO](#) [EXPERIENCE](#) [NEWS](#) [SHOP](#) [WAYS TO GIVE](#) [DONATE](#)

Field Seminar Registration Open

Plan your summer trip!

[REGISTER NOW](#)

Yellowstone Forever is the official nonprofit partner of **Yellowstone National Park**. Our mission of engagement and support through philanthropy and education for the park will ensure **Yellowstone remains for generations to come.**

[LEARN MORE](#)

YELLOWSTONE FOREVER INSTITUTE



PRIVATE GUIDED TOURS

"Hands Down One of The Greatest Experiences of Our Lives."
— *Private tour participant
California*

[BOOK A TOUR](#)

EASY TRIP PLANNING

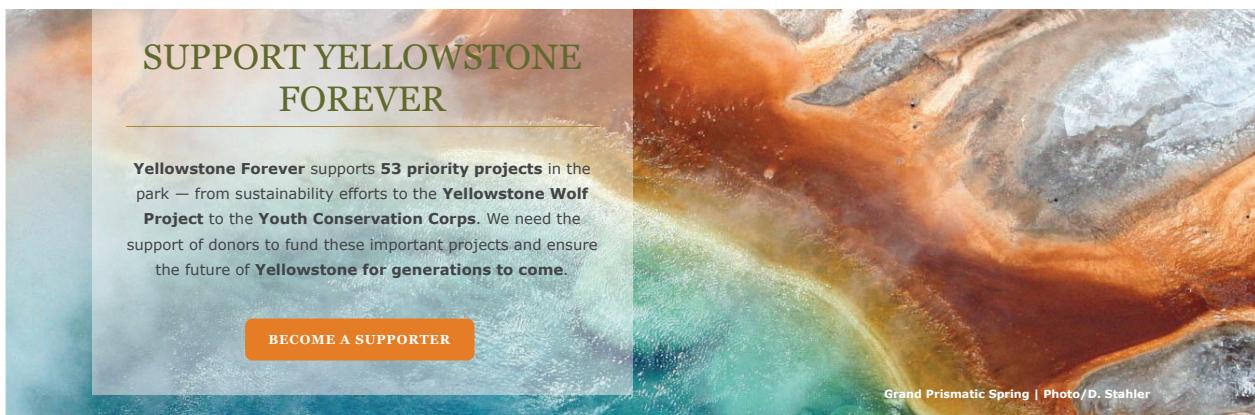
Fully explore winter in Yellowstone with an inclusive package that covers lodging at an in-park lodge, most meals, transportation and an expert guide!

[PLAN YOUR TRIP](#)

FIELD SEMINARS

In-depth learning experiences led by experts in their field, with programs ranging from photography to wildlife to hiking or cross-country skiing.

[LEARN WITH US](#)



SUPPORT YELLOWSTONE FOREVER

Yellowstone Forever supports **53 priority projects** in the park — from sustainability efforts to the **Yellowstone Wolf Project** to the **Youth Conservation Corps**. We need the support of donors to fund these important projects and ensure the future of **Yellowstone for generations to come**.

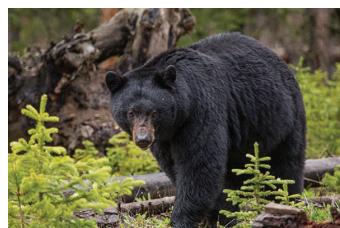
[BECOME A SUPPORTER](#)

Grand Prismatic Spring | Photo/D. Stahler

FEATURED PROJECTS



NATIVE FISH CONSERVATION



SPONSOR A BEAR BOX



TRAILS RESTORATION

LATEST NEWS

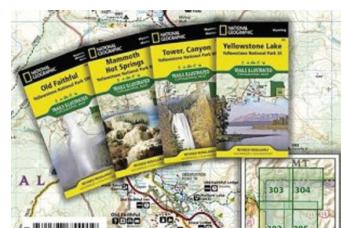
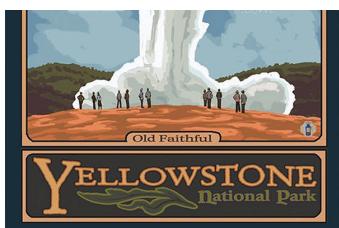
Yellowstone to Offer Summer Workshops for Teachers

Are you a teacher, or do you know of a teacher, who would like to get students excited about place-based learning? Educators play a critical role in connecting young people to public lands and wild places, and Yellowstone National Park provides unparalleled opportunities to use the outdoors as a living...

[READ MORE](#)



SHOP ONLINE



Mountains of the Imagination

Rising above a scene rich with extraordinary wildlife, pristine lakes, and alpine terrain, the Teton Range stands monument to the people who fought to protect it. These are mountains of the imagination. Mountains that led to the creation of Grand Teton National Park where you can explore over two hundred miles of trails, float the Snake River or enjoy the serenity of this remarkable place.



Your Mountains are Calling

Grand Teton has a lot to offer whatever your interests. Explore the Plan Your Visit pages to help with your trip planning.



Be a Junior Ranger!

Learn more about becoming a Junior Ranger in Grand Teton National Park and about Jr. Ranger Day!



Backpacking the Teton Range

Sleep at a higher altitude. Plan your Teton backcountry adventure.



Camping

Spend the night under the stars! Find a park campground for your tent or RV.



Take a Field Trip to the Tetons

Our education team offers curriculum-based learning options for all-ages.



We have an app for that

Download our new app before you get here! Explore Grand Teton and discover places to visit, find a bite to eat, and a place to stay.



WE SUPPORT GRAND TETON NATIONAL PARK



Grand Teton National Park Foundation is a private, nonprofit organization that funds projects that enhance Grand Teton National Park's cultural, historic, and natural resources and helps others learn about and protect all that is special in the park.

The Foundation initiates improvements, critical research, and outreach that enrich visitors' experiences to help create a stable future for Grand Teton National Park.





PROTECTING
WILDLIFE &
NATURAL
RESOURCES

[LEARN MORE](#)



ENGAGING YOUTH
IN THE OUTDOORS

[LEARN MORE](#)



IMPROVING
VISITOR
EXPERIENCES

[LEARN MORE](#)



PRESERVING
CULTURAL
RESOURCES

[LEARN MORE](#)

THINGS TO DO IN THE PARK



HIKING

[LEARN MORE](#)



WILDLIFE VIEWING

[LEARN MORE](#)



WINTER ACTIVITIES

[LEARN MORE](#)

LATEST POSTS FROM THE FOUNDATION





YCP Member Named Youth Conservationist of the Year

We are happy to share that Isabelle Burky, a participant of the Foundation's 2019 Youth Conservation Program (YCP), was recently named Wyoming Game and Fish's first Youth Conservationist of the Year for 2020! Isabelle was selected for the award for ...

[READ MORE](#)


Foundation-Funded Snow Ranger Monitors Avalanche Conditions in Grand Teton

Outdoor enthusiasts have long adored the Tetons for many reasons, one of them being the 400+ average inches of snow that falls on the range every winter, creating unrivaled backcountry skiing conditions. Snow science professionals at the Bridger-Teton National Forest ...

[READ MORE](#)


Adventure Journal: Nordic Ski to the Lucas-Fabian Homestead

Foundation-funded grooming of Teton Park Road is in full-swing and offers visitors a unique winter experience in one of America's most iconic national parks. With 14 miles of Nordic track to enjoy, the region between Taggart Lake Trailhead and Signal ...

[READ MORE](#)


LOVE YOUR PARK? SUPPORT YOUR PARK.

GRAND TETON'S FUTURE DEPENDS ON YOU.

[DONATE TODAY](#)


CONTACT US

Phone: (307) 732-0629

Email: director@gttnpf.org

Physical Address: 115 E. Pearl, Suite 201 Jackson, WY 83001

Mailing Address: P.O. Box 249 Moose, WY 83012


[PRIVACY POLICY](#)

INSTAGRAM


[Follow](#)

Discover more of Grand Teton

Name _____

Email _____



National Park Service[Plan Your Visit](#)[Learn About the Park](#)[Get Involved](#)[INFO](#)[ALERTS](#)[MAPS](#)[CALENDAR](#)[RESERVE](#)

Feel Like You're On Top of the World!

Rocky Mountain National Park's 415 square miles encompass and protect spectacular mountain environments. Enjoy Trail Ridge Road – which crests at over 12,000 feet including many overlooks to experience the subalpine and alpine worlds – along with over 300 miles of hiking trails, wildflowers, wildlife, starry nights, and fun times. In a world of superlatives, Rocky is on top!

**Plan Ahead for Summer**

Yes, it's winter, but it's never too late to start planning for summer, Rocky's busiest season.

Winter Activities and Snow Levels

It's winter, but that doesn't mean you can't still enjoy Rocky! Check snow levels and avalanche forecasts and learn about winter activities.

**Current Conditions**

Conditions in the mountains can change quickly! Know what to expect and be prepared.

Road Conditions

What roads are open? Are they safe to drive? Click here for road reports and information.

Weather

Rocky's weather is extreme! Learn what to expect in each season and how to prepare for your visit.



**PLEDGE
to
PROTECT**

Rocky Mountain National Park
#rockypledge

[Contact Us](#)[Login](#)

Protecting Public Lands for More Than 80 Years

Founded in 1931, the Rocky Mountain Conservancy (formerly the Rocky Mountain Nature Association) is a nonprofit organization supporting Rocky Mountain National Park. When you support the Conservancy, you're supporting one of our national treasures for generations to come.

Donate



From the trails you hike to the wildlife you encounter, our work in Rocky Mountain National Park helps protect and preserve the beauty of one of America's favorite national parks.

[Donate](#)

Classes & Tours



With unprecedented access to RMNP and hands-on field opportunities, these educational programs offer experiences that will last a lifetime!

[Our Programs](#)

Membership



Your Rocky Mountain Conservancy membership keeps you connected to Rocky Mountain National Park, helps protect and preserve the park, and saves you 15% in our Nature Stores in the park!

[Join Today](#)

Shop

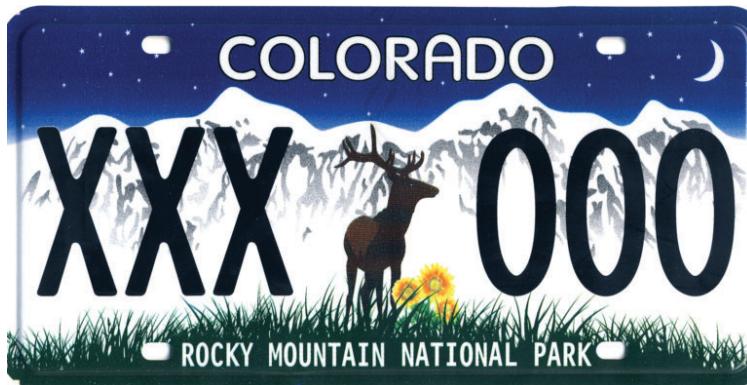


Check out our online Nature Store! With your purchases, you are supporting Rocky's research and educational missions.

[Shop](#)

Get Your RMNP Plates

Support Rocky Mountain National Park with a specialty license plate. Your donation gets you a beautiful license plate and gives Rocky funds for important educational programs in the park.

[Learn more](#)[Donate for Plates](#)

Conservancy Contributes to New Park Housing in Rocky

On October 24, U.S. Department of Interior and National Park Service officials celebrated the construction of new housing units at Rocky Mountain National Park.

[Read more](#)

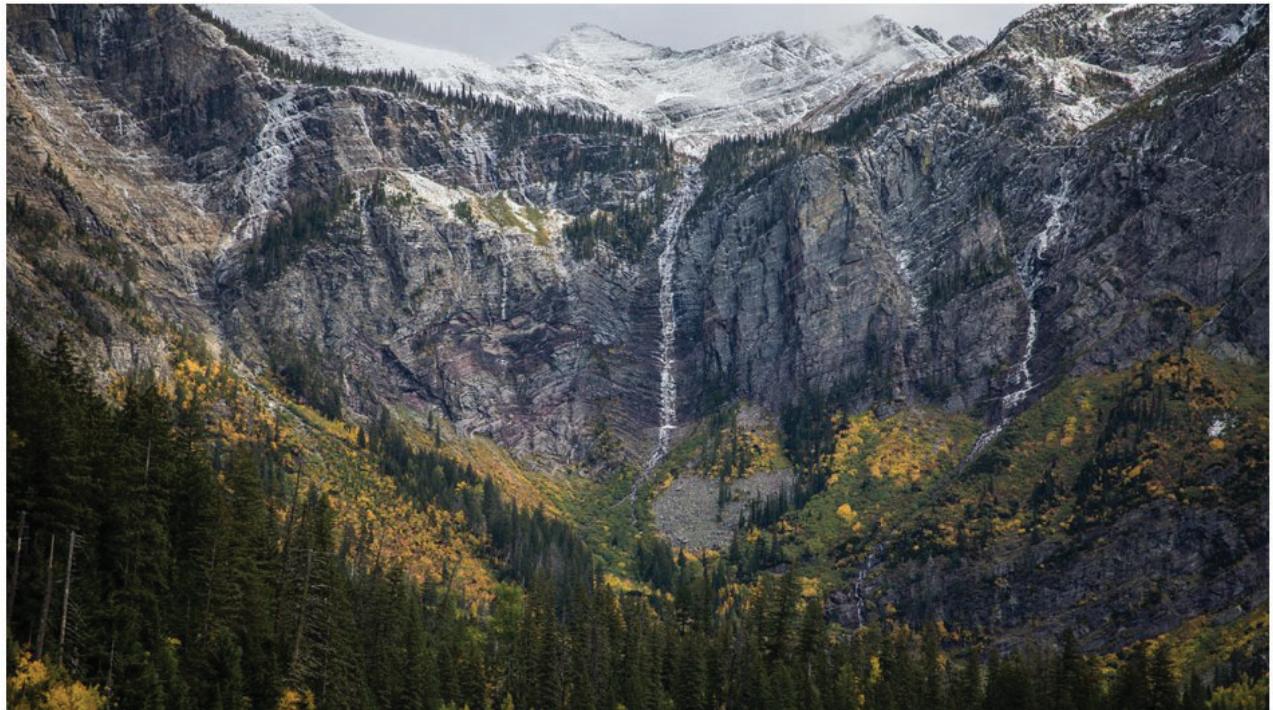
Current News

In 2019, the Rocky Mountain Conservancy – Conservation Corps completed over 10,500 hours of volunteer service in Rocky Mountain National Park and the Arapaho-Roosevelt National Forests. This work was completed by thirty-three AmeriCorps members spread across five crews working in the Boulder, Canyon Lakes, and Sulphur Ranger Districts of the Arapaho-Roosevelt National Forests, as well [...]

[Read More](#)[Newsletter Sign-Up](#)[Join or Give](#)[› Donate](#)

Crown of the Continent

Come and experience Glacier's pristine forests, alpine meadows, rugged mountains, and spectacular lakes. With over 700 miles of trails, Glacier is a hiker's paradise for adventurous visitors seeking wilderness and solitude. Relive the days of old through historic chalets, lodges, and the famous Going-to-the-Sun Road. Explore Glacier National Park and discover what awaits you.



Current Conditions in the Park

Cold is creeping into the park. Plan ahead and check the weather before visiting.



Plan Your Trip

What types of activities are there to do in Glacier?



Road Status

During spring and fall, conditions are constantly changing. Check here for updates on which roads are open for driving, hiking, and biking.



Weather

The Continental Divide makes for unpredictable weather in Glacier's mountains.



International Designations

In addition to being a national park, Glacier is an international peace park, biosphere reserve, and world heritage site.

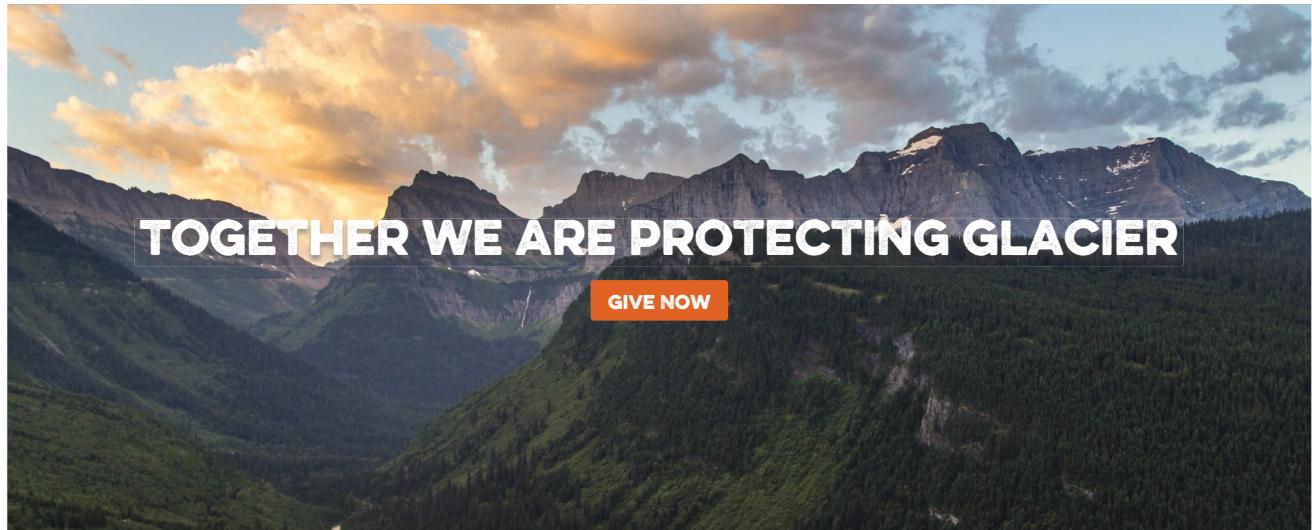


Nearby Attractions

There are many other places nearby that offer a host of different and interesting vacation options.



OUR WORK EXPLORE GLACIER SUPPORT GLACIER SHOP DONATE



It's sweater weather! Stay cozy all season long in Glacier sweaters and jackets.

[SHOP](#)

Project updates and news about how your donations are making a difference.

[READ MORE](#)

Check current conditions throughout Glacier National Park.

[VIEW WEBCAM](#)



WE NEED YOU!

"We jumped at the opportunity to fund various needs. Our first endeavor was funding the St. Mary Falls bridge project that increases access and enhances safety."

- Mark and Mary Ann
Houston, Texas

[BECOME A FRIEND](#)



\$2.3 MILLION

Donations in 2018 funded education, preservation and scientific research projects in Glacier National Park.

**FUNDED THROUGH THE GENEROUS SUPPORT OF
DONORS LIKE YOU**



247 CITIZEN SCIENTISTS

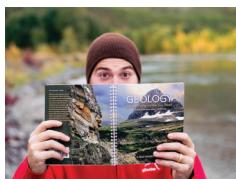
Contributed 7,530 hours to surveying priority species of concern in Glacier National Park last year.



SHOP OUR PARK STORES

100% of proceeds go to Glacier National Park

[SHOP NOW](#)



BOOKS AND MAPS



GIFTS AND COLLECTIBLES



APPAREL AND ACCESSORIES



FEATURED COLLECTIONS



National Parks



Rouge National Urban Park, Ontario

National parks are a country-wide system of representative natural areas of Canadian significance. By law, they are protected for public understanding, appreciation and enjoyment, while being maintained in an unimpaired state for future generations. National parks have existed in Canada for well over a century. [Learn more...](#)

Keep the WILD in wildlife! [Ten tips to respect wildlife and stay safe!](#)

Discover Parks Canada in 2019!

The Discovery Pass is your gateway to history, nature, and adventure from coast to coast to coast. Get yours today and start planning!

[Order your Discovery Pass](#)



[Find a national park](#)



[Reservations](#)



[Learn to Camp](#)



[Science and conservation](#)

Learn how Parks Canada and its partners are protecting species, habitats and ecosystems.



[Protecting species](#)

Learn about species at risk protection and recovery efforts.



[Plan your visit](#)

Parks Canada has countless unique experiences to suit your needs.

Related links

Visiting

- [Trail conditions](#)
- [Dark Sky Places](#)
- [Don't move firewood! Prevent the spread of pests](#)

Conservation

- [A natural priority: A report on Parks Canada's Conservation and Restoration Program](#)
- [Research in national parks](#)
- [National Parks System Plan](#)
- [Creating new national parks](#)

Date modified :

2019-08-09



Australian Government
Department of the Environment and Energy

[Home](#) / [Topics](#) / [National parks](#) / [Parks Australia](#)

Parks Australia



Parks Australia supports the [Director of National Parks](#), the federal park agency, in managing six Commonwealth national parks, the Australian National Botanic Gardens, and [Australian Marine Parks](#).

Parks Australia staff are part of the federal environment portfolio, in the Department of the Environment. The Director of National Parks is a statutory officeholder, charged under the [Environment Protection and Biodiversity Conservation Act 1999](#) (the EPERC Act) with helping to conserve Australia's biodiversity and cultural heritage.

You can find more information about Parks Australia in our [publications](#).



[Click for larger map view](#)

Senior management team

[Show all](#) [Hide all](#)

▼ Dr James Findlay – Director of National Parks

▼ Judy West – Assistant Secretary, ANBG, Partnerships and Science Branch

▼ Carlyn Waters – Assistant Secretary, Booderee and Business Services Branch

▼ Brant Smith – Assistant Secretary, Kakadu and Strategic Priorities Branch

▼ Jason Mundy – Assistant Secretary, Marine Parks Branch

▼ Karl Dyason – Assistant Secretary, Uluru and Island Parks Branch



Parks Australia

Parks Australia looks after Australia's natural treasures – including Kakadu, Uluru and our beautiful oceans.

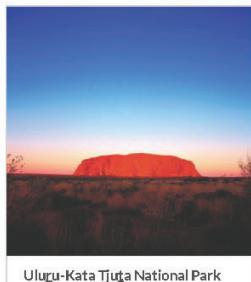
We are responsible for six national parks, 58 marine parks and the Australian National Botanic Gardens.

Explore Australia's national parks and marine parks below.

National parks and marine parks



Kakadu National Park



Uluru-Kata Tjuta National Park



Booderee National Park



Christmas Island National Park



Pulu Keeling National Park



Norfolk Island National Park



Australian National Botanic Gar...



Australian Marine Parks

APPENDIX D | EXISTING WEBSITE HEADINGS

This section lays out the existing website headings to show the different paths found on each of the key websites mentioned in the *Chapter 3: Methods*. The highlighted portions show which headings contain information related to biodiversity conservation, from where to find different publications with relevant research topics to listings of different natural resources.

GLACIER NATIONAL PARK EXISTING WEBSITE STRUCTURE

PARK FACTS

PARK STATISTICS

WATER

LAND

FACILITIES

PLANTS AND ANIMALS

VISITATION

HOME PAGE

PLAN YOUR VISIT

-BASIC INFORMATION

- Operating Hours & Seasons
- Fees & Passes
- Current Conditions
- Permits & Reservations
- Weather
- Pets
- Brochures
- Goods & Services
- Cell and WiFi

-DIRECTIONS AND TRANSPORTATION

- Road Construction Information
- Maps
- Getting Around
- Glacier's Shuttle
 - Shuttle Stops
- Going-to-the-Sun Road
 - Going-to-the-Sun Road Info
 - Going-to-the-Sun Road Project

-EATING AND SLEEPING

- Camping
- Aspenglen

-PLACES TO GO

- Visitor Centers
- Goat Haunt
- Lake McDonald Valley
- Logan Pass
- Many Glacier
- North Fork
- St. Mary Valley
- Two Medicine

-THINGS TO DO

- Hiking
 - Lake McDonald
 - Many Glacier
 - North Folk/Goat Haunt
 - St. Mary
 - Two Medicine
 - Trail Status
- Backcountry Camping

- Advance Reservations
- Ranger-led Activities
 - Native America Speaks
 - Glacier Instameets

- Camping
- Guided Tours
 - Boat Trips and Rentals
 - Bus Tours
 - Guided Hiking Trips
 - Horseback Rides
 - Rafting

- Photography
- Bicycling
- Fishing
- Boating
- Private Stock Use
- River Camping
- Cross-country Skiing

-CALENDAR

-SAFETY

- Bears
- Mountain Lions
- Other wildlife
- Terrain
- Water

-ACCESSIBILITY

- Physical/Mobility
- Deaf/Hearing Loss
- Blind/Low Vision
- Service Animals

-LEAVE NO TRACE

-TIPS FOR DEALING WITH CROWDS

-NEARBY ATTRACTIONS

LEARN ABOUT THE PARK

-NEWS

- News Releases**
- Press Kit

- Purpose and Significance Statements
- History of the NPS Arrowhead
- Fact Sheet
- Park Superintendents
- Current Superintendent's Biography

- Contact Public Affairs
- Social Media

-PHOTOS & MULTIMEDIA

- Park Videos
 - Day Hike Safety Videos
 - Backcountry and Bear Safety
 - Science and Learning
 - Park Features

- At Home In This Place
- Going-to-the-Sun Road
- Points of Interest
- Accessible Videos
- Audio Tours
 - Going-to-the-Sun Road
 - Audio Tour
 - Headquarters District
 - Historic Walking Tour
 - Avalanche Basin
 - Podcasts
- Photo Gallery
- Multimedia Presentations
 - Interactive Panoramas
 - Superpowers Exhibit
- Webcams
- HISTORY & CULTURE
 - People
 - American Indian Tribes
 - Early Settlers
 - National Park Service
 - Civilian Conservation Corps (CCC)
 - Places
 - Historic Lodges and Chalets
 - Mission 66
 - Collections
 - Research Library
 - Archeology
 - Archaeological Resources
 - Archaeological Project
- NATURE
 - Glaciers
 - Melting Glaciers
 - How to See a Glacier
 - Glacial Geology
 - Animals
 - Amphibians
 - Birds
 - Fish
 - Insects, Spiders, Centipedes, Millipedes
 - Mammals
 - Reptiles
 - Plants
 - Ferns
 - Grasses
 - Lichens
 - Mosses and Liverworts
 - Mushrooms and Other Fungi
 - Trees and Shrubs
 - Wildflowers
 - Environmental Factors
 - Air Quality
 - Climate Change
- Geologic Activity
- Hydrologic Activity
- Lightscape/Night Sky
- Nonnative Species
- Soundscape/Noise
- Water Quality
- Weather
- Natural Features & Ecosystems
 - Forests
 - Fossils
 - Geologic Formations
 - Lakes and Ponds
 - Mountains
 - Rivers and Streams
 - Soils
 - Wetlands, Marshes, and Swamps
- Wildland Fire
 - Current Fire Information
 - Outdoor Fire Safety
 - Fire Ecology
 - Fire History
 - Fire Education
 - Fire Management
- SCIENCE & RESEARCH
 - Crown of the Continent Research Learning Center**
 - Research Permits
- EDUCATION
 - Parks as Classrooms
 - Lesson Plans
 - Related Curriculum Materials
 - Bonus Activities
 - Traveling Trunks
 - Plan a Field Trip
 - Ranger-Guided
 - Native Plant Restoration and Citizen Science**
 - Self-Guided
 - Travel Grants
 - Professional Development
 - Distance Learning
 - Ask a Ranger
 - Bears in Glacier
 - Making in Mountains
 - Disappearing Glaciers
 - Student Resource Guide
- KIDS & YOUTH
 - Be A Junior Ranger
 - Park Fun
 - Apgar Nature Center
- MANAGEMENT
 - Foundation Plan
 - International Designations
 - Park Statistics
 - Laws & Policies
 - Your Dollars At Work

-BOOKSTORE

GET INVOLVED

-PARTNERS

-VOLUNTEER

-Astronomy Volunteers

-Artist-in-Residence

-Current Artists-in-
Residence

-Former Artists-in-
Residence

-A Brief History of Glacier
Artists

-Campground Hosts

-Volunteer Campground Assistant

-Internships

-WORK WITH US

-National Park Service Paid

Positions

-Pathways Internship Program

-DO BUSINESS WITH US

-Concessioners

-Commercial Use Authorizations

-PLANNING

-REDUCE YOUR CARBON FOOTPRINT

-SUSTAINABILITY

YELLOWSTONE NATIONAL PARK EXISTING WEBSITE STRUCTURE

PARK FACTS

GEOGRAPHY & GEOLOGY

PRECIPITATION, TEMPERATURE, YELLOWSTONE LAKE

WILDLIFE

VEGETATION

CULTURAL RESOURCES

EMPLOYEES

FACILITIES

ROADS & TRAILS

VISITATION

HOME PAGE

PLAN YOUR VISIT

-TAKE THE YELLOWSTONE PLEDGE

- Chinese
- Czech
- French
- German
- Italian
- Japanese
- Korean
- Russian
- Spanish

-BASIC INFORMATION

- Operating Hours & Seasons
 - Seasons
 - Explore in Summer
 - Explore in Winter
- NPS Yellowstone App
- Fees & Passes
 - Academic Fee Waivers
 - Your Fee Dollars at Work
- Current Conditions
 - Backcountry Situation Report
 - Current Geyser Activity
 - Canyon Area Construction
- Permits & Reservations
 - Film, Photography, and Sound Recording Permits
 - Weddings and Other Ceremonies
 - Public Assembly and First Amendment Activities
 - Commercial Travel
 - Ash Scattering
- Weather
- Pets
- FAQs
 - Park Facts
 - Visitation Statistics

-Regulations

-Backcountry Regulations

-Brochures

-Wildlife and Science Publications

-Report a Lost Item

-Goods & Services

-TRANSLATED VISITOR INFORMATION

-DIRECTIONS AND TRANSPORTATION

-Park Roads

-Road Construction

-Parking

-Maps

-GPS Coordinates

-EATING AND SLEEPING

-Lodging

-Camping

-Bridge Bay Campground

-Canyon Campground

-Fishing Bridge RV Park

-Grant Village

Campground

-Indian Creek

Campground

-Lewis Lake Campground

-Madison Campground

-Mammoth Campground

-Norris Campground

-Pebble Creek

Campground

-Slough Creek

Campground

-Tower Fall Campground

-Picknicking

-Restaurants

-PLACES TO GO

-Visitor Centers

-Albright Visitor Center

-Canyon Visitor Education Center

-Fishing Bridge Visitor Center

-Grant Visitor Center

-Madison Information Station

-Museum of the National Park Ranger

-Norris Geyser Basin Museum

-Old Faithful Visitor Education Center

-West Thumb Information Station

-West Yellowstone Visitor Information Center

ENDAR

-SAFETY

-Backcountry Safety

- Canyon Village and the Grand Canyon
- Fishing Bridge, Lake, and Bridge Bay
- Madison and the West
- Mammoth Hot Springs and the North
- Norris Geyser Basin
- Old Faithful
- Tower-Roosevelt and the Northeast
- West Thumb, Grant, and the South

-THINGS TO DO

- Participate in a Ranger Program
- Explore Thermal Basins
- Watch Wildlife
- Hike a Trail
- Take Photographs
- Camp in the Backcountry
 - Allowed Bear-Resistant Food Storage Containers
 - Winter Backcountry Camping
- Catch a Fish
 - Fish in Yellowstone's Northwest
 - Fish in Yellowstone's Northeast
 - Fish in Yellowstone's Southwest
 - Fish in Yellowstone's Southeast
- Boat
 - Clean, Drain, and Dry
- Bike in the Park
 - Spring & Fall Bicycling
- Ride a Horse
 - Day Ride Permits
 - Coggins Test
 - Exotic Plants: Don't Let Them Ride Along
 - Stock Packing Regulations
- Play in the Snow
- Guided Tours
 - Backpacking
 - Bicycling
 - Boating
 - Day Hiking
 - Fishing
 - Painting and Photography
 - Skiing and Snowshoeing
 - Horse Riding
 - Road-Based Tours

-CAL-

-Bear Safety

- A Bear Doesn't Care Campaign
- Bear Encounter
- Bear Management Areas
- Bear Spray
- Camp in Bear Country
- Hike in Bear Country
- Watch Roadside Bears

-Swim and Soak

-ACCESSIBILITY

- Service Animals
- Wheelchairs and Mobility
 - Backcountry Accessibility
 - Accessibility in the Canyon Area
 - Accessibility in the Lake Area
 - Accessibility in the Madison Area
 - Accessibility around Mammoth Hot Springs
 - Accessibility in the Norris Area
 - Accessibility in the Old Faithful Area
 - Accessibility in the Tower-Roosevelt Area
 - Accessibility in the West Thumb Area
 - Yellowstone Map and Guide

-NEARBY ATTRACTIONS

LEARN ABOUT THE PARK

-NEWS

- Social Media
- Instameets
- Park Newspaper**
- News Releases**

-PHOTOS & MULTIMEDIA

- Photo Gallery
 - Visitor Activities
 - Lakes and Ponds
 - Canyons and Rivers
 - Campground Photos
 - Lodging Photos
 - Skies
 - Thermal Features
 - Vegetation
 - Waterfalls
 - Weather
 - Wildlife
- Sounds
 - 1610 AM
 - Audio Postcards
 - Orientation Audio -

- Videos
 - Yellowstone in Depth
 - Minute Out In It
 - Q&A
 - Inside Yellowstone
 - Video Library
 - Visiting Yellowstone
 - Wildlife Safety
- Virtual Tours
- Webcams
- HISTORY & CULTURE
 - History Publications
 - Park History
 - Timeline of Human History in Yellowstone
 - The Earliest Humans
 - Historic Tribes
 - European Americans Arrive
 - Expeditions Explore Yellowstone
 - Birth of a National Park
 - Flight of the Nez Perce
 - Modern Management
 - Early Visitors
 - Historic Wildlife Observations
 - Associated Tribes
 - Preserving Cultural Resources
 - Archeology
 - Native American Affairs
 - Cultural Landscapes
 - Places
 - Mammoth Hot Springs
 - Fort Yellowstone
 - Old Faithful Area
 - Collections
 - Archives
 - Museum Collection
 - HRC Blog
 - Research Library
 - Historic Vehicle Collection
 - FAQs
- NATURE
 - Greater Yellowstone Ecosystem
 - Influence of Geology
 - Air Quality
 - Soundscapes
 - Water
 - Cycles and Processes
 - Winter Ecology
 - Beyond Boundaries
 - Land Use
- Climate Change
 - Changes in Yellowstone Climate
 - Examining the Evidence in Yellowstone
 - Global Climate Change
- Geology
 - Volcano
 - Hydrothermal Systems
 - Hydrothermal Features
 - Yellowstone Lake
 - Geology
 - Earthquakes
 - Glaciers
 - Sedimentation and Erosion
 - Fossils
- Wildlife
 - Amphibians
 - Birds
 - Mammals
 - Native Fish Species
 - Nonnative Fish
 - Aquatic Invasive Species
 - Reptiles
 - Report a Wildlife Sighting
 - Rescuing Wildlife
- Life in Extreme Heat
 - Thermophilic Archaea
 - Thermophilic Bacteria
 - Thermophilic Eukarya
 - Thermophilic Viruses
 - Thermophilic Communities
 - Thermophiles in Time and Space
- Plants
 - Forests
 - Sagebrush-steppe
 - Wetlands
 - Hydrothermal Plant Communities
 - Wildflowers
 - Ross's Bentgrass
 - Yellowstone Sand Verbena
 - Yellowstone Sulphur Flower
 - Invasive Plants
- Fire
 - Ecological Consequences of
 - 1988 Fires
- SCIENCE & RESEARCH
 - Biennial Scientific Conferences
 - 13th Biennial

- Conference: Building on the Past, Leading into the Future
 - 13th Biennial Conference
 - Keynote Speakers
 - 12th Biennial Conference: Crossing Boarders
- Research
 - History of Science in Yellowstone
 - Research Permit Office
- Vital Signs Reports**
- Yellowstone Science**
 - YS 25(1) Conservation of Native Fish
- EDUCATION**
 - Expedition Yellowstone
 - Curriculum Supplements
 - Parks as Classrooms
 - Curriculum Materials
 - Field Trips
 - Institutes & Field Schools
 - Distance Learning
- KIDS & YOUTH**
 - Ask a Ranger
 - Places in Yellowstone
 - Geology
 - Hydrothermal
 - Wildlife
 - Get Wild: Yellowstone Survivor
 - History
 - Preservation
 - Picture Yourself in Yellowstone
 - Become a Junior Ranger
 - Explore as a Young Scientist
- MANAGEMENT**
 - Strategic Priorities**
 - Our Staff & Offices
 - Office of the Superintendent
 - Business and Commercial Services
 - Office of Strategic Communications
 - Resource Education and Youth Programs
 - Yellowstone Center for Resources
 - Laws & Policies
 - Superintendent's Compendium
 - Transporting Carcasses Through Yellowstone
 - Guidance for Protecting Yellowstone
 - Yellowstone National
- Park Protection Act (1872)
 - National Park Service Organic Act (1916)
 - Cultural Resource Laws
- Bear Management**
- Bison Management**
 - A History of Bison Management
 - Questions & Answers About Bison Management
 - Bison Articles & Publications
- Native Fish Conservation Program**
 - Preparing for Restoration
 - Yellowstone Fish Reports
- Fire Management
 - Current Fire Activity
 - Wildland Fire Program
- Visitor Use Management
 - Transportation
 - Visitor Use Study (2016)
 - Visitor Use Study (2018)
- Winter Use Management
 - History of the Debate
 - Winter Use Planning and Litigation
 - Winter Use Management Archive
 - Yellowstone's Biosphere and World Heritage Designations
- BOOKSTORE**
- RESOURCES & ISSUES**
- GET INVOLVED**
 - PARTNERS
 - DONATE
 - VOLUNTEER
 - WORK WITH US
 - Youth Conservation Corps
- DO BUSINESS WITH US**
 - Commercial Use Authorizations (CUAs)
 - Activity-based CUAs
 - Road-based Commercial Tour CUAs
 - Service-based CUAs
 - CUA Application Process and Insurance Requirements
 - Resources for Commercial Guides
- PLANNING**
- SUSTAINABILITY**
 - Water Conservation
 - Energy Conservation
 - Fleet and Transportation
 - Recycling and Waste Diversion
 - Dark Skies

GRAND TETON NATIONAL PARK EXISTING WEBSITE STRUCTURE

PARK FACTS

PARK STATISTICS
FACILITIES
FEATURES
VISITATION

HOME PAGE

PLAN YOUR VISIT

-BASIC INFORMATION

- Operating Hours & Seasons
- NPS Grand Teton App
- Fees & Passes
- Permits & Reservations
 - Backcountry Reservations
 - Filming & Photography
 - Permits
 - Wedding Permit
 - Scattering Ashes

- Current Conditions

- Lost and Found

- Brochures

- Weather

- Pets

-DIRECTIONS AND TRANSPORTATION

- Maps

- Roads

-EATING AND SLEEPING

- Lodging

- Camping

- Gros Ventre Campground
- Jenny Lake Campground
- Signal Mountain Campground
- Colter Bay Campground
- Colter Bay RV Park
- Lizard Creek Campground
- Headwaters Campground

- Restaurants

-PLACES TO GO

- Visitor Centers

- Laurance S. Rockefeller Preserve Center

- Moose and Mormon Row

- Laurance S. Rockefeller Preserve and Moose-Wilson Road

- Jenny Lake

- String and Leigh Lakes
- Signal Mountain
- Moran and the East
- Jackson Lake Lodge
- Colter Bay
- Leeks Marina and the North
- Rockefeller Parkway and Flagg Ranch

-THINGS TO DO

- Ranger Programs
- Scenic Drives
- Hiking
- Biking
- Skiing and Snowshoeing
- Backcountry Camping
- Climbing & Mountaineering
- Horseback Riding
- Outdoor Activities
- Concessioner Activities
- Fall in the Tetons
- Winter in the Tetons

-SPECIAL PROGRAMS

-CALENDAR

-SAFETY

- Safety in Bear Country
- Black vs. Grizzly
- Bear Encounters
- Hiking in Bear Country
- Camping in Bear Country
- Backcountry Food Storage
- Roadside Bears

-ACCESSIBILITY

- Physical/Mobility
- Deaf/Hearing Loss
- Blind/Low Vision
- Learning Disability
- Service Animals

-NEARBY ATTRACTIONS

-JOHN D. ROCKEFELLER, JR.

MEMORIAL PARKWAY

LEARN ABOUT THE PARK

-NEWS

-News Releases

- News Release Archives
- Social Media

-PHOTOS & MULTIMEDIA

- Photo Gallery
- Virtual Tour
- Multimedia Presentations
 - Park Videos
 - Podcasts
 - Interactive Panoramas

- Audio descriptions
- Webcams
- HISTORY & CULTURE**
 - Cultural History
 - American Indians
 - Explorers and Trappers
 - Homesteaders and Ranchers
 - Dude Ranches
 - Park Expansion
 - Lodging and Vacation Homes
 - Conservationists
 - Western Center for Historic Preservation
 - WCHP Preservation Services
 - Training Programs
 - Get Involved
 - Contact WCHP
- NATURE**
 - Animals
 - Amphibians
 - Birds
 - Fish
 - Insects, Spiders, Centipedes, Millipedes
 - Mammals
 - Reptiles
 - Plants
 - Ferns
 - Grasses
 - Lichens
 - Mosses and Liverworts
 - Trees and Shrubs
 - Wildflowers
 - Environmental Factors**
 - Wilderness
 - Disturbed Lands
 - Geologic Activity
 - Glacier Monitoring
 - Nonnative Species
 - Weather
 - Natural Features & Ecosystems
 - 2017 Solar Eclipse
 - Flood Plains
 - Fossils
 - Glaciers/Glacial Features
 - Lakes and Ponds
 - Forests
 - Watersheds
 - Wetlands, Marshes and Swamps
 - Wildland Fire
 - Fire Ecology
 - Fire History
 - Fire Media
 - Fire and Climate Change
- Repeat Photos
- Current Fire Information
- Fire Safety
- Risk Reduction
- SCIENCE & RESEARCH**
 - Vital Signs Reports**
 - Cultural Research
 - Pathways Research**
 - Boyd Evison Scholarship
- EDUCATION**
 - Parks as Classrooms
 - Curriculum Materials
 - Field Trips
 - Traveling Trunks
 - Distance Learning
 - KIDS & YOUTH**
 - Be a Junior Ranger
 - Park Fun
- MANAGEMENT**
 - Park Statistics
 - Laws & Policies
 - Firearms
- BOOKSTORE**
- GET INVOLVED**
 - PARTNERS**
 - DONATE**
 - VOLUNTEER**
 - Group Volunteer Programs
 - Volunteers-in-Parks (VIP) Program
 - Hammer Corps
 - WORK WITH US**
 - NPS Academy
 - Interpretive Internship
 - Youth Conservation Program
 - DO BUSINESS WITH US**
 - Concessioner Resources
 - Commercial Use Authorizations
 - Hunt Outfitters
 - Business Resources Policy & Plans
 - Guide Information
 - PLANNING**
 - Planning Terms
 - Moose Wildson Corridor Comprehensive Management Plan
 - Jenny Lake Renewal Project
 - Management Documents
 - SUSTAINABILITY**
 - SUPPORT YOUR PARK**
 - Join Our Friends

ROCKY MOUNTAIN NATIONAL PARK EXISTING WEBSITE STRUCTURE

PARK FACTS

PARK STATISTICS

PURPOSE + SIGNIFICANCE

VISITATION

SIZE AND FEATURES

CONTINENTAL DIVIDE

SPECIES

EXOTIC SPECIES

WILDLIFE POPULATION ESTIMATE

ROADS AND TRAILS

DESIGNATIONS

2018 STAFF

HOME PAGE

PLAN YOUR VISIT

-TAKE THE ROCKY PLEDGE

-BASIC INFORMATION

-Plan Ahead

-Rules & Regulations

-Operating Hours & Seasons

-Fees & Passes

-Educational Fee Waivers

-Current Conditions

-Road Conditions

-Trail Conditions

-Longs Peak Information

-Area Closures

-Flood Impacts &

Closures

-Permits & Reservations

-Scattering Ashes

-Special Events Permit

-Weddings

-Wedding Locations

-Commuter Permits

-Commercial Trucking

Permit

-Weather

-Pets

-Goods & Services

-Brochures

-DIRECTIONS AND TRANSPORTATION

-Shuttle Bus Routes

-Maps

-Getting Around

-Mountain Driving

-2019 Road Resurfacing

-Mileages and Elevations

-EATING AND SLEEPING

-Camping

-Aspenglen Campground

-Glacier Basin

Campground

-Longs Peak

Campground

-Moraine Park

Campground

-Timber Creek

Campground

-PLACES TO GO

-Holzwarth Historic Site

-Scenic Drives

-Old Fall River Road

-Trail Ridge Road

-Wilderness

-Visitor Centers

-THINGS TO DO

-100th Anniversary Celebration

-Wilderness Camping

-Wilderness Camping

Guide

-Stock Sites

-Cross-country Zones

-Bivouac Zones

-Winter Camping

-Designated Site Details

-Planning Checklist

-Bicycling

-Climbing

-Longs Peak Keyhole

Route

-Fishing

-Hiking

-Hiking Essentials

-Suggested Hikes

-Winter Hikes

-Accessible Trails

-Continental Divide

National Scenic Trails

-List of Hiking Trails

-Horseback Riding

-Picnicking

-Ranger-led Programs

-Evening Programs at

Visitor Centers and

Campgrounds

-Night Sky & Astronomy

Programs

-Suggested Kids' Activities

-Wildlife Viewing

-Winter Activities

-SAFETY

-Animal-Transmitted Diseases

-ACCESSIBILITY

-NEARBY ATTRACTIONS

LEARN ABOUT THE PARK

- NEWS
 - Park Newspaper
 - News Releases
 - Archive
 - Contact Public Affairs
 - Vistas-Rocky's Newsletter**
- PHOTOS & MULTIMEDIA
 - Blogs
 - Wild Things
 - West Side Stories
 - Ranger Thoughts
 - Teacher-Ranger-Teacher
 - Podcast
 - Social Media at Rocky
 - Sound Library
 - Photo Gallery
 - Multimedia Presentations
 - Living with Fire Video Series
 - Meet Your Rocky Rangers Video Series
 - Science Behind the Scenes Video Series
 - Roaming Rocky Podcasts
 - Webcams
- HISTORY & CULTURE
 - People
 - Places
 - Historic Structures
 - Historic Roads
 - Historic Trails
 - Stories
 - Brief Park History
 - Administrative History
 - 1915-1965
 - Time Line of Historic Events
 - Collections
 - Preservation
- NATURE
 - Animals
 - Birds
 - Fish
 - Mammals
 - Amphibians and Reptiles
 - Butterflies
 - Insects, Spiders, Centipedes, Millipedes
 - Endangered and Threatened Animal Species
 - Plants
 - Algae
 - Invasive Exotic Plants
 - Lichens
 - Mosses & Liverworts
 - Threatened and
- Endangered Plant Species
- Trees & Shrubs
- Environmental Factors**
 - Air Quality
 - Climate Change
 - Diseases
 - Geologic Activity
 - Hydrologic Activity
 - Nonnative Species
 - Water Quality
 - Human Activities
 - Night Sky & Noise
 - Forest Health
- Natural Features & Ecosystems
 - Montane
 - Subalpine
 - Alpine Tundra
 - Glaciers/Glacial Features
- Natural Resource Vital Signs**
- SCIENCE & RESEARCH
- EDUCATION
 - Distance Learning
 - Plan A Field Trip
 - Ranger Guided
 - Self Guided
 - West Side Programs
 - Pre-Field Trip Prep
 - Teacher Resources
 - Teacher Guides
 - Fun Facts for Teachers
 - Service Learning
 - Professional Development
 - Teacher Workshops
 - Internships
- KIDS & YOUTH
 - Be A Junior Ranger
 - Park Fun
 - Scout Ranger Programs
- MANAGEMENT
 - Management Plans
 - Our Staff & Offices
 - Park Statistics
 - Laws & Policies
 - Permits, Applications, and Forms
 - Firearms Regulations
 - Rocky Mountain National Park Compendium
 - Unmanned Aircraft
 - Elk and Vegetation Management**
 - Background
 - Research
 - Elk and Vegetation Management Plan
 - Get Involved
- BOOKSTORE
- WILDLAND FIRE

- Current Fire Information & Regulations*
- Fire Management*
- Frequently Asked Questions*
- Living With Fire*
- Fire Ecology*
- Fire History*

GET INVOLVED

- NPS CENTENNIAL*
- PARTNERS*
- VOLUNTEER*
 - Internships
 - Artist-In-Residence Program
 - 2007; 2008; 2009;
 - 2011; 2012; 2013;
 - 2014; 2015; 2016
 - National Public Lands Day
 - International Volunteers
- WORK WITH US*
 - Commercial Use Authorizations
 - RMNP Employment Forms
- PLANNING**
 - Planning and Management Documents
 - Invasive Exotic Plant Management Plan**
 - Continental Divide Research Learning Center**
 - Elk & Vegetation Management Plan
 - Background
 - Process Planning & Documents
 - Public Involvement
 - Research
 - Video and Media
 - Fact Sheet
 - Record of Decision
 - Learn about becoming a Volunteer Elk Cull Team Member
 - Grand Ditch Breach Restoration
- SUSTAINABILITY*
- SUPPORT YOUR PARK*
 - Leave No Trace*
 - Rocky Mountain Conservancy*

NATIONAL PARK SERVICE EXISTING WEBSITE STRUCTURE

NOTE: The author had to click into each major subheading and list sub-subheadings on each page because there were not more levels of hierarchy in the tabs at the time this was collected.

PLAN YOUR VISIT

-FIND A PARK

- Find a Park by State
- Freedom Fighters
 - Frederick Douglass Nat'l Historic Site
 - Harriet Tubman
 - Underground Railroad
 - NHP
 - Selma to Montgomery
 - Nat'l Historic Trail
- Keeping Culture Alive
 - New Orleans Jazz Nat'l Historic Park
 - Gullah/Geechee Cultural Heritage Corr.
 - Maggie L Walker
 - National Historic Site
- National Park Getaways
 - This Month's National Park Getaway
 - Roger Williams National Memorial
 - Golden Spike National Historic Park
 - Casa Grande Ruins National Monument

-EVENTS

- Event calendar

-PASSES

- America the Beautiful Passes
 - The National Parks and Federal Recreational Lands Pass Series
 - Annual Pass
 - Annual 4th Grade Pass
 - Senior Pass
 - Access Pass
 - Volunteer Pass

-TRIP IDEAS

- Washington, DC: Civil Rights in Washington, DC
- South Carolina: Exploring Historic Charleston
- Massachusetts: Travel the Amistad Story
- Iowa: A Half Day in Herbert Hoover's Hometown
- Maryland: Battles, Banners, and

LEARN & EXPLORE

-ABOUT US

- Our Mission
- Our Employees
- How We Are Organized
- Our Official Emblem
- Learn More
- Follow Us

-EXPLORE NATURE

- Home
- Science and Research
 - Science in Parks**
 - Scientific Study
 - Request a Permit
 - Collection
 - Resources
 - National Park Foundation
 - Science Fellowships
 - Citizen Science**
 - Social Science
 - Research Learning Centers
 - Cooperative Ecosystem Studies Units**
 - Benefits Sharing
 - Inventorying & Monitoring Natural Resources
 - Junior Explorers

-Topics

- Places in Parks
- Life in Parks**
- Science and Research in Parks**
 - Resources in Parks
 - Things to Do in Parks
 - Protecting Nature**

-Engage with Us

- Blogs
 - Speaking of Nature Blog
 - Nature News**
 - Events
 - Partnerships
- Careers in Science
 - What We Do
 - What Inspired Us

Boats

- Virginia: Explore Northern Virginia by Bicycle
- Trip Ideas Across the Country

- #ScienceDeskDigs
- Work With Us
- Photos and Multimedia
 - Photo Galleries
 - Video
 - Outside Science
 - Voices of Science
- Publications
 - State of the Park Reports**
 - Glossary of Terms
- EDUCATORS**
 - Teacher Ranger Teach Program
 - Every Kid Outdoors
 - Spaceflight Explorer Junior Ranger
 - More Educational Materials
 - Distance Learning
 - Materials for Loan
 - Field Experiences
 - Classroom Materials
 - Professional Development
 - Other Education Materials
 - Teacher Features
 - Citizen Science**
 - Teaching with Historic Places
 - Spaceflight Explorer Junior Ranger
 - Railroad History
- PHOTOS & MULTIMEDIA**
- DISCOVER HISTORY**
 - Home
 - American Stories
 - Preserve Places
 - Education & Training
 - Heritage Travel
- KIDS**
 - Visit Parks with Kids
 - Every Kid Outdoors
 - Become a Junior Ranger
- NEWS**
 - News Releases**
 - News Sources
 - Subscribe to NPS News!
 - Looking for Story Ideas?
 - Hot Topics
 - Social Media
 - Multimedia Search
 - Facts & Figures
 - Publications
 - Contact Media Staff
 - Plan Your Visit
- EXPLORE BY TOPIC**
 - Plants Animals & More
 - Mammals
- Fish & Fishing
- Invasive & Non-Native Species**
- Forces of Nature
 - Fire: Structural Fire and Wildland Fire
 - Climate Change
 - Geology
- Outdoor Adventure
 - Biking
 - Trails & Hiking
 - Camping
 - Pets
 - Watching Wildlife
 - Health and Safety
- Great American Landscapes
 - Rivers
 - Caves and Karst
 - Grasslands & Prairies
- America's Places
 - Cultural Landscapes
 - Homes
 - Lighthouses & Lookouts
- Arts & Culture
 - Music
 - Painting
- Economy, Discovery & Innovation
 - Infrastructure
 - Maritime Heritage
 - Science**
- American People & Government
 - American Indian Heritage
 - Civil Rights
 - Women's History
- Conflict & War
 - American Military
 - Battlefields
 - World War II
- GET INVOLVED**
 - DONATE**
 - PARTNER**
 - Explore Partner Opportunities
 - VOLUNTEER**
 - Volunteer News
 - Volunteer Pass
 - Reference Manual 7
 - Community Volunteer Ambassador Program
 - Artist-in-Residence
 - Citizen Science**
 - National Parks BioBlitz**
 - Girl Scout Ranger Program
 - Programs for Boy Scouts
 - International Volunteers-In-Parks
 - Amtrak Trails & Rails
 - George and Helen Hartzog Awards

-VIP Volunteers-In-Parks

-WORK FOR US

-Apply

-Jobs for Students

-Information for New Employees

-Volunteer

-COMMUNITY RESOURCES

-Community Assistance

Programs

PARKS CANADA EXISTING WEBSITE STRUCTURE

INTRODUCTION

FIND A NATIONAL PARK

PLAN YOUR VISIT

- Passes and Admission
- Find a Parks Canada Location
- Camping and Accommodations
- Plan by Region
- Travel Tips and Ideas
- Red Chair Locations
- Activities and Experiences
- Learn to Camp
- Trip Planning Tools
- Visitor Safety
- Fees
- Visitor Guidelines
- Travel Trade

-Qausuittuq National Park

- Thaidene Nene National Park
- Reserve

RESERVATIONS

SCIENCE AND CONSERVATION

- Climate Change and Protected Areas
- Ecological Monitoring
- Indigenous Ecological Knowledge
- New Protected Areas
- Protecting Species
- Conserving and Restoring Ecosystems
- Get Involved in Conservation
- Parks Insider
- Environmental Stewardship
- Plastics Pollution

PROTECTING SPECIES

- Managing Ships and Whales in the St. Lawrence Estuary
- The Wanderers: Epic and Perilous Animal Journeys
- Biotics Web Explorer
- Kids' Wildest Questions
- The Top Turtle Stories from Parks Canada, 2018-2019
- Tiny Tundra = Healthy Herd
- Success Stories
- Bats And Parks Canada
- 2019: International Year of The Salmon
- Protecting Wildlife Official Merchandise

RESEARCH IN NATIONAL PARKS

- Research in Northern National Parks

NATIONAL PARKS SYSTEM PLAN

CREATING NEW NATIONAL PARKS

- Map of Completing the Parks System
- South Okanagan-Similkameen

PARKS AUSTRALIA EXISTING WEBSITE STRUCTURE

NATIONAL PARKS

- National parks and gardens
- Kakadu National Park
- Uluru-Kata Tjuta National Park
- Booderee National Park
- Christmas Island National Park
- Pulu Keeling National Park
- Norfolk Island National Park
- Australian National Botanic Gardens

MARINE PARKS

- Australian Marine Parks
- South-west marine parks
- North-west marine parks
- North marine parks
- Coral Sea Marine Park
- Temperate East marine parks
- South-east marine parks

CORPORATE

- Corporate website**
- Director of National Parks**
- Media releases
- Permits, licenses & leases
- Publications**
- Privacy notice

ABOUT

- About us
- Contact us
- Media centre
- Employment
- Disclaimer

NOTE: The following are the amount of times each heading appeared under each of the six main national parks listed on the Park Australia travel and corporate websites.

Park Travel Headings (mix of these topics)

THINGS TO DO - 5
PLAN YOUR TRIP - 5
PEOPLE & PLACE - 1
TOURS - 1
EXPLORE/DISCOVER - 5

Park Corporate Headings (mix of these topics)

FOR VISITORS - 3
CULTURE AND HISTORY - 6
WORLD HERITAGE LISTING/NATIONAL AND REGIONAL SIGNIFICANCE - 2
NATURAL ENVIRONMENT - 6
BOTANIC GARDENS - 1
EDUCATION - 3
MANAGEMENT AND CONSERVATION - 6
PERMITS, LICENSES AND LEASES - 6
PUBLICATIONS - 6
CONTACT US - 6

APPENDIX E | GOVERNMENT ORGANIZATIONAL STRUCTURE

This section lays out the organization structure of Parks Australia (Australian Government: Department of Agriculture, Water and the Environment 2020a), Parks Canada (Government of Canada. 2019), and the National Park Service (National Park Service 2019a) that were described in *Chapter 4: Findings*. The job titles that relate to biodiversity conservation are highlighted to visually show the dedication of each organization to protecting biodiversity. Any job titles that related to environment, natural resources, protected areas, ecological monitoring, conservation, or stewardship were included.

**Australian Government: Department of Agriculture,
Water, and the Environment Sections**

Australian Antarctic Division

Antarctic Operations and Safety

Assets and Infrastructure

Planning and Organisational Support

Policy and International

Science Branch

Technology and Innovation

Biodiversity Conservation Division

Biodiversity Policy and Water Science

Program Delivery

Protected Species and Communities

Threatened Species Commissioner and Biosecurity

Centre for Australian National Biodiversity Research

Commonwealth Environmental Water Office

Northern Water Use Policy and Wetlands Branch

South Water Use and Science Engagement Branch

Corporate Strategies Division

Business and Ministerial Services Branch

Financial Services Branch

People Strategies Branch

Enquiries

Environment Approvals Division

Assessments and Governance Branch

Assessments and Post Approvals Branch

Assessments and Wildlife Trade

Backlog Assessments

Environment Protection Division

Chemicals

Government Engagement

Industry and International Engagement

Waste Management

Environmental Protection Reform Taskforce

EPBC Act Review

Executive

Heritage, Reef and Marine Division

Heritage Branch

Marine and International Heritage Branch

Reef Branch

Supervising Scientist Branch

Knowledge and Technology Division

Environment Accounts and Science Branch

Environmental Resources Information Network (ERIN)

Branch

Information Technology Branch

Legal and Compliance

General Counsel

Office of Compliance

Parks Australia Division

ANBG, Partnerships and Science

Australian Marine Parks

Booderee and Business Services

Kakadu and Strategic Priorities

Regional offices

AUSTRALIAN CAPITAL TERRITORY

ISLAND TERRITORIES

JERVIS BAY TERRITORY

NORTHERN TERRITORY

Uluru and Island Parks

Policy Analysis and Implementation Division

Communications and Engagement Branch

Economics and Analysis Branch

Strategy and Governance Branch

Parks Canada Organization Structure

Parks Canada

+ Agency CEO

+ Centre for Values and Ethics

+ Office of the Ombudsman and Director, Centre for Values and Ethics

+ Office of Internal Audit and Evaluation

+ Evaluation

+ Internal Audit

+ Office of the Chief Auditor and Evaluation

+ Office of the Chief Executive Officer

+ Executive Correspondence Office

+ Chief Financial Officer Directorate

+ Comptrollership Branch

+ Accounting and Reporting Section

+ Corporate Accounting Services

+ Financial Operations

+ Financial Policy, Communications and Special Projects Section

+ Corporate Resource Management Branch

+ Budget Allocation, Forecasting and Analysis Section

+ External Planning and Reporting, CFO

Attestations and Costing Section

+ Financial Management Advisory

+ Office of the Chief Financial Officer

+ Procurement and Contract Branch

+ Contracting Operations Section

+ Procurement & Contracting Policy Section

+ External Relations and Visitor Experience Directorate

+ Brand Experience Branch

+ Parks Canada Brand Team

+ Parks Canada Promotion Team

+ Parks Canada Web Team

+ Corporate Communications Branch

+ Access to Information and Privacy Office

+ Internal Communications and Innovation

+ Investment Planning Communications

+ Strategic Communications Team

+ External Relations Branch

+ New Media Investment and Strategies Team

+ Outreach and Engagement Team

+ Partnering and Stakeholder Relations Team

+ National Celebrations Branch

+ Office of the Director General, External Relations and Visitor Experience

+ Social Sciences Branch

+ Visitor Experience Branch

+ National Operations and Sales Team

+ Visitor Experience Infrastructures Team

+ Visitor Experience Planning and Product Development Team

+ Visitor Service, Safety and Activities Team

+ Human Resources Directorate

+ HR Strategy and Client Service Relationships Branch

+ Office of the Chief Human Resources Officer

+ Workforce Engagement and Contribution Branch

+ Workplace Management, Data and Systems Branch

+ Indigenous Affairs, Heritage Conservation and Commemoration Directorate

+ Archaeology and History Branch

+ Historical Services, Eastern Canada and FHBRO

+ Historical Services, Western Canada and HSMBC

+ Terrestrial Archaeology

+ Underwater Archaeology

+ Collections, Curatorial and Conservation Branch

+ Conservation

+ Cultural Heritage Policies Branch

+ Built Heritage

+ Cultural Resources Management

+ Heritage Designations and Programs Branch

+ Heritage Designations

+ International and Intergovernmental Affairs

+ Indigenous Affairs Branch

+ Consultation

+ Office of the Director

+ Vice President Office

+ Protected Areas Establishment and Conservation Directorate

+ Law Enforcement Branch

+ Natural Resource Conservation Branch

+ Active Management & Ecological Restoration

+ Environmental Assessment

+ Environmental Services, Infrastructure Planning

+ Marine Policy

- + Monitoring & Ecological Information
- + Species Conservation & Management
- + Office of the Chief Ecosystem Scientist
- + Protected Areas Establishment
- + Vice President Office, PAEC
- + Strategic Policy and Investment Directorate
 - + Asset Management and Project Delivery
 - + Asset and Environmental Management
 - + Highways Project Delivery
 - + Project Delivery
 - + Waterways Project Delivery
 - + Investment Planning and Reporting
 - + Investment Planning and Portfolio Management
 - + Investment Program Delivery, Monitoring and Reporting
 - + Office of the Chief Administrative Officer
 - + Office of the Chief Information Officer
 - + Client Portfolio Management Team
 - + Information Integration Team
 - + Information Systems Team
 - + Information Technology Team
 - + Policy, Legislative and Cabinet Affairs
 - + Cabinet Affairs Team
 - + Realty and Administrative Services Branch
 - + Accommodations and Corporate Administrative Services
 - + Realty Services
 - + Strategic Planning and Reporting Branch
- + Corporate Planning and Reporting Team
- + Environmental Management and Departmental Security Team
 - + Management Planning Team
 - + Vice President, Operations
 - + Atlantic
 - + Cape Breton Island Field Unit
 - + Eastern Newfoundland Field Unit
 - + Mainland Nova Scotia Field Unit
 - + New Brunswick North Field Unit
 - + New Brunswick South Field Unit
 - + Office of the Executive Director, Atlantic
 - + Prince Edward Island Field Unit
 - + Western Newfoundland and Labrador Field Unit
 - + Office of the Senior Vice-President, Operations
 - + Ontario and Waterways
 - + Georgian Bay and Ontario East Field Unit
 - + Northern Ontario Field Unit
 - + Office of the Executive Director, Ontario and Waterways
 - + Ontario Waterways Unit
 - + Quebec Waterways Unit
 - + Rouge National Urban Park Field Unit
 - + Southwestern Ontario Field Unit
 - + Pacific and Mountain Parks
 - + Banff Field Unit
 - + Coastal British Columbia Field Unit
 - + Gwaii Haanas Field Unit
 - + Jasper Field Unit
 - + Lake Louise, Yoho & Kootenay Field Unit
 - + Mount Revelstoke and Glacier National Park Field Unit
 - + Office of the Executive Director, Pacific and Mountain Parks
 - + Waterton/Bar-U Field Unit
 - + Prairies, Yukon and Northwest Territories
 - + Manitoba Field Unit
 - + Northern Prairies Field Unit
 - + Office of the Executive Director, Prairies, Yukon and Northwest Territories
 - + Riding Mountain Field Unit
 - + Saskatchewan South Field Unit
 - + Southwest Northwest Territories Field Unit
 - + Western Arctic Field Unit
 - + Yukon Field Unit
 - + Quebec and Nunavut
 - + Gaspesie Field Unit
 - + La Mauricie and Western Quebec Field Unit
 - + Mingan Field Unit
 - + Nunavut Field Unit
 - + Office of the Executive Director, Quebec and Nunavut
 - + Quebec Field Unit
 - + Saguenay St-Lawrence Field Unit

Organizational Structure of the National Park Service

Director	Learning and Development Distance Learning Center Historic Preservation Training Center Horace Albright Training Center NPS Fundamentals Leadership Development Group Organization Development Branch Stephen T. Mather Training Center Career Academies
Chief of Staff	Office of Equal Opportunity Programs Affirmative Employment, Diversity and Inclusion Programs Complaints Processing and Resolution Programs Minority University Outreach Program Public Civil Rights
Office of Policy	Office of Human Resources Customer Solutions Services Field Advisory Services and Executive Resources Division Human Resources Operations Center HR Services Division HR Franchise HR Operations Division Personnel Security and Identity Management Group WASO Servicing Human Resources Office Seasonal Recruitment Operations Center (SROC) Labor and Employee Relations Division
Office of the Chief Financial Officer	Office of Relevancy, Diversity and Inclusion Youth Programs Division
Business Management Group	Deputy Director, Operations Office of Communications Cultural Resources, Partnerships, and Science Directorate American Battlefield Protection Program Archeology Federal Archeology Program Archeology Program Cultural Resources Business Office Heritage Documentation Programs Historic American Buildings Survey Historic American Engineering Record Historic American Landscape Survey Museum Management Program National Center for Preservation Technology and Training National Heritage Areas Program National Historic Landmarks Program National NAGPRA Program National Register of Historic Places Program Park Cultural Landscapes Program Park Historic Structures Program Park History Program Maritime Heritage Program National Historic Lighthouse Preservation Program
Senior Science Advisor	Science, Technology & Training Cultural Resources Geographical Information
Deputy Director, Congressional & External Relations	Office of International Affairs Office of Legislative and Congressional Affairs
Office of the Comptroller	Deputy Director, Management & Administration Office of Property and Space Management
Accounting Operations Center	Business Services Directorate Commercial Services Program Asset Management Contract Management Financial Management Planning and Development
Budget Office	Contracting and Financial Assistance Contracting Program Financial Assistance Program Servicewide Charge Card
Office of Property and Space Management	Recreation Fee Program Interagency Passes Recreation Fees Recreation.gov/Reservation System
Commercial Services Program	Information Resources Directorate IT Security Office Certification and Accreditation IT Security Incident Response Operations Security Privacy
Asset Management	National Information Services Center Management Services Operation Services Denver Data Center Help Desk SharePoint
Contract Management	Project Services Resources Information Services Digital Information Geographic Information Systems Program Library
Financial Management	Web Services
Planning and Development	National Information Technology Center DC Data Center IT Services Infrastructure Management Radio Program Management Wide Area Network
Planning and Development	Portfolio Management Capital Planning Correspondence Enterprise Architecture FOIA
Contracting Program	Workforce and Inclusion Directorate
Financial Assistance Program	
Servicewide Charge Card	
Interagency Passes	
Recreation Fees	
Recreation.gov/Reservation System	
IT Security Office	
Certification and Accreditation	
IT Security Incident Response	
Operations Security	
Privacy	
National Information Services Center	
Management Services	
Operation Services	
Denver Data Center	
Help Desk	
SharePoint	
Project Services	
Resources Information Services	
Digital Information	
Geographic Information Systems Program	
Library	
Web Services	
National Information Technology Center	
DC Data Center	
IT Services	
Infrastructure Management	
Radio Program Management	
Wide Area Network	
Portfolio Management	
Capital Planning	
Correspondence	
Enterprise Architecture	
FOIA	
Workforce and Inclusion Directorate	

System Facility	Northern Colorado Plateau Inventory & Monitoring Network
State, Tribal, and Local Plans and Grants Division	Northern Colorado Plateau Inventory & Monitoring Network
Historic Preservation Fund	Northern Great Plains Inventory & Monitoring Network
Certified Local Governments	Pacific Island Inventory & Monitoring Network
Historic Preservation Planning Program	Rocky Mountain Inventory & Monitoring Network
Technical Preservation Services	San Francisco Bay Area Inventory & Monitoring Network
Federal Historic Preservation Tax Incentives Program	Sierra Nevada Inventory & Monitoring Network
Historic Surplus Property Program	Sonoran Desert Inventory & Monitoring Network
Technical Preservation Services for Historic Buildings	South Florida Caribbean Inventory & Monitoring Network
Tribal Relations and American Cultures Program	Southeast Alaska Inventory & Monitoring Network
American Indian Liaison Office	Southeast Coast Inventory & Monitoring Network
Cultural Anthropology Program	Southern Colorado Plateau Inventory & Monitoring Network
Cultural Resources Office of Interpretation and Education	Southern Plains Inventory & Monitoring Network
Park Ethnography Program	Southwest Alaska Inventory & Monitoring Network
Park NAGPRA	Upper Columbia Basin Inventory & Monitoring Network
Tribal Historic Preservation Program	Air Resources Division
Interpretation, Education, and Volunteers Directorate	Policy, Planning, and Permit Review Branch
Cooperating Associations	Research and Monitoring Branch
Harpers Ferry Center	Biological Resources Division
Acquisition Management (Contracting)	Resource Education and Partnerships
Conservation	Landscape Restoration and Adaptation
Interpretive Planning	Wildlife Conservation Branch
Media Development Division	Wildlife Health Branch
Publications Division	Climate Change Response Program
Sign Program	Environmental Quality Division
Junior Rangers	Environmental Information Management Branch
Lets Move Outside	Environmental Planning and Compliance Branch
Teachers	Resource Protection Branch
Volunteers	Social Science Branch
Natural Resource Stewardship and Science Directorate	Geologic Resources Division
Inventory and Monitoring Division	Energy and Minerals Branch
Appalachian Highlands Inventory & Monitoring Network	Geologic Features and Systems Branch
Arctic Inventory & Monitoring Network	Natural Sounds and Night Skies Division
Central Alaska Inventory & Monitoring Network	Overflights Branch
Chihuahuan Desert Inventory & Monitoring Network	Planning and Compliance Branch
Cumberland Piedmont Inventory & Monitoring Network	Science and Technology Branch
Eastern Rivers and Mountains Inventory & Monitoring Network	Natural Resources Office of Communications
Great Lakes Inventory & Monitoring Network	Water Resources Division
Greater Yellowstone Inventory & Monitoring Network	Aquatic Systems Branch
Gulf Coast Inventory & Monitoring Network	Ocean and Coastal Resources Branch
Heartland Inventory & Monitoring Network	Planning and Information Branch
Klamath Inventory & Monitoring Network	Water Rights Branch
Mediterranean Coast Inventory & Monitoring Network	Cooperative Ecosystem Studies Units
Mid-Atlantic Inventory & Monitoring Network	National Natural Landmarks Program
Mojave Desert Inventory & Monitoring Network	Research Learning Centers
National Capital Inventory & Monitoring Network	Atlantic Research and Learning Center
North Coast and Cascades Inventory & Monitoring Network	Desert Research Learning Center
Northeast Coastal and Barrier Inventory & Monitoring Network	Appalachian Highlands Science Learning Center
Northeast Temperate Inventory & Monitoring Network	Continental Divide Research Learning Center
	Crater Lake Science and Learning Center
	Crown of the Continent Research Learning Center
	Gateway Research Learning Center

Great Lakes Research and Education Center	Urban Parks and Recreation Recovery
Greater Yellowstone Science Learning Center	National Tourism Program
Mammoth Cave International Center for Science and Learning	Conservation and Outdoor Recreation Division
Murie Science and Learning Center	Challenge Cost Share Program
Ocean Alaska Science and Learning Center	Wild and Scenic Rivers Program
Old-Growth Bottomland Forest Research and Education Center	Hydropower Assistance
Schoodic Education and Research Center	National Trails System
Urban Ecology Research Learning Alliance	Rivers, Trails, and Conservation Assistance Program
North Coast and Cascades Research Learning Center	Office of Partnerships and Philanthropic Stewardship
Pacific Coast Science and Learning Center	Visitor and Resource Protection Directorate
Gulf Islands Research and Education Center	Fire and Aviation Management
Southern California Research Learning Center	Aviation Program
Park Planning, Facilities and Lands Directorate	Structural Fire Program
Construction Program Management Division	Wildland Fire Program
Capital Asset Management	Law Enforcement, Security, and Emergency Services
Construction Program Guidance	Emergency Services
Construction Project Review	Investigative Services
Facility Criteria Model	Law Enforcement Operations
Value Analysis	Law Enforcement Training Center
Denver Service Center	Office of Professional Responsibility
Contracting Division	Office of Public Health
Design and Construction Division	Disease Prevention and Response Branch
Information Management Division	Environmental Health and Field Services
Planning Division	Healthy Parks Healthy People
Transportation Division	One Health
Land Resources Division	Office of Risk Management
Park Facility Management Division	Employee Wellness
Accessibility Management Program	Occupational Safety and Health Program
Asset Management	Operational Leadership
Business Operations and Support Services	Public Risk Management Program
Communications	Regulations and Special Park Uses Division
Environmental Compliance and Response Environmental Mgmt.	Federal Register
Facilities Planning	Regulations
Facilities Planning	Special Park Uses
Park Asset Mgmt. Planning	Uniform Program
Office of the Chief	US Park Police
Park Improvement	Wilderness Stewardship Division
Cyclic Management	Wilderness Stewardship
Housing Mgmt.	Region 1
Recreation Fee Project Mgmt.	Administration
Repair/Rehabilitation	Budget, Finance, and Accountability
Sustainable Operations and Climate Change	Business Services
Climate Change	Communications and Legislative Affairs
Green Parks Plan	Interpretation, Education, and Partnerships -
Energy & Water Mgmt. and Conservation	Northeast Region
Pollution Prevention	Network to Freedom
SOCC Resources	Legislative Affairs and Communications
Sustainable Buildings	Planning, Facilities, and Conservation Assistance
Federal Lands Transportation Program	Historic Architecture, Conservation, and Engineering Center
Dam Safety	Ranger Services and Safety
Park Roads and Parkways	Resource Stewardship
Transportation Mgmt.	Cultural Resources Programs
Partnerships and Civic Engagement Directorate	Olmsted Center for Landscape Preservation
State and Local Assistance Programs Division	Stewardship Institute
Federal Lands to Parks Program	Region 1: National Capital Area
Land and Water Conservation Fund	Lands, Planning & Design
	Partnerships & Community Engagement, National Capital Region

Office of the Regional Director	Climate Change Landscape Conservation Corps
Administration	Cultural Resources
Communications	Vanishing Treasures Program
Liaison to the White House	Western Archeological and Conservation Center
Operations	
Resource Stewardship and Science, NCR	Environmental Quality
Museum Resource Center	GIS - Intermountain Region
Region 2	Natural Resources
Administration	Planning
Communications and Public Affairs	Recreation Fee Program
Facility Management and Risk Management	Submerged Resources Center
Operations	Workforce Management
Partnerships, Interpretation, and Visitor Education	Equal Opportunity
Planning, Compliance, Lands, and Commercial Services	Workforce Enhancement
Resource Stewardship and Science	Regions 8, 9, 10, and 12
Southeast Archeological Center	Regional Director's Office
South Florida Collections Management Center	Administration & Facility Management
Strategic Management	Acquisition & Major Acquisition Business Office
Regions 3, 4, and 5	Comptroller
Cultural Resources	Facility Management
Midwest Archeological Center	Information Technology
Administration	Pacific Islands
Equal Employment Opportunity	Workforce Management
Operations	Communications, Oversight & Analysis
Partnerships and Natural Resources	Public Information, Freedom of Information
Planning, Construction, Compliance, Communications, and Legislation	Public Use Management
Regions 6, 7, and 8	Commercial Services
Regional Director's Office	Fire Management
Indian Affairs and American Culture, Intermountain Region	Interpretation & Technology
National Trails	Lands San Francisco
Park Management	Visitor Resource & Protection
Chief of Staff, IMR Deputy Director	Resource Management & Planning
Southern Arizona Office	Cooperative Ecosystem Studies Units
Operations, IMR Deputy Director	Cultural Resources
Interpretation and Education	Lands Seattle
Distance Learning	Natural Resources
Teacher Ranger Teacher	Upper Columbia Projects
Trails & Rails: California Zephyr Route	Region 11
Volunteers	Regional Director's Office
Youth Programs	Safety, Health & Wellness
Park Management	Administration
Safety	Human Resources
Visitor and Resource Protection	Acquisition and Financial Assistance
Business and Technology	Communications and Operations
Old Sante Fe Building	Interpretation and Education
Communications and Partnerships	Team Alaska
Communications, Legislation and FOIA	Alaska Rivers, Trails & Conservation Assistance
Heritage Partnerships Program	Alaska Region Commercial Services
Partnerships	Alaska Region Environmental Planning & Compliance
RTCA	Native Liaison
RTCA	Resources
Southwest Border Resource Protection Program	Alaska Region Cultural Resources
Special Projects	Lands
Facilities and Lands	Alaska Region Natural Resources
Environmental Management	Alaska Region Subsistence
Lands	Shared Beringian Heritage Program
Resource Stewardship and Science, IMR	Science Advisor

APPENDIX F | DOCUMENT ANALYSIS TABLES

	National Park Service	National Parks Foundation
Goals	The mission of the National Park Service is 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. (National Park Service 2019a)."	"As the official nonprofit partner of the National Park Service, the National Park Foundation generates private support and builds strategic partnerships to protect and enhance America's national parks for present and future generations." (https://www.nationalparks.org/about-foundation/mission-history)
Management Policies	<i>Management Policies 2006</i> NEPA Laws, Executive Orders, Regulations, Director's Orders Organic Act of 1916 Endangered Species Act of 1973 (https://www.nps.gov/aboutus/lawsandpolicies.htm)	<i>National Park Foundation Strategic Plan 2018-2023</i> (https://www.nationalparks.org/about-foundation/strategic-plan)
Conservation Efforts/Projects	2017-2018 Conservation Accomplishments: https://www.nps.gov/articles/2017-2018-conservation-accomplishments.htm Citizen Science: BioBlitz (https://www.nps.gov/subjects/citizenscience/citizen-science-projects.htm) A random list in a search on their website will bring up this option with these headings: Conserving species and their habitats, restoring landscapes and ecosystems, protecting resources *Lots of things pop up for specific parks but there's not one place to find a list	Our Work - go to all programs to see which projects are being funded in each park - the all button however is at the bottom of the page (https://www.nationalparks.org/our-work)
Reports	(when you type in conservation projects on the NPS website, it takes you to the Conservation Core); all these websites were given to me by different NPS employees IRMA (THIS IS A MASS AMOUNT OF INFO TO SIFT THROUGH - houses all the research and papers produced for parks - not public friendly) https://irma.nps.gov/Portal/ https://www.nps.gov/subjects/parkscience/index.htm https://parkplanning.nps.gov/planningHome.cfm https://www.nps.gov/subjects/biodiversity/explore.htm	Annual Financial Reports - (https://www.nationalparks.org/about-foundation/financial-reports)

National Parks Conservation Association	Natural Resource Stewardship and Science Directorate
"We're protecting and enhancing America's National Park System for present and future generations." (https://www.nPCA.org/)	"The Natural Resource Stewardship and Science Directorate (NRSS) provides scientific, technical, and administrative support to national parks for the management of natural resources. NRSS develops, utilizes, and distributes the tools of natural and social science to help the National Park Service (NPS) fulfill its core mission: the protection of park resources and values."
Values (<https: about="" our-values="" www.npca.org="">)</https:>	<i>National Park Service Natural Resource Stewardship and Science Framework: Four pillars to guide natural resource activities and investments</i> (https://www.nps.gov/orgs/1778/upload/NRSS_Framework_Four_Pillars_-WCAG_2-0AA-1.pdf)
A Century of Impact (list of accomplishments) - (<https: a-century-of-impact="" campaigns="" www.npca.org="">)</https:>	*Inventory & Monitoring Division seems focused more on the before step - inventoring and monitoring local ecosystems to see where potential problems could be *Biological Resource division leads to pages about biodiversity, invasive species, and pollinators but it is just a list of types not projects While there is a lot of science happening in the parks, it is unclear where biodiversity projects are located under which division
<i>NPCA: The Book</i> Annual Financial Reports - (<https: about="" our-accountability="" www.npca.org="">)</https:> Field Report - Northern Rockies (<https: 3136-northern-rockies-regional-office-field-reports="" resources="" www.npca.org="">)</https:>	<i>The Natural Resource Report series and Natural Resource Data series</i> (https://www.nps.gov/im/publication-

	National Park Service	National Parks Foundation
Website Notes/Analysis	https://www.nps.gov/index.htm	https://www.nationalparks.org/
Target audience	Families (lots of emphasis on kids activities); travelers?	Adults/Donors
First Impressions	The NPS homepage looks like a blog as there is a random conglomeration of info and it's hard to know where to look first. There is nothing that is immediately related to conservation as a whole. The website seems more oriented towards tourism or very specific activities going on in the parks, although if you dig enough you can find more information about conservation in the parks.	Definitely an emphasis on support, however, the main donation portal just takes you to a page where you can directly donate money instead of directly supporting an activity; although there is a button to donate something in memorium; more dynamic than the NPS website and better graphics
Primary message	Informative; Discovery; Visit Planning	Park Support; Donations
Website Headings	Plan Your Visit; Learn & Explore; Get Involved	About the Foundation; Our Work; Explore Parks; Connect; Support
Accessibility of biodiversity conservation info.	15 locations (Learn & Explore -> Explore Nature -> Science and Research -> Science in Parks – 4 clicks; Learn & Explore -> Explore Nature -> Science and Research -> Citizen Science – 4 clicks; Learn & Explore -> Explore Nature -> Science and Research -> Cooperative Ecosystem Studies Units – 4 clicks; Learn & Explore -> Explore Nature -> Science and Research -> Inventorying & Monitoring Natural Resources – 4 clicks; Learn & Explore -> Explore Nature -> Topics -> Life in Parks – 4 clicks; Learn & Explore -> Explore Nature -> Topics -> Science and Research in Parks – 4 clicks; Learn & Explore -> Explore Nature -> Topics -> Protecting Nature – 4 clicks; Learn & Explore -> Explore Nature -> Engage with Us -> Nature News – 4 clicks; Learn & Explore -> Explore Nature -> Publications -> State of the Park Reports – 4 clicks; Learn & Explore -> Educators -> Teacher Features -> Citizen Science – 4 clicks; Learn & Explore -> News -> News Releases – 3 clicks; Learn & Explore -> Explore by Topic -> Plants Animals & More -> Invasive & Non-Native Species – 4 clicks; Learn & Explore -> Explore by Topic -> Economy, Discovery & Innovation -> Science – 4 clicks; Get Involved -> Volunteer -> Citizen Science – 3 clicks; Get Involved -> Volunteer -> National Parks BioBlitz – 3 clicks)	2 locations (Our Work -> Programs -> Programs that Protect – 3 clicks; Explore Parks -> Search – 2 clicks - love the search function)

National Parks Conservation Association	Natural Resource Stewardship and Science Directorate
https://www.npca.org/	https://www.nps.gov/orgs/1778/index.htm
Adults/Donators	Adults (complicated)
Sign up message appears and you have to click x to get out of it when you first come to the homepage (want people to sign up for their newsletters); seems like it is focuses on providing news but the donate button is also highlighted at the top of the page	There are a lot of categories so it's kind of overwhelming; I'm not sure where exactly to go to look for information because there is no hierarchy of information and several categories to choose from
Informative; Donations	Informative; Education
News & Resources; Issues; Parks; Our Impact; Get Involved; Give; Donate	Home; What We Do; News; Events
3 locations (Issues -> Landscapes – 2 clicks; Issues -> Wildlife – 2 clicks (not conservation directly but shows at least a stronger connection); Our Impact -> A Century of Impact -> Select Topic – 3 clicks)	3 locations (Links to other parks of the NPS Website, not really projects?? - Inventory & Monitoring Division -> Inventory & Monitoring Networks -> Select a Region -> Our Science – 4 clicks; Inventory & Monitoring Division -> Inventory & Monitoring Networks -> Select a Region -> Inventories -> Select an inventory products -> Select park – 6 clicks; Explore Nature -> see NPS – 2+ clicks)

	Glacier	Yellowstone
Primary Challenges	The purpose of Glacier National Park, part of the world's first International Peace Park, is to preserve the scenic glacially carved landscape, wildlife, natural processes, and cultural heritage at the heart of the Crown of the Continent for the benefit, enjoyment, and understanding of the public (National Park Service 2017b)	Yellowstone National Park, the world's first national park, was set aside as a public pleasure ground to share the geothermal wonders and preserve and protect the scenery, cultural heritage, wildlife, and geologic and ecological systems and processes in their natural condition, for the benefit and enjoyment of present and future generations (National Park Service 2017d)
Government Funding (The United States Department of the Interior 201	Climate change Energy development Nearby land management Increasing visitation (National Park Service 2017b)	Protection of natural and cultural resources Infrastructure and operation sustainability Visitor experience (National Park Service 2017d)
FTE (Employees)	13,453	34,410 Park Support: 7% Includes human resources, contracting, budget and finance, partnerships, telecommunications and information technology Facility Operations and Maintenance: 43% Includes utilities, roads, trails, structures, historic preservation coordination, construction management Park Protection: 13% Includes law enforcement, emergency medical services, search and rescue, entrance station operations, structural fire activities Resource Stewardship: 9% Includes management operations and monitoring of natural and cultural resources, invasive species management, research coordination Visitor Services: 28% Includes interpretation and education, and park concessions management
Total Gross Acreage	269	518
	1,013,126.00	2,219,790.70
Visitors	~3 million/year (National Park Service 2017a)	~4 million/year (National Park Service 2019f)

Grand Teton	RoMo
The purpose of Grand Teton National Park is to preserve and protect the spectacular scenery of the Teton Range and the valley of Jackson Hole; protect a unique geologic landscape that supports abundant diverse native plants and animals and associated cultural resources; protect wildlands and wildlife habitat within the Greater Yellowstone area, including the migration route of the Jackson elk herd; and to provide opportunities for enjoyment, education, inspiration, and scientific investigation compatible with these resources for present and future generations (National Park Service 2017c)	The purpose of Rocky Mountain National Park is to preserve the high-elevation ecosystems and wilderness character of the southern Rocky Mountains within its borders and to provide the freest recreational use of and access to the park's scenic beauties, wildlife, natural features and processes, and cultural objects (National Park Service 2013)
Climate change Park visitation Aging infrastructure NPS business Workforce management (National Park Service 2017c)	Visitor use management Transportation Climate change Backcountry data and understanding (National Park Service 2013)
12,205	12,436
231	239
310,044.40	265,807.30
~3.5 million/year (National Park Service 2019b)	~4.5 million/year (National Park Service 2019c)

Glacier	Yellowstone
<p>PEPC (Park Planning) News Releases Citizen Science: Common Loons, Mountain Goats, Pikas Crown of the Continent Research Learning Center Highlights: Stoneflies, Fire's impact on landscapes, grassland monitoring, Bull Trout, Bears Berries & Bees, Glacier's Avalanches Climate Friendly Parks Initiative - Protecting Key Environmental Features (Air Quality, Climate Change, Geologic Activity, Hydrologic Activity, Lightscape/Night Sky, Nonnative Species, Soundscape/Noise, Water Quality, Weather)</p>	<p>PEPC (Park Planning) News Releases; Park Newspaper Strategic Priorities: Strengthen The Yellowstone Ecosystem & Heritage Resources (Advance and Sustain the Yellowstone Ecosystem) Wildlife and Science Publications: "Yellowstone Grizzly Bears: Ecology and Conservation of an Icon of Wildness" "Yellowstone's Wildlife in Transition" "Yellowstone Bison: Conserving an American Icon in Modern Society" "U.S. Fish & Wildlife Service Grizzly Bear Conservation Strategy" "Interagency Bison Management Plan" Native Fish Conservation Program "Yellowstone Resources and Issues Handbook: 2019" - invasive species Vital Signs Reports: "The State of Yellowstone Vital Signs and Select Park Resources 2017" Yellowstone Science: Citizen Science Engagement, Assessing Greater Yellowstone Ecosystem Health, Monitoring Aquatic Ecosystems, Forecasting fire severity, Whitebark pine, Aquatic Vascular Macrophytes as Vital Signs, Yellowstone Backpackers, Bear Country safety, Insects as a Vital Sign, Invasive Plants as indicators of ecosystem health, Warm Period Monitoring on Ecosystem Health, Taking the Pulse of Wetlands, Yellowstone River Fish-Kill, Sound Inventories and Climate Change, Yellowstone Birds, Yellowstone bats as ecosystem health indicators, Vital Signs Assessment, Surrogate Species, Snow Droughts, Understanding Dynamic Ecosystems Yellowstone Reports: Vital Signs Reports, Yellowstone Bird Reports, Yellowstone Wolf Project Reports, Protection of Native Yellowstone Cutthroat Trout in Yellowstone Lake, The Yellowstone Lake Crisis: Confronting a Lake Trout Invasion, Superintendent's 2008 Report on Natural Resource Vital Signs, Archive of Biennial Scientific Conference Proceedings, Yellowstone Center for Resources Annual Reports (last one in 2009)</p>
Conservation Information (NPS website)	
Primary Guiding Documentation	<p><i>GLAC Foundation Document</i> (National Park Service 2017b)</p>
Partnerships (website)	<p>Glacier National Park Conservancy Glacier Institute Glacier National Park Volunteer Associates</p>
	<p>Yellowstone Forever Xanterra Parks & Resorts Delaware North Yellowstone Park Service Stations Medcor at Yellowstone</p>

Grand Teton	RoMo
PEPC (Park Planning) News Releases Environmental Monitoring: Wilderness, Glacier, Disturbed Lands, Wildland Fire, Geologic Activity, Non-native Species, Weather Natural & Cultural Resources Vital Signs: "Natural and Cultural Resources Vital Signs 2018 Report" Multi-use Pathways Research: "Effects of pathways within Grand Teton National Park on avian diversity, abundance, distribution, nesting productivity, and breeding behaviors" "Impacts of a multi-use pathway on American Black Bears in Grand Teton National Park, Wyoming" "Grand Teton National Park Pathway Elk Study"	PEPC (Park Planning) News Releases; Park Newspaper; Vistas-Rocky's Newsletter Environmental Factors: Climate Change, Air Quality, Water Quality, Geology, Forest Health, Night Sky and Natural Sounds, Environmental Diseases and Pests, Invasive Exotic Species Natural Resource Vital Signs: "Natural Resource Vital Signs Report at Rocky Mountain National Park" Continental Divide Research Learning Center Research Highlights: Soil Respiration, Climate Change in Rocky Mountain National Park, The Sounds of Rocky Mountain National Park, Boreal Toad Research in RMNP, Ice Patch Archaeology and Paleontology, Assessing the Vulnerability of White-tailed Ptarmigan to Climate Change Continental Divide Research Learning Center Research Highlights Archive (Plants/Wildlife): Aspen age distribution, Effects of Beaver Dams on Riparian Areas, Effects of Browsing and Fire on Shrublands, Effects of Elk Herbivory, Simulated Beaver Structures, Bighorn Sheep Population, Moose Summer Diet, Population Genetics of Bighorn Sheep, Elk and Moose Exclusion Fence, Black Bear Population and Stability Elk and Vegetation Management Plan: "Interagency Plan Development 2003-2007" "Implementation Phase 2008-2028" Citizen Science: Lily Lake Phenology, Dragonfly Mercury Project, Monitoring change in Forest Composition, Rocky Mountain Inventory and Monitoring Invasive Exotic Plant Management Plan
<i>GRTE Foundation Document (National Park Service 2017c)</i>	<i>ROMO Foundation Document (National Park Service 2013)</i>
Grand Teton National Park Foundation Grand Teton Association Teton Science Schools The Murie Center National Trust for Historic Preservation Jackson Hole Wildlife Foundation University of Wyoming NPS Research Station Interagency Grizzly Bear Team Rockefeller Senior Associates Jenny Lake Rangers Fund	Rocky Mountain Conservancy Continental Divide Research Learning Center Tatra National Parks Costa Rican Parks

	Glacier	Yellowstone
Park Website	https://www.nps.gov/glac/index.htm	https://www.nps.gov/yell/index.htm
Target audience	Families; Travelers	Families; Travelers
First impressions	Glacier's website is also focused on providing information to tourists for the current season. However, there again is not information about biodiversity conservation.	Yellowstone has a pretty good overview of natural features and tourism overall, but still nothing specific about conservation efforts are immediately apparent
Primary message (Front Page)	Visit Planning	Learn; Visit Planning; Get Involved
Website Headings	Plan Your Visit; Learn About the Park; Get Involved	Plan Your Visit; Learn About the Park; Get Involved
Access to biodiversity conservation info.	5 locations (Learn About the Park -> News -> News Releases – 3 clicks; Learn About the Park -> Nature -> Environmental Factors – 3 clicks; Learn About the Park -> Science & Research -> Crown of the Continent Research Learning Center – 3 clicks; Learn About the Park -> Education -> Plan a Field Trip -> Native Plant Restoration and Citizen Science – 4 clicks; Get Involved -> Planning – 2 clicks)	11 locations (Plan Your Visit -> Basic Information -> Brochures -> Wildlife and Science Publications – 4 clicks; Learn About the Park -> News -> Park Newspaper – 3 clicks; Learn About the Park -> News -> News Releases – 3 clicks; Learn About the Park -> Science & Research -> Vital Signs Reports – 3 clicks; Learn About the Park -> Science & Research -> Yellowstone Science – 3 clicks; Learn About the Park -> Management -> Strategic Priorities – 3 clicks; Learn About the Park -> Management-> Bear Management – 3 clicks; Learn About the Park -> Management-> Bison Management – 3 clicks; Learn About the Park -> Management-> Native Fish Conservation Program – 3 clicks; Learn About the Park -> Resources & Issues – 2 clicks; Get Involved -> Planning – 2 clicks)

Grand Teton	RoMo
https://www.nps.gov/grte/index.htm	https://www.nps.gov/romo/index.htm
Families; Travelers	Families; Travelers
Grand Teton's homepage is mostly focused on the activities you can participate in on your visit. Again, nothing is clear about biodiversity management.	Rocky Mountain's website is mostly focused on providing information to tourists for the current season, which is good. However, there again is not information about biodiversity conservation.
Visit Planning	Visit Planning; Get Involved
Plan Your Visit; Learn About the Park; Get Involved	Plan Your Visit; Learn About the Park; Get Involved
5 locations (Learn About the Park -> News -> News Releases – 3 clicks; Learn About the Park -> Nature -> Environmental Factors – 3 clicks; Learn About the Park -> Science & Research -> Vital Signs Reports – 3 clicks; Learn About the Park -> Science & Research -> Pathways Research – 3 clicks; Get Involved -> Planning – 2 clicks)	10 locations (Learn About the Park -> News -> Park Newspaper – 3 clicks; Learn About the Park -> News -> News Releases – 3 clicks; Learn About the Park -> News -> Vistas-Rocky's Newsletter – 3 clicks; Learn About the Park -> Nature -> Environmental Factors – 3 clicks; Learn About the Park -> Nature -> Natural Resource Vital Signs – 3 clicks; Learn About the Park -> Science & Research – 2 clicks; Learn About the Park -> Management -> Elk and Vegetation Management – 3 clicks; Get Involved -> Planning – 2 clicks; Get Involved -> Planning -> Planning and Management Documents -> Invasive Exotic Plant Management Plan – 4 clicks; Get Involved -> Planning -> Continental Divide Research Learning Center – 3 clicks)

	Glacier	Yellowstone
Target audience/Partner Website	https://glacier.org/	https://www.yellowstone.org/
First impressions	Adults/Donators	Adults/Donators; Volunteers; Travelers
	Emphasis on protecting Glacier (big bold letters) and donating; Can donate a general amount or shop on their online store; you can look through their list of projects but you can't directly donate to them and they are not prioritized in any particular order, they do however have a "2020 Project Funding Guide" for projects they are working on that is its own separate PDF (again, no way to directly fund them unless you call?); does have information about visiting Glacier and trip planning	Pop up to donate when you first enter the site; very much about planning your trip but still centered around donating; plan your trip button is at the top with a link to different programs you could attend; also have their own shop and present several different ways to give with a list of current prioritized projects which you can directly donate to online; seems to be more focused on the overall experience than just donating money which is nice and they offer several different ways to get involved
Primary message	Park Support; Donations; Visit Planning	Visit Planning; Park Support; Donations
Website Headings	Our Work; Explore Glacier; Support Glacier; Shop; Donate	About Us; What We Do; Experience; News; Shop; Ways to Give; Donate
Access to biodiversity conservation info	Categorized under: Scientific Research, Preservation (list) 2 locations (Our Work -> Preservation – 2 clicks; Our Work -> Scientific Research – 2 clicks)	Categorized under: Wildlife, Wonders, & Wilderness (list) 2 locations (What We Do -> Current Projects -> Wildlife, Wonders, & Wilderness – 3 clicks; Experience -> Citizen Science – 2 clicks) Yellowstone Citizen Science: Red-Tailed Hawk Monitoring; Home on the Range; Invasive Weed Mapping; Yellowstone Phenology; Yellowstone Pika Project (not on NPS website)

Grand Teton	RoMo
https://www.gtnpf.org/	https://rmconservancy.org/
Adults/Donators; Travelers	Adults/Donators; Travelers
At first I thought the website wasn't as interactive as the other ones; but they have a video playing in loop at the top of the screen that shows the scenery and wildlife while posing prompting questions about support; offer multiple ways to give which is nice; they offer information about research, conservation, and education under the option to donate to "Wild Treasure Campaign Priorities," but there is no option online to directly donate to a specific project - although you can leave a comment; an ad to sign up for the newsletter will pop up after some time; seem more focused on a few key big ideas than individual projects; have information about visiting the park at the bottom without focusing too much on it	Seems like a more basic website; you do have the option to donate to different projects but again it seems that are emphasizing more general projects than specific ones which does make it more focused on big picture ideas; seems focused on just getting people involved whether it's through donating or attending a class; nothing too exciting although they are the only website to have "Join or Give" first in their list of headings
Park Support; Donations; Visit Planning	Park Support; Donations; Visit Planning
Who We Are; Achievements; Initiatives; News & Blog; Ways to Give; Donate	Join or Give ; Our Projects; Learn With Us; Work With Us; Get to Know Us; Shop
Categorized under: Achievements and Initiatives (list) 2 locations (Achievements – 1 click; Initiatives -> Protecting Wildlife and Natural Resources – 2 clicks)	Categorized under: "Our Projects" 1 location (Our Projects – 1 click)

Canada	
Goals	"On behalf of the people of Canada, we protect and present nationally significant examples of Canada's natural and cultural heritage, and foster public understanding, appreciation and enjoyment in ways that ensure the ecological and commemorative integrity of these places for present and future generations." (https://www.pc.gc.ca/en/agence-agency/mandat-mandate)
Conservation Efforts/Project Reports (annual and current)	<i>A Natural Priority: A Report on Park Canada's Conservation and Restoration Program</i> - 41 key projects (https://www.pc.gc.ca/en/agence-agency/bib-lib/rapports-reports/core-2018) <i>Canadian Protected Area Status Report</i> (https://www.canada.ca/en/environment-climate-change/services/wildlife-habitat/publications/protected-areas-report-2012-2015/table-contents.html) <i>Citizen science</i> - Atlantic Canada: 3 projects; Quebec: 3 projects; Ontario: 3 projects; Canadian Prairies: 2 projects; Western Canada: 3 projects; Northern Canada: 3 projects (https://www.pc.gc.ca/en/nature/science/impliquez-involved/science)
Organizational Chart	Minister of the Environment -> Chief Executive Officer -> Director General National Historic Sites; Director General External Relations and Visitor Experiences; Director General National Parks; Director General Eastern Canada; Director General Western and Northern Canada; Chief Administrative Officer; Chief Human Resources Officer (http://parkscanadahistory.com/publications/plans-priorities-e-2007-2008.pdf - pg. 21)
Visitors	20,096,236/year (2018-19) https://www.pc.gc.ca/en/docs/pc/attend
Volunteers	Parks Canada: 6,000 volunteers (https://parksjournal.com/wp-
Budget (% Dedicated to Conservation)	87% - protecting and presenting Canada's Natural and Cultural Heritage vs. internal services - 139,371,019 (file:///F:/5thYear/Report/Lit%20Notes/Reading/Canada/2019-2020_Parks_Canada_Agency_Departmental_Plan.pdf)
Employee Departments (% Dedicated to Conservation)	17.6% - 9/51 departments; 111/5014 employees - 2.21% (http://www.goc411.ca/Employees/IndexByUnit/C%3dca%2cO%3dgc%2cOU%3dPC-PC)
Primary Guiding Documentation/Policy (related to Conservation)	Canada National Parks Act <i>CMP: Open Standards for the Practice of Conservation</i> <i>National Park System Plan 1997</i> (https://www.pc.gc.ca/en/agence-agency/lr-ar ; https://www.pc.gc.ca/en/agence-agency/bib-lib/rapports-reports/core-2018/apercu-overview ; https://www.pc.gc.ca/en/pn-np/plan)

Australia	US NPS
Vision: Outstanding natural places that enhance Australia's well-being. Goals & Objectives: Resilient places and ecosystems: to protect and conserve the natural and cultural values of Commonwealth reserves; Multiple benefits to traditional owners and local communities: to support the aspirations of traditional owners in managing their land and sea country; Amazing destinations: to offer world class natural and cultural experiences, enhancing Australia's visitor economy. (https://parksaustralia.gov.au/about/)	The mission of the National Park Service is 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. (National Park Service 2019a)."
<i>Director of National Parks Annual Report - 7 Case studies</i> (https://www.environment.gov.au/system/files/resources/1ab9ba54-8234-46d6-a93f-38b38769ff18/files/director-national-parks-annual-report-2017-18.pdf) Individual projects are listed under each park on the main website under: "Management and conservation"; Kakadu: 4 threatened species projects, 6 research projects; Uluru;Kata: 4 research projects; Booderee: 1 research project; Christmas Island: 3 conservation projects; Norfolk; Pulu Keeling (https://www.environment.gov.au/topics/national-parks)	<i>2017-2018 Conservation Accomplishments</i> -16 projects highlighted (https://www.nps.gov/articles/2017-2018-conservation-accomplishments.htm) <i>Citizen Science - Environmental Change Projects:</i> 24; Biodiversity Projects: 47; Culture and Heritage Projects: 11 (https://www.nps.gov/subjects/citizenscience/citizen-science-projects.htm)
Director of National Parks -> Marine Protected Areas Branch; Parks Island and Biodiversity Science Branch; Park Services Branch; Joint Management Branch(https://www.environment.gov.au/system/files/resources/1ab9ba54-8234-46d6-a93f-38b38769ff18/files/director-national-parks-annual-report-2017-18.pdf - pg. 26)	Director -> Deputy Director, Congressional and External Relations -> Deputy Director, Operations; Deputy Director, Management & Administration (https://www.nps.gov/aboutus/upload/NPS-Org-Chart.pdf)
1,473,108/year (2017-18) https://www.environment.gov.au/system/files/resources/1ab9ba54-8234-46d6-a93f-38b38769ff18/files/director-national-parks-annual-report-2017-18.pdf	318,211,833/year (2018-19) https://www.nps.gov/aboutus/visitation-numbers.htm
Conservation Volunteers Australia: 100,000 volunteers (https://northernterritory.com/tours/conservation-volunteers-australia)	National Parks Volunteers: 240,000 volunteers (https://www.nationalparkstraveler.org/2017/05/volunteers-are-integral-national-park-system-can-there-be-too-many)
20% - outcome 1,2,4/total resourcing - 1,734,326 (https://www.awe.gov.au/sites/default/files/2020-01/pbs-2018-19-environment-and-energy.pdf)	0.06% - Resource Stewardship, Park Protection, Park Support, National Recreation and Preservation, Construction Program Management & Operations, Management Planning, and Land Acquisition & State Assistance: 1476702 / total budget 2.4 billion (The United States Department of the Interior 2019)
62.29% - 1993 employees total in the Department of Agriculture, Water, and the Environment; 61 sections listed with a key contact of which 38 centered around the environment or conservation (https://www.directory.gov.au/portfolios/agriculture-water-and-environment/department-agriculture-water-and-environment)	9.9% - 44/446 total job org. structure; 216 staff dedicated to "conservation" or "environment" out of 23,256 employees (0.01%) (https://www.nps.gov/aboutus/organizational-structure.htm ?)
Environment Protection and Biodiversity Conservation Act 1999 <i>Australia's Biodiversity Conservation Strategy 2010-2030</i> <i>Director of National Parks Corporate Plan 2019-2023</i> (https://www.environment.gov.au/topics/national-parks/parks-australia ; https://www.environment.gov.au/topics/national-parks/parks-australia/publications ; https://www.environment.gov.au/biodiversity/conservation/strategy/draft-revision)	<i>Management Policies 2006</i> NEPA Laws, Executive Orders, Regulations, Director's Orders Organic Act of 1916 Endangered Species Act of 1973 (https://www.nps.gov/aboutus/lawsandpolicies.htm)

	Canada
Partnerships	Google The Royal Canadian Geographical Society Institute for Canadian Citizenship Trans Canada Trail Destination Canada MEC (Mountain Equipment Co-op) Mars Canada Inc. Vancouver Aquarium A for Adventure Indigenous Tourism Association of Canada (ITAC) Parkbus (https://www.pc.gc.ca/en/agence-agency/partenaires-partners/national)
Website	Parks Canada (https://www.pc.gc.ca/en/index)
Target audience	Families; Travelers (but a younger audience)
First impressions	Canada's Website is clearly organized and provides links to 6 key topics in the park, one of which is science and conservation; the park website focuses on visitation and protecting local ecosystems with a larger goal of preserving regional biodiversity
Primary message	Visit Planning; Learn; Conservation
Website Headings	Introduction; Find a national park; Plan your visit; Science and conservation; Protecting species; Research in national parks; National Parks System Plan; Creating new national parks; Reservations
Access to biodiversity conservation info.	3 locations (Science and conservation – 1 click; Protecting species – 1 click; National Parks System Plan – 1 click)

Australia	US NPS
FNPW - Foundation for National Parks and Wildlife Aboriginal Carbon Foundation and Centre for Appropriate Technology Australian Environment Grantmakers Network Greening Australia and Woodside The Revamp Network The Ian Potter National Conservatory Google 10 Deserts Project Warru recovery program Project Catalyst Australian Roads Project Conservation and Agriculture Project (https://www.environment.gov.au/about-us/partnerships/case-studies)	National Park Foundation NPS Conservation Association NRSS Fish and Wildlife Service National Forest Service Office of Environmental Policy and Compliance Advisory Council on Historic Preservation Council on Environmental Quality Student Conservation Association Youth Conservation Corps George Mason University Center for Climate Change Communication (https://www.nps.gov/orgs/1780/partners.htm)
Parks Australia (https://parksaustralia.gov.au/)	NPS (https://www.nps.gov/index.htm)
Adults; Travelers	Families (lots of emphasis on kids activities); Travelers
6 parks are mentioned on the official website, the rest are managed by region; Parks Australia has two sides of its website: one that focuses more on travel and a corporate side that focuses on policy and management; Australia's corporate website immediately states that the parks follow the "Environment Protection and Biodiversity Conservation Act 1999" and provide a link to this resource; the travel website lets you explore what the parks have to offer and different activities you can participate in	The NPS homepage looks like a blog as there is a random conglomeration of info and it's hard to know where to look first. There is nothing that is immediately related to conservation as a whole. The website seems more oriented towards tourism or very specific activities going on in the parks, although if you dig enough you can find more information about conservation in the parks.
Informative; Visit Planning; Conservation	Informative; Discovery; Visit Planning
National Parks; Marine Parks; Corporate; About	Plan Your Visit; Learn & Explore; Get Involved
4 locations (Corporate -> Parks Australia – 2 clicks; Corporate -> Parks Australia -> The Director of National Parks – 3 clicks; Corporate -> Parks Australia -> The Publications; – 3 clicks; Corporate -> Topics -> Biodiversity -> Biodiversity Conservation -> Australia's Strategy for Nature – 5 clicks)	15 locations (Learn & Explore -> Explore Nature -> Science and Research -> Science in Parks – 4 clicks; Learn & Explore -> Explore Nature -> Science and Research -> Citizen Science – 4 clicks; Learn & Explore -> Explore Nature -> Science and Research -> Cooperative Ecosystem Studies Units – 4 clicks; Learn & Explore -> Explore Nature -> Science and Research -> Inventorying & Monitoring Natural Resources – 4 clicks; Learn & Explore -> Explore Nature -> Topics -> Life in Parks – 4 clicks; Learn & Explore -> Explore Nature -> Topics -> Science and Research in Parks – 4 clicks; Learn & Explore -> Explore Nature -> Topics -> Protecting Nature – 4 clicks; Learn & Explore -> Explore Nature -> Engage with Us -> Nature News – 4 clicks; Learn & Explore -> Explore Nature -> Publications -> State of the Park Reports – 4 clicks; Learn & Explore -> Educators -> Teacher Features -> Citizen Science – 4 clicks; Learn & Explore -> News -> News Releases – 3 clicks; Learn & Explore -> Explore by Topic -> Plants Animals & More -> Invasive & Non-Native Species – 4 clicks; Learn & Explore -> Explore by Topic -> Economy, Discovery & Innovation -> Science – 4 clicks; Get Involved -> Volunteer -> Citizen Science – 3 clicks; Get Involved -> Volunteer -> National Parks BioBlitz – 3 clicks)

APPENDIX G | INTERVIEW NOTES & MATERIALS

The following are the researcher's notes from the interviews that were highlighted in *Chapter 4: Findings*. The responses have been summarized not to represent direct quotes, but the general idea of the conservation to help protect anonymity. Some identifying factors have also been cut out of the notes. Also included in this section is the IRB approval form from the Committee on Research Involving Human Subjects to carry out the research.

TO: Dr. Howard Hahn
College of Architecture, Planning, and Design
1099 Seaton Hall

Proposal Number: 10003

FROM: Rick Scheidt, Chair

Committee on Research Involving Human Subjects

DATE: 12/26/2019

RE: Proposal Entitled, "Proposing a Rocky Mountain Region Biodiversity Conservation Communication Strategy for the National Park Service"

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written – and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §46.101, paragraph b, category: 2, subsection: ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

INTERVIEW POOL

- Rocky Mountain National Park Chief of Resource Stewardship
- Glacier National Park Chief of Planning and Environmental Compliance
- The Natural Resource Stewardship and Science Directorate (NRSS) Director, Coordinator, and Wildlife Conservation Branch Chief

INTERVIEW TRANSCRIPTS (in random order)

Interview 1 | 1.24.2020 | 30:12 minutes

1. Balancing tourism and biodiversity conservation is a stated goal of the National Park Service. In your experience, how is this accomplished?

Visitor use management - increasing trends over time - balancing protecting resources with access - how to manage and accommodate visitor management (especially from larger parks) while protecting resources (especially protecting biodiversity to have a more diverse landscape) NOT EASY

2. When a conflict arises between tourism and biodiversity conservation, how is it typically resolved?

Ex: social trails - try to block off areas with vegetation or hide it or use signage, people bringing in stock/feed or invasive species - prohibit certain foods, dead animal on trail - temporarily close that trail until it is safer for tourists to traverse; Harder ones are the issues that occur over time; there are popular places where there is a more substantial mountain goat and sheep population - wildlife has become habituated (and visitors try to get close to them) to larger crowds of people; trying different messaging and education on safe wildlife distance and proper behavior as well as volunteers/rangers helping to monitor behavior

3. In your experience, do you see biodiversity conservation being a high enough priority compared to tourism management within the NPS?

Yes, biodiversity used to have to be analyzed in NEPA documents (no longer the case); managing a diverse ecosystem however is a high enough priority within the parks; difficulty comes with navigating the political environment and accomplishing everything that needs to be done

4. What biodiversity conservation guidelines/standards currently exist for the NPS and how

are the guidelines/standards applied in your park?

Management Policies 2006 - biodiversity guidelines (umbrella); parks have their own “resource management places” -> strategic resource plans (our park currently doesn’t have one); foundation documents, general management plans; specific plans for species specific issues where specific and appropriate

5. When parks are conducting biodiversity conservation projects, how are they documented?

Planning documents typically document them; Current project: removing non-native lake trout to allow native species to recover - did an EA plan (required) - projects included in annual reports; Citizen science?

6. How do you make documented biodiversity conservation projects accessible/available online to the public?

Annual reports don’t typically go out to the public unless asked for them; plans and environmental assessments go out on the PEPC website (planning environment public communication) - national website database

for public documents; most people ask; IRMA houses all the research and papers produced for parks

7. In what ways do you think the documentation of biodiversity conservation projects could be better communicated or disseminated to the public?

Annual park reports to the public that documents all the projects they have been working on - biodiversity and conservation projects could be a part of that

8. How are biodiversity conservation projects, whether in terms of existence and research results, shared across parks?

No formal way that is set up - biologists and staff share information between each other; conferences and workshops enable this communication; Washington office puts out information about notable research about parks

9. In what ways do you think the documentation and communication of biodiversity conservation projects could be improved between the parks?

Personally see more networking among established groups for researchers and

biologists set up across parks within a certain region; Denver office representation - don't have all the parks and don't necessarily share information

10. Are partners like the NPS' Natural Resource Stewardship and Science Directorate being used to communicate biodiversity conservation efforts on a regional basis? If so, how?

Skip (based on last question)

11. Who coordinates the financial and/or management efforts supporting biodiversity conservation projects between the NPS, conservancies, foundations and other partners? Do you see any emerging trends regarding this relationship?

A little of both - primarily the parks put together a request and take that to the conservancies (make a pitch to them from the NPS to raise money for a project or sponsor them); parks can apply to other funding sources within the government

12. Who decides how to prioritize biodiversity conservation projects related to education, preservation, scientific research, and maintenance?

NPS leadership typically decides this on an individual park basis

13. Do you think the park service mission is adequately represented on the NPS website?

Yes

14. How does your park prioritize the information that is displayed on your website?

Parks used to have their own website designs - now they follow a format dictated by the Washington office

15. Do you think better communication about biodiversity conservation projects to the public can increase volunteerism? If so, would the overall benefit be worth the extra coordination effort? Does this depend on the scale of volunteerism or public support?

Sure - always room for improvement on promoting projects and getting support; Effort depends on the project - sometimes the project really needs volunteers and it is definitely worth it; other projects could be easier done in house

Interview 2 | 1.31.2020 | 1:13:53 hours

1. Balancing tourism and biodiversity conservation is a stated goal of the National Park Service. In your experience, how is this accomplished?

Always been a challenge and will always be a challenge; Parks deal with this at the park level - tourism program within the parks is one person (they go to trade shows and go to different groups and present information about the parks - raise awareness for some of the less popular parks and advertise those locations to help spread out visitors); Some of the parks have tried to have discussions about gateway communities and how to reduce traffic and “carrying capacity” to alleviate the stress on parks; Ex: shuttle systems (depends on the infrastructure); a lot of it deals with public education with public transportation; picture of “walters whittles” leading up to Angel’s Landing at Zion shows; “Organic Act” preserving park resources for the enjoyment of future generations (issues with noise and quality of experience that interrupts things like wildlife); WAY TO MOVE FORWARD: partner with gateway communities and states and communities and congress and think about and develop more of a landscape planning effort around parks (different ways to enter the parks like biking into Moab)

2. When a conflict arises between tourism and biodiversity conservation, how is it typically resolved?

Ex: Zion people were driving with a massive traffic jam and they implemented a shuttle service and worked with the outside town and legislators

3. In your experience, do you see biodiversity conservation being a high enough priority compared to tourism management within the NPS?

All the parks are different and have different laws that created them with different resources, different visitation and infrastructure, varying levels of supporting gateway communities - so many different variables; I would hope so - I think that visitors to parks are interested in the protection of park resources and biodiversity - public meetings and information available on the internet; interested in working with stakeholders and do a good job of communicating compared to other agencies

4. What biodiversity conservation guidelines/standards currently exist for the NPS and how are the guidelines/standards applied in your park?

Laws, policies, director's orders; each park has their own laws in addition which is up to the regional offices to apply them; Management Policies 2006 document (really great guidebook for the quick answer)

5. When parks are conducting biodiversity conservation projects, how are they documented?

Varies on the type of project and how it is designed; is it park specific or are they working with another federal agency or parks or partners; depends on who is in charge of the research (college, research partners, stakeholders, etc.); It's a big challenge - ex: how can you record wildlife fatalities from cars: no uniform way to collect or share data (park service is partnering with the fish and wildlife service to figure out how to collect and share data); agencies may be talking to each other but there are different ways to share information - data management is critical

6. How do you make documented biodiversity conservation projects accessible/available online to the public?

Depends on the type of project and the partners involved; research projects with

universities would be potentially published in a journal or shared with an interagency team; probably a challenge about when to share information and being transparent and making it make sense or be accurate

7. In what ways do you think the documentation of biodiversity conservation projects could be better communicated or disseminated to the public?

Press releases typically happen with projects that are worth paying attention to, especially if it contributes to a scientific discussion; need to be strategic about what is communicated so that it makes sense; CESU network (educational network); a better way to communicate projects more broadly between parks; universities are sharing information with each other but don't know how sophisticated they are about communicating findings to the public and they could improve

8. How are biodiversity conservation projects, whether in terms of existence and research results, shared across parks?

NRSS has a role in pulling cross-cutting issue research and make sense of it; parks and NRSS work together to collect data and share

information (a lot of coordinated information when it comes to similar issues - can happen organically or if there are common issues parks can talk to each other - geologists can form regional or national teams that can be formal or informal depending on the resource)

9. In what ways do you think the documentation and communication of biodiversity conservation projects could be improved between the parks?

See last answer - communication and documentation depends on the different partners who are involved - there's a working group within the park service but then there's also work with interagency groups

10. Are partners like the NPS' Natural Resource Stewardship and Science Directorate being used to communicate biodiversity conservation efforts on a regional basis? If so, how?

NRSS is the Washington level, regional communication happens all the time (ex. The Everglades); depends on the projects and who are involved and typical expertise are typical regional (big picture and micro-level)

11. Who coordinates the financial and/or management efforts supporting biodiversity

conservation projects between the NPS, conservancies, foundations and other partners? Do you see any emerging trends regarding this relationship?

*Both the NPS and other agencies can propose a project depending on what the project is; the way that conservation works at the landscape level is that one group doesn't do one thing there is SO MUCH collaboration going on and different stakeholders involved; the amount of collaboration is definitely being improved and the amount of volunteers that helps take; Appalachian trail landscape partnership *good example for collaboration and groups that work together - public trust for land, national park foundation etc. can put together some money to conserve land; funding comes from multiple places (parks can't do it alone - rely on partnerships and philanthropists); engage at the landscape level; Crown of the Continent*

12. Who decides how to prioritize biodiversity conservation projects related to education, preservation, scientific research, and maintenance?

Sometimes congress tells the parks what to do; all parks are different and are communicating with their gateway communities; depends

honestly - could be the superintendent or regional directors (impossible to make everyone happy and what their priorities); depends on what funding efforts are available; focusing on different things at different times

13. Do you think the park service mission is adequately represented on the NPS website?

Yes and no; the park service can take for granted a lot of things (assuming the public knows more than they do - like treating the park well and general goodwill); assume people understand the mission and get it - talk about it a lot - but might not communicate it as well as we should; we should talk more about giving context to the resources (ex. what is enjoyment?); issues with access and appropriate use to parks (take for granted that people value viewing wildlife and having clean water and clean air in the park - the public isn't surveyed about these things); people come to parks assuming resources are intact and people get enjoyment from that but maybe a night sky level of enjoyment isn't measured; communicate the quality of the resource to the public better (their experience)

14. How does your park prioritize the information that is displayed on your website?

Interpretive teams plan out monthly themes and how that gets communicated to the public; the website is confusing and there isn't as much staff dedicated to working on the website

15. Do you think better communication about biodiversity conservation projects to the public can increase volunteerism? If so, would the overall benefit be worth the extra coordination effort? Does this depend on the scale of volunteerism or public support?

Important; there's not a lot there that connects volunteers (there is the youth program); so much more opportunity to engage the public on getting people involved in projects; people who come to parks want to make a difference and make things better (staff and financing issue); hard to coordinate events with the public (ex. picking up trash or pulling invasive species) - people could do more; park websites could be better utilized to empower the public to help - hard to have the capacity to help within the NPS itself, but friend groups can definitely help and give their services to the NPS; connected conservation effort - network for Landscape Conservation (planned conservation seminars; focus on partnering with communities - Acadia is doing great work with working on a shuttle service and managing volunteers and doing

events and with land trusts); friends groups are getting more sophisticated at helping support the volunteers

Interview 3 | 2.04.2020 | 49:32 minutes

1. Balancing tourism and biodiversity conservation is a stated goal of the National Park Service. In your experience, how is this accomplished?

The NPS gets its direction from a variety of laws, policies, and regulations (particularly the Organic Act) - manage natural resources for protection and enjoyment; NPS looks at ecosystems (biodiversity, etc); NPS Management Policies 2006 walks through the Organic Act and Endangered Species act etc. to show how that is applied in the parks

2. When a conflict arises between tourism and biodiversity conservation, how is it typically resolved?

Organic Act - looks like there is a dual mission - NOT TRUE, preservation and resource protection is paramount - if the two butt up against each other, resource protection takes the higher level of attention

3. In your experience, do you see biodiversity conservation being a high enough priority compared to tourism management within the NPS?

Sometimes it does get lost - went through that through the Centennial (promotion did cause some impacts on cultural and natural resources) when they were promoting the parks to get more people to come; hard to balance visitor enjoyment and protection of resources; ex: parking lots get filled and overflow - need more parking lots and other resources get impacted; need to be careful not to promote enjoyment of people at the expense of resources; obviously enjoyment of people is a huge part of it from the Organic Act - heightened when linking park resources to the meaning of those resources

4. What biodiversity conservation guidelines/standards currently exist for the NPS and how are the guidelines/standards applied in your park?

Organic Act is the overarching guiding principle; NPS Management Policies 2006; Endangered Species Act; Migratory Bird Act; NEPA; Clean Water Act; several laws and regulations that guide conservation; when the

parks propose something, the parks need to look at resources that might be impaired - will it impact species, plants or critical habitats (nesting birds), look at resources under NEPA (directs a process to look at the impacts on the environment and the disclosure to the public and the agency what those impacts are for decision making) and the level of impact, will water quality be affected

5. When parks are conducting biodiversity conservation projects, how are they documented?

They could be documented under NEPA (impacts - categorical exclusion or environmental impact statement); Endangered Species and Critical Habitats are documented under that specific act; consult with other agencies to determine what the impacts will be (adverse or not) - depends on the severity or not of different processes)

6. How do you make documented biodiversity conservation projects accessible/available online to the public?

PEPC - documents are stored online and the public can weigh in on those decisions (primary source for the public); EIS can be

advertised in the federal register where the public can comment

7. In what ways do you think the documentation of biodiversity conservation projects could be better communicated or disseminated to the public?

We can always do better; PEPC can be a bit clunky (looking at updating and revising to be more user friendly); some parks are better than others are better than others at communicating on social media; utilize press releases and reports to congress; work with outside agencies or NGOs, NCPA, and other partnerships that have an invested interest in how parks can communicate through their advocacy groups (could be better utilized); realize that people protect things they love and if they don't know the resources parks have or how fragile they are they may not realize the importance of protecting those sources

8. How are biodiversity conservation projects, whether in terms of existence and research results, shared across parks?

Challenge with parks spread across the country and limited staff with sources dedicated to keeping the parks running; parks can be

isolated; role is to try and connect parks and share information; connect resources/issues that parks may be facing and how they are similar/different; important for these regional/national staff to help parks manage their resources - primary duties; there are groups that have members across different scales in the NPS that have different specialties (NRAG - has reps from parks, regional, and national level - look at issues that can help various levels of resource management); Inside NPS - internal website for sharing information internally - people can post announcements or concerns; Community of Practice subgroup (bat conservation ex.) that can share information between themselves (number of those); Variety of other ways - various groups put on workshops with other parks and regions (ex. Plant management workshop - how to manage based on budget uncertainties and how to manage invasive plants; Wildlife species management; two workshop examples from last week); Various work groups that have meetings; period calls and publications are shared internally and externally

9. In what ways do you think the documentation and communication of biodiversity conservation projects could be improved between the parks?

We can always do better - do a better job of communicating internally between parks, regions, and nationally - newsletters, Inside NPS - could really explore the use of social media (a communication tool the parks are working on using more and more); always striving to improve communication and sharing of documents and resources

10. Are partners like the NPS' Natural Resource Stewardship and Science Directorate being used to communicate biodiversity conservation efforts on a regional basis? If so, how?

Internally and externally through workshops, work groups, calls (question 8)

11. Who coordinates the financial and/or management efforts supporting biodiversity conservation projects between the NPS, conservancies, foundations and other partners? Do you see any emerging trends regarding this relationship?

Funding comes from congress (Washington level and then gets funneled down to parks directly or regional management); important to look at what their needs are; preserving these resources occurs at the park level (rubber meets the road at the park level) - parks really

need to be managing these efforts; it goes both ways with who is sponsoring/approaching projects (bigger parks have bigger friend groups to support projects) - comes down to working together and communicating to better manage resources

12. Who decides how to prioritize biodiversity conservation projects related to education, preservation, scientific research, and maintenance?

Funding sources go directly to parks - and the parks have the ability to spend those as they see fit (superintendent typically decides); there are pots of money out there that parks compete for and submit proposals (ex. SCC - Service Conservation Call; USGS funding; internal park funds from partners; NGOs; MOU - Memorandum of Understanding; ZOO)

13. Do you think the park service mission is adequately represented on the NPS website?

We can always do better; (don't get on it too much on the public end, more on the internal facing websites); some parks really focus on their social media which is a really good way to engage the public; sure the NPS website could be improved to improve the functionality

14. How does your park prioritize the information that is displayed on your website?

Challenge; there's a lot of information out there and interest in parks; challenge is how to best display that and give the information people want/need; message needs to be tailored for different audiences (how to reach people that don't use the internet); WHO IS IN CHARGE - there are individuals who are in charge of outreach/communication at the Washington level and then down through the region and at the park level

15. Do you think better communication about biodiversity conservation projects to the public can increase volunteerism? If so, would the overall benefit be worth the extra coordination effort? Does this depend on the scale of volunteerism or public support?

Yes - better communication (can always do better); people love parks (critical - people will only protect what they value); if the public thinks that protecting parks is important then they will strive to help; the parks would not work without volunteers; NPS struggles to provide the service they want to provide with the funding they have so volunteers are critical to the success

Interview 4 | 2.06.2020 | 1:02:27 hours

1. Balancing tourism and biodiversity conservation is a stated goal of the National Park Service. In your experience, how is this accomplished?

Depends on the resources that people are coming to see to what is protected; conservation to biodiversity is critical for experience of visitors in National Parks

2. When a conflict arises between tourism and biodiversity conservation, how is it typically resolved?

Professional judgment required; not allowed to take action that would damage biodiversity conservation; usually conduct an environmental assessment or impact statement; need to justify or include; the regional director typically signs off; park managers are working with each other and other partners to conduct the analysis necessary to determine the impacts (significant or not to mitigate or avoid or not proceed with the activity as proposed)

3. In your experience, do you see biodiversity conservation being a high enough priority compared to tourism management within the NPS?

We live in a complicated world in the NPS because we are a public agency, in addition to effects and impacts, we are responsive to what the public expects of the park service; priority is a reflection of what the public expects the parks to allow or not allow; how do you do (the mission statement) and what does the right answer look like on the ground; develop policy from law and projects; the essence of what we deal with on a daily basis is always asking this question - how can we ensure that balance is consistent with laws and policies; the perspective on what should and shouldn't be allowed varies between parks and different interest groups; in case history - protect the resource takes precedence - where do you draw the line over what is considered preserving the resources?

4. What biodiversity conservation guidelines/standards currently exist for the NPS and how are the guidelines/standards applied in your park?

The decisions that parks and the NPS make - what and how we should be doing biodiversity conservation - management policies and their guidance document (Management Policies 2006) - if parks are unclear how to manage the issues they can look up how the NPS guides them to deal with them and then if unclear move to other manuals/guidelines and eventually up to the big office to have a conversation and analysis

5. When parks are conducting biodiversity conservation projects, how are they documented?

Handled at the individual park level; flexibility; when specific projects are funded in parks for natural resources, typically they are obligated to produce a plan to study the proposal and provide a completion report; series of standards have to be met in terms of data quality (quality and how it is housed need to follow standards for quality assurance and control); in many cases the information is stored at the park level and Inventory and Monitoring Program (very strict in how work they are funding/involved with must meet these standards) - for other projects or reports that generate the data, that information typically ends up in IRMA; IF SOMEONE WANTS

INFORMATION should be able to find projects from the Inventory and Monitoring Program and IRMA, also would want to contact the parks themselves, and if other researchers have done work they would have a research and collecting permit that requires people to provide a study plan or completion report; should be able to see what is required for each information network online?

6. How do you make documented biodiversity conservation projects accessible/available online to the public?

IRMA, Inventory and Monitoring program, Research Permits; NPS is trying to ensure that information meets consistent standards but provide flexibility for parks; how to store this information (ex. Bird species lists vs. coral reef); because the NPS is a gov. organization, it needs to meet certain standards to provide information to the public (security, access and data quality) - might need to contact parks individually; we know there are certain species that have market value and get poached, or sensitive plant species in specific parks (don't necessarily want to make that available)

7. In what ways do you think the documentation of biodiversity conservation projects could be

better communicated or disseminated to the public?

Something we are working on, more user friendly websites (parks need to continue to work through their current systems to make them better through their accessibility and way they can be used); coupling science projects with science communication material (combine technical information with information to help the public better understand what we are doing); a high priority but works in progress; NPS website 3 years ago was focused on individual parks and visitation - working now to make the website house more information on the system about resources and biodiversity (literally an effort in the last couple of years - trying to centralize this information); huge space for improvement; good to have an outsider's perspective

8. How are biodiversity conservation projects, whether in terms of existence and research results, shared across parks?

Internal - parks have same access as the public to anything; more information is shared internally (Inside NPS has similar natural resource information - HOW TO more than data and information itself); Inventory and

Monitoring network has more available to parks inside with greater detail and more how to... (including confidential information)

9. In what ways do you think the documentation and communication of biodiversity conservation projects could be improved between the parks?

Room for improvement here as well; make more user friendly and accessible and make it easy to find; we have done more research recently on the public to provide this information (how to... etc.)

10. Are partners like the NPS' Natural Resource Stewardship and Science Directorate being used to communicate biodiversity conservation efforts on a regional basis? If so, how?

It is a priority of the NRSS to continue to do more work on this topic and to raise awareness and make accessible; developed a set of pillars to guide the broad direction of the NRSS (invest time, and money, and people); fourth pillar: enhancing stewardship science access and engagement (capacity and ability of the park service to provide usable information about natural resources to the public and park managers); websites information and standards (consistent through the NRSS)

11. Who coordinates the financial and/or management efforts supporting biodiversity conservation projects between the NPS, conservancies, foundations and other partners? Do you see any emerging trends regarding this relationship?

The NRSS is the service that coordinates financial efforts; individual parks can do their own things at their level; sometimes the NRSS can provide support at the national level; overall coordination comes from the NRSS; work with other partners (as well as what the parks do) - local flexible opportunities; national level: will engage with foundations and other partners to advance those; National level examples: Citizen Science Dragonfly Mercury project (happening across the country); advance the ability of parks to help support Citizen Science and push toward broader themes (46-47 minutes); Inventory and Monitoring program is funded through the NRSS; works with the NPF to develop a program for scientists to conduct research in the national parks - NRSS work with the parks to identify what the needs are; work to make conservation higher; the trend is to steer people towards broader issues (working with the public and directing them to a theme)

12. Who decides how to prioritize biodiversity conservation projects related to education, preservation, scientific research, and maintenance?

Priorities are determined through the director's office at the highest level and through the administration or congress; congress can mandate the parks to spend a certain amount of money on something; determined collaboratively between directors to identify priorities; scaled down is a Natural Resources Priority group - that group helps to prioritize; works at different scales!

13. Do you think the park service mission is adequately represented on the NPS website?

It is better now than it used to be, but there is still room for improvement - communications department works with the NRSS to decide what happens

14. How does your park prioritize the information that is displayed on your website?

1) Need (what publics are interested in); 2) People within (NRSS) identify what priority information should be displayed to the website (work with communications department); what

kinds of stories can we tell or what type of stories are compelling

15. Do you think better communication about biodiversity conservation projects to the public can increase volunteerism? If so, would the overall benefit be worth the extra coordination effort? Does this depend on the scale of volunteerism or public support?

ABSOLUTELY (primary motivators for getting this information out to inspire people to get involved or help); the way things work in the park service occur at the national level and at the local level at the parks; sometimes parks coordinate volunteers; NRSS provides tools to help parks coordinate efforts better (show what works better at other parks) or they can give every park a system to use that is more top-down (try not to dictate so they provide flexible options) - if you want to move an initiative sometimes you need to pass a new policy; Citizen Science had lots of parks talking to each other (how do we store? what did you do?) - created a Citizen Science working group with reps from each park to figure out standard policies or tools for how people can share their information - we think you should prioritize this or do this - chartered by the National Resources Support group; difficult for

outsiders to find (mostly an internal activity) - but even within the parks service getting the word out to the parks themselves can be difficult (communication can be difficult over time)

Interview 5 | 3.05.2020 | 59:49 minutes

1. Balancing tourism and biodiversity conservation is a stated goal of the National Park Service. In your experience, how is this accomplished?

Not necessarily an accurate statement of the mission - at high levels it is accomplished depending on where the budget is distributed, that does influence what the parks can do responding to visitor needs and interacting with the community; beyond that, all the different activities that the parks do, the parks need to consider visitor experience and the impacts on the natural resources (through environmental compliance project); rapid rise in visitation to the most popular parks - facing impacts on natural resources; working on visitor access strategy that looks at visitor safety and operations and the impact of visitors on natural and cultural resources; re-vegetating areas that have been trampled by visitors and having discussions about how we can keep

those places from being trampled (sensing, messaging, re-vegetating, to close or not to close); ex. Boreal Toads are in decline at the park, have a couple different stressors affecting them, reintroducing them to new areas identified as a good habitat

2. When a conflict arises between tourism and biodiversity conservation, how is it typically resolved?

It depends on the scale and who has the decision power; visitor use strategy scale: superintendent has a lot of say on what is prioritized (visitors or reducing impacts); applying different strategies in different places - needs support from the regional director and even higher could have influence on the big picture; ex. Having reservation systems; when looking at a specific area, we will often discuss what to do with our interdisciplinary team (public info officer, information chiefs, superintendent, etc.) and get ideas from staff; can't make the parks into a "no touch museum" to protect the natural resources; come to an agreement as a group - sometimes test a method and do photo monitoring; Elk and vegetation management plan - big part of it was putting up fence ex-closures and intensively studying the project - visitors

don't like seeing fences (put in gates for their access) - willow and aspen impact

3. In your experience, do you see biodiversity conservation being a high enough priority compared to tourism management within the NPS?

I wish we had more budget allocated to biodiversity conservation, however, we are facing a huge increase in visitation that the parks are not prepared for. There are impacts not only to the park's resources, but to the staff. Each administration has their priorities - the Secretary of the DOI priorities - all projects have to be approved through DOI priorities

4. What biodiversity conservation guidelines/standards currently exist for the NPS and how are the guidelines/standards applied in your park?

2006 Management Policies (doing what we can with our resources) - ex. Removing non-native species; fishing and hunting strategic plans

5. When parks are conducting biodiversity conservation projects, how are they documented?

Technical reports and publications are documented in IRMA or peer reviewed literature or research permit system; in terms of what the park is doing on the significant things the parks will put out press releases and see what the press is picking up; partnered with conservancy to reach their audience; park newspapers; EIS documents (public outreach component); PEPC; depending on the size of project they can get a lot of public attention; sometimes they will be on the website or through social media; research conferences are open to the public

6. How do you make documented biodiversity conservation projects accessible/available online to the public?

See above question

7. In what ways do you think the documentation of biodiversity conservation projects could be better communicated or disseminated to the public?

There's always room for improvement; we have a lot of outlets - Publication Officer will have meetings with different civic groups to talk about these types of topics; in addition to the online improvements; the NPS has this

huge website - could make videos; the really interested public would have to look in a lot of different places; individual parks could have a one stop shop; EIS documents can be found on PEPC (can't see everything in PEPC); right now there are several different avenues - one way to improve this is to have one standardized way for projects to be included (needs to come from the higher level)

8. How are biodiversity conservation projects, whether in terms of existence and research results, shared across parks?

There are a couple of things - our region puts out an annual report - typically includes only the projects the regional staff is focusing on (internally published); for threatened or endangered species there are recovery teams that can include more than one park - can be through other agencies (like Fish & Wildlife) - depends on whether the species include the other parks; Park Science Publications; Climate Change Response Newsletters; it has diminished, but a lot of people have been to the George Wright Conference (reduced ability to travel to conferences)

9. In what ways do you think the documentation and communication of biodiversity conservation projects could be improved between the parks?

Well one thing I liked at another park I worked at, we had twice a year meetings with our network (same set of parks that the Inventory and Monitoring Network served) - a couple of big and small parks - talked about different topics and what projects we were going to submit to fundings or limitations on what we could submit as a region, worked with USGS geological survey at those meetings; I&M Network at current park utilizes conference calls since the parks are more spread out

10. Are partners like the NPS' Natural Resource Stewardship and Science Directorate being used to communicate biodiversity conservation efforts on a regional basis? If so, how?

New to the region; I feel like we haven't done much with the NRSS; depends on the specific topic - if we don't have expertise, we could reach out for assistance from the Washington office; ex. the national level helps a lot with acoustic monitoring; depends on the topic

11. Who coordinates the financial and/or management efforts supporting biodiversity

conservation projects between the NPS, conservancies, foundations and other partners? Do you see any emerging trends regarding this relationship?

There is a funding source at the regional and Washington level for resource management science projects - competitive proposals and they will panel and award funding for the projects (review the merits and outcomes) SUPER COMPETITIVE; at the national level, there are some sources through the National Park Foundation (focused more on youth engagement) - science committee has been more active in the past; at the park level, the different conservancies have conferences they go to together but they aren't necessarily coordinated - establish relationships competitively, some parks have stronger friends groups that are more successful - our group I would say is medium strong; the park typically approaches the partners with projects (projects typically focused on interpretation and education but they are beginning to focus more on conservation); depends on the mission of each conservancy to fund projects

12. Who decides how to prioritize biodiversity conservation projects related to education, preservation, scientific research, and maintenance?

A lot of the funding outside of our base amount for projects is the Service Wide Comprehensive call which houses several funding sources; recreation fees can help feed into this - our park is base poor and are pretty fees rich (relative to other parks) - the legislation on the fees is very specific on what you can spend it on (look into the law); only submit one or two projects on natural resources a year compared to 100 projects for cyclic maintenance; depends on what is submitted to compete

13. Do you think the park service mission is adequately represented on the NPS website?

Yes, but I haven't looked at the main one recently

14. How does your park prioritize the information that is displayed on your website?

The park is in charge of the information but the websites are standardized; public office of communication decides what goes on the main pages; our staff is consulted on what goes on

the nature pages (natural history) - designed so that it doesn't have to be updated all the time; research center tries to have more updated information on current projects - puts out an e-newsletter that highlights different projects (available for the public and park staff); social media - interpretation and education division

15. Do you think better communication about biodiversity conservation projects to the public can increase volunteerism? If so, would the overall benefit be worth the extra coordination effort? Does this depend on the scale of volunteerism or public support?

Yeah I think that communication really can affect volunteerism, volunteers are also some of the best communication vectors we have. Our park has a really huge volunteer program, a lot of which are retirees or large groups coming in, and we can't meet all the requests to volunteer (a lot of work to make sure they are properly prepared); it is better to have targeted volunteers to work on specific projects; just the case in our parks; volunteers are some of our strongest messengers because they care a lot and they learn more from their experiences

APPENDIX H | REGIONAL COMMUNICATION NETWORK CATEGORIES

The websites studied in *Chapter 4: Findings* were analyzed to determine what categories the NPS should have. The highlighted categories were the overlapping themes chosen.

National Park Foundation:

- Programs that Protect
- Programs that Connect
- Programs that Inspire

National Parks Conservation Association:

- Defending Wildlife
- Telling the American Story
- Restoring our Waters
- Preserving Natural Sounds + Night Skies
- **Protecting Natural Wonders**
- Bringing Parks & People Together
- **Educating and Inspiring Park Visitors**
- Strengthening the National Park System
- Clearing the Air
- **Preserving Antiquity**
- **Rising to the Challenge**
- Raising All Voices

Yellowstone Forever:

- **Wildlife, Wonders, & Wilderness**
- **Visitor Experience**
- **Cultural Treasures**
- Ranger Heritage
- Greenest Park

• Tomorrow's Stewards

Glacier National Park Conservancy:

- **Preservation**
- **Education**
- Scientific Research

Grand Teton National Park Foundation

- **Protecting wildlife and natural resources**
- Engaging youth in the park
- **Preserving cultural resources**
- **Improving visitor experiences**
- Snake River Gateways

Rocky Mountain Conservancy:

- **Next Generation Fund**
- Conservation Corps
- Trail Improvement
- **Land Protection**
- **Historic Preservation**
- Legacy Endowment

Parks Canada:

- **Science and Conservation**

Parks Australia:

- **Culture and history**
- **Natural environment**
- **Education**
- **Management and conservation**

APPENDIX I | ANNUAL REPORT PAGES

Several reports from *Chapter 4: Findings* were analyzed to determine what should be in the Regional Research Network Year in Review report. The following are what was taken from each report to put into the proposed document.

National Park Foundation

- Mission statement
- People involved
- Investing in our future page: number of engaged partners, number of people participating in park events and activities, hours of service contributed and number of volunteers (graphic example)
- Stronger together: list of partners

National Parks Conservation Association:

- Our work by the numbers: number of volunteers (graphic example)

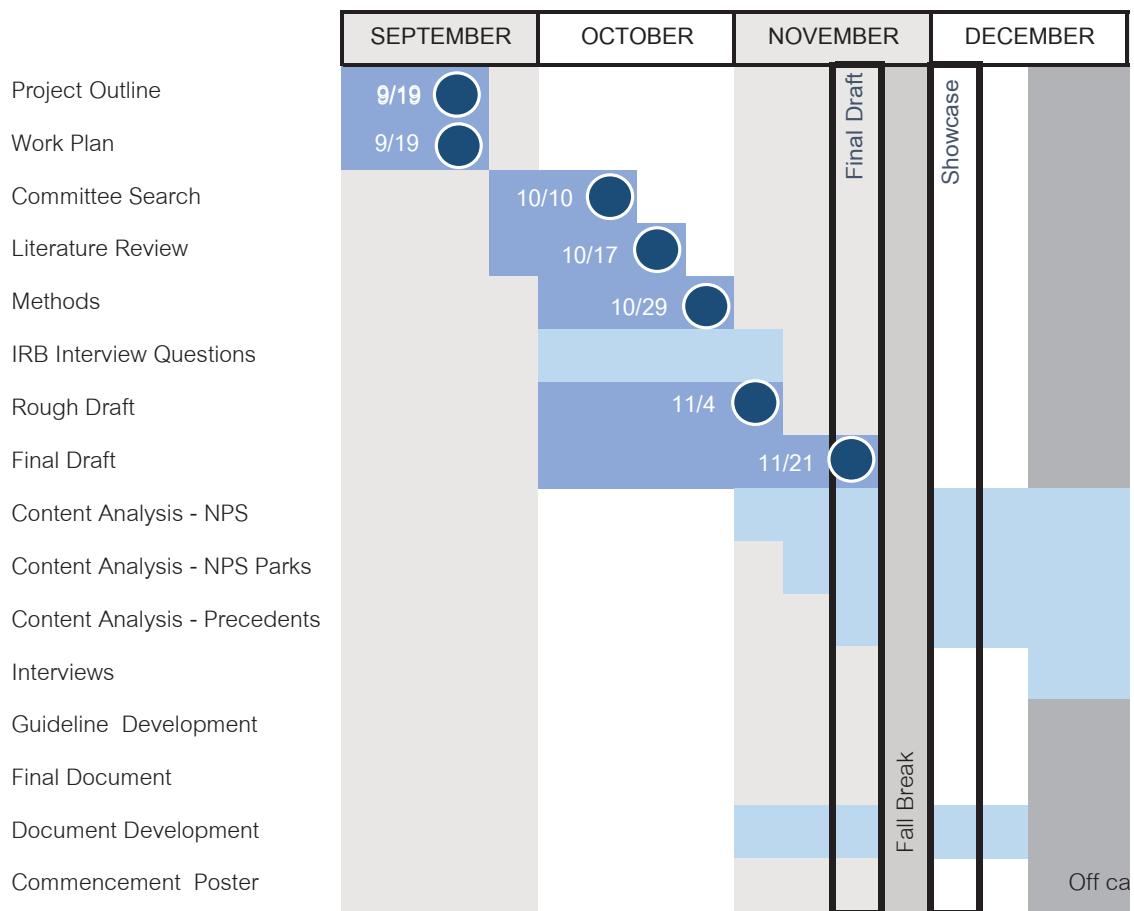
Glacier National Park Conservancy:

- List of projects by type with a map
- 2020 by the numbers: amount of money raised total; number of projects, money raised, and key projects for each topic (graphic example)

Parks Canada:

- Overview of Park Canada's Conservation and Restoration Program
- Project pages: photo and catchy title, description of the issue, the approach, and what has been accomplished (graphic example)

APPENDIX J | PROJECT TIMELINE



JANUARY	FEBRUARY	MARCH	APRIL	MAY
Draft MR	Substantial Completion	Final Report Draft	Final Defense	Commencement Exhibit
Draft MR	Substantial Completion	Final Report Draft	Final Defense	Graduation!!!
Campus	Spring Break	4/6/		