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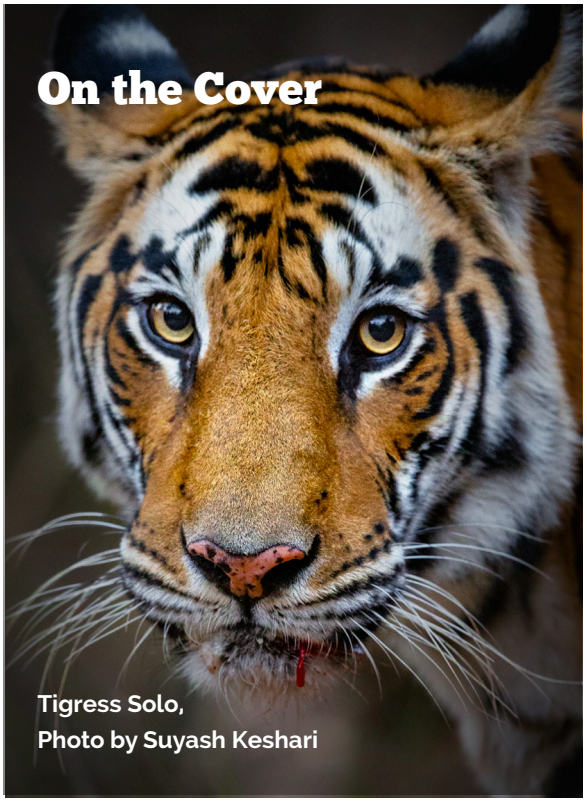

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IJW Editor-in-Chief Emeritus

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The International Journal of Wilderness links wilderness professionals, scientists, educators, environmentalists, and interested citizens worldwide with a forum for reporting and discussing wilderness ideas and events; inspirational ideas; planning, management, and allocation strategies; education; and research and policy aspects of wilderness stewardship.

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MANUSCRIPTS TO: Robert Dvorak, Dept. of Recreation, Parks and Leisure Services, Central Michigan University, Room 108 Finch Hall, Mount Pleasant, MI 48859; Telephone: (989) 774-7269. E-mail: dvora1rg@cmich.edu.

BUSINESS MANAGEMENT AND SUBSCRIPTIONS: The WILD Foundation, 717 Poplar Ave., Boulder, CO 80304, USA. Telephone: (303) 442-8811. E-mail: info@wild.org.

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EDITORIAL PERSPECTIVES

Unseen Forces Still Wild

by AMY LEWIS

Amy Lewis

Between the precincts of Amun-Re and Montu in the vast Egyptian temple complex of Karnak is a dark little room permitting only a single shaft of sun- or moonlight to enter. This is the House of Sekhmet, the healer and destroyer, and for four millennia she has dwelled here.

Upon entering, even the most stalwart skeptics often report experiencing an electric charge of energy crackling across their skin, causing the hairs on their arms and legs to stand on end and their limbs to vibrate reflexively. What they report when they gaze upon the black granite statue of the Powerful One or, even more boldly, try to take her photograph, is even harder to believe. More difficult to dismiss, however, is the collective and decades-long complaints of the local people. The locked gate that bars this room from visitors (only those who "befriend" guards gain entrance) was put in place because the citizens of the neighboring city genuinely feared that a dark lion – the aspect of Sekhmet – prowled the ruins at night.

The House of Sekhmet alone is worth the journey to Egypt. But one need not travel so far to experience an immaterial connection with unseen forces. Wilderness, after all, still exists, and is, for most, far closer than the eastern banks of the Nile. How many times have you stepped into a forest and sensed an all-encompassing presence while simultaneously feeling viscerally calmer, more connected, and more alive? When was the last time you gazed upon a snow-covered peak and experienced the thrill of electricity running

down your spine? How often have you traveled to a wild and lonely landscape to suddenly sense with utter certainty that you are both infinitesimally small and infinitely content?

And what, then, of the unseen forces, the genius loci responsible for our physical response to the wild? Who or what are they? Are we responding to the titanic processes that have, on timelines we cannot fathom, forged the conditions necessary for life? The roots and soils that store vast amounts of carbon and regulate the entire atmosphere. The myriad digestive systems that give birth to forests. The subterranean mouths that alchemically transform abiotic materials into the building blocks of life. Or is it just on a deep evolutionary level we recognize that we are coming home – coming home to the wild, the womb of life?

It is difficult for many to conceive that we humans were once wild beings, and maybe still are. Civilization has transformed many things, not the least of which is the biosphere and our relationship with it, but civilization still has not managed to transform the fundamental reality that regardless of how we perceive ourselves, we are, materially and perhaps immaterially, still dependent on wilderness. That we often neglect and profane this living temple makes its power and necessity no less real.

That's one of many reasons the community surrounding the IJW is so special. Because you, dear reader, recognize that on some level you are still wild, that we are all still wild. And you also likely intuit that to be truly wild means to be a contributing member of the community of life force on this planet. Just as bison maintain the plains and the panther creates harmony in the forests, you envision a place in the world for yourself and others that enhances the web of life. For me, this is what it means to be wild. And this is why the IJW is so important – because it is helping to sustain the community that will share those values with others.

Challenging times await us, both ecologically and as a community. The wild is in retreat, as a place and a concept. It is my hope that we can come together like never before, as an international community of journal readers, as practitioners, and as activists, and bring our collective knowledge and strengths to the defense of wilderness. It is my sincere belief that the IJW has an important role in this effort, and I look forward to being one of many who help steward this evolution over time.

In this issue of IJW, we remember Dr. Kathy McKinnon, former chair of the IUCN World Commission on Protected Areas. Lisa Ronald and her coauthors investigate how we might make wilderness more welcoming by assessing barriers to inclusion. Jason Taylor and the Aldo Leopold Wilderness Research Institute staff present their 10-year wilderness science strategic plan. Howard Smith and others discuss shifting baseline syndrome among whitewater outfitters and guides. And Suyash Keshari and Bhavna Menon tell the story of India's Tigers.

Warm and wild regards,

Amy Lewis. ijw

AMY LEWIS is interim president of the WILD Foundation; email: amy.lewis@wild.org.

Indonesia rainforest. **Photo credit:** Kanenori from Pixabay

Kathy MacKinnon:
A Smart, Dedicated, Accomplished, and Compassionate Conservationist

by The INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE and VANCE MARTIN

Dr. Kathy MacKinnon. Photo provided by the IUCN.

It is with enormous sadness that International Union for the Conservation of Nature (IUCN) and the World Commission on Protected Areas (WCPA) announce the sudden passing of Kathy MacKinnon, a stalwart of protected areas and of conservation globally.

There are many ways to describe Kathy – friend, mentor, committed conservationist, scientist, passionate advocate, dedicated organizer, funny, and inspired, to name just a few. Our hearts reach out to her three sons and grandchildren, whom we heard much about. Kathy called IUCN's World Commission on Protected Areas her second family, where she made many deep friendships across the Union.

Kathy had a legendary career in conservation. She received her PhD in zoology from Oxford University and spent 10 years in Indonesia working on tropical ecology research and protected areas planning and management. She worked with many international and national conservation NGOs, as well as government agencies in developing countries. For 16 years, Kathy was the lead biodiversity specialist with the World Bank where she found ways to include conservation outcomes in development investments. She is the author of more

than 100 scientific books and publications, including recent books that promote protected areas as proven and sustainable natural solutions, helping societies cope with climate change. In 2007, she was awarded the Distinguished Service Award of the Society of Conservation Biology, and in 2018, she was awarded the Midori Prize for Biodiversity.

"Kathy was an inspiration to the whole conservation community, within and beyond IUCN. Her dedication to the work of the Union on protected areas was unmatched. I am confident I speak on behalf of the Union when I say, the planet has lost one of its main defenders. You will be truly missed, Kathy." – Bruno Oberle, Director General, IUCN

Prominent in many international forums for protected areas, Kathy was on the International Steering Committee for the IUCN World Parks Congress 2014 held in Sydney, Australia, and a leading contributor to the development of the program for that Congress, leading to the Promise of Sydney. Serving first as deputy chair of the IUCN World Commission on Protected Areas, she then served two terms as chair until 2021. As an IUCN councilor, she served on the Finance and Audit Committee, and most prominently on the Preparatory Committee for the IUCN Congress held in 2021 in Marseille, France. She was also a dedicated member of the World Protected Areas Leadership Forum.

She was a constant member of IUCN's many delegations to the Convention on Biological Diversity (CBD) and the Working Group implementing the Programme of Work on Protected Areas, and she worked on the implementation of the far-reaching Target 11 on Protected Areas as well as the negotiations toward the new 30x30 Target of the Global Biodiversity Framework. She became chair of the Target 11 Partnership, working closely with the CBD to spur efforts to achieve all elements of the Target. During this time, she was also very active in the many WCPA specialist groups and task forces that have defined international nature conservation policy and practice. In particular, she championed the linkages between protected areas and climate change adaptation and mitigation and led the process for defining "other effective area-based conservation measures."

"Kathy worked tirelessly, championing protected areas and OECMs as being critically important for biodiversity conservation. Nature has lost one of its greatest allies; we have a responsibility to honor her important legacy by continuing her work the best we can." – Madhu Rao, Chair, IUCN World Commission on Protected Areas

In her words, "Protected areas of many kinds not only give sanctuary to the wonder of 4.5 billion years of evolution but, in holding species and ecosystems, they protect the fundamental underpinning of human livelihoods, economies and wellbeing. They are a key tool in maintaining the sustainability of life on Earth and in combatting the ravages of climate change."

As chair, she was particularly dedicated to ensuring the WCPA produced high-quality guidance on many topics related to the governance and management of protected areas. She contributed to the development of the IUCN Green List Standard, and served as the chair of the Green List Committee that placed the first sites on the IUCN Green List.

Many will remember Kathy's dedication and consistent involvement in many aspects of IUCN's conservation work. For example, she cochaired the International Steering Committees for the Second Asia Parks Congress, and the Inaugural IUCN African Protected Areas Congress, examining and ensuring that every detail was addressed in the planning and organization of these Congresses. Fearless and objective, she also served on the Independent Panel of Experts that reviewed and assessed allegations of human rights abuses in and around protected areas.

Today we remember her courage, dedication, friendship, and leadership in helping define contemporary approaches and challenges for protected and conserved areas worldwide, and the way in which she inspired so many. ijw

This article originally appeared at https://www.iucn.org/story/202303/memoriam-dr-kathy-mackinnon. Learn more about Kathy's career and many conservation accomplishments on the IUCN website.

THE INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE is the world's largest and most diverse environmental network, harnessing the knowledge, resources, and reach of more than 1,400 member organizations and 15,000 experts. Its purpose is to advance sustainable development and create a just world that values and conserves nature.

To Kathy

I will miss Kathy MacKinnon personally, and the world of nature conservation will miss even more her knowledge, experience, and impact. Few people have a résumé, which includes years of hands-on fieldwork in Indonesia (following her PhD in zoology at Oxford), 16 years at the World Bank, and many decades of front-line, professional, voluntary service in the World Commission on Protected Areas of the IUCN – including six years as WCPA chair.

Kathy's love of nature and assiduous dedication to conservation was coupled with a deft ability to craft development solutions that minimized impact on biodiversity. We first met when she was at the World Bank, leading the charge to build conservation solutions into mammoth development projects. Later, I asked her what it was like to work at the Bank at a time (starting in 1994) when it was trying to mend its ways and build out a large internal environmental department as well as start the Global Environmental Facility (an independent organization within the World Bank). Her answer: "Often frustrating, sometimes exciting, always necessary."

Kathy was certainly a pragmatist, with an eye toward getting things done. Her work ethic was simply formidable; no other way to describe it. She likely clocked more hours in meetings than anyone else I know, but always driving toward solutions and frequently commenting on the excess "blather" when action was required and "the answer is actually quite simple." However, as author of more than 100 books and publications, her legacy is by no means defined by the endless meetings she led, facilitated, and navigated. Kathy knew good ideas when she heard them and also named bad ideas and plans when she saw them, because her highly developed knowledge and extensive experience came from always being in the action. With an endless travel schedule, she insisted on going where and when needed.

As founder–chair of the WCPA's Wilderness Task Force (a temporary committee) and then subsequently the Wilderness Specialist Group (a permanent designation), I was always and easily able to schedule a call, have a conversation, and strategize with Kathy. She regarded the World Wilderness Congress (she was a delegate numerous times) as a critical aspect of global conservation, telling me more than once to "keep it as different, effective, and enjoyable as it is…there is nothing else like it."

Yes, she was a celebrated leader and amazingly productive worker, for sure. Yet Kathy also had a great (sometimes wicked!) laugh, and was a compassionate, enduring friend, colleague, and mentor to countless people both within the WCPA (her "second family") and in scores of countries. Go well, Kathy.

- Vance G. Martin

VANCE G. MARTIN is a founding associate editor of IJW, past president of the WILD Foundation (USA), and president emeritus of Wilderness Foundation Global (South Africa); email: vance@wildernessglobal.org.

Fishing in Montana's Great Bear Wilderness. **Photo credit:** Antonio Ibarra/Montana statewide photographer for Lee Newspapers.

STEWARDSHIP

Can We Make Wilderness More Welcoming? An Assessment of Barriers to Inclusion

by LISA RONALD and SALAH AHMED, KATIE BLISS, JESSE CHAKRIN, TANGY EKASI-OTU, KIMM FOX-MIDDLETON, JENN HARRINGTON, SHELTON JOHNSON, TINA MAZZEI, JESSI MEJIA, and ROGER OSORIO

PEER-REVIEWED

ABSTRACT: Perspectives about and values for wilderness vary greatly among people who are underrepresented in wilderness recreation and management. Understanding divergent interpretations of wilderness can better equip communicators to evaluate how well communications strategies resonate with audiences, including potential and current wilderness visitors, employees, and partners. A committee of individuals from systemically excluded groups conducted a reflective assessment of wilderness attributes and norms and how they are communicated, revealing potential inclusivity barriers to wilderness under four themes: Wilderness History and Culture, Fundamental Wilderness Qualities, Gender Assumptions, and Access to Wilderness. This reflective assessment can also help communicators broaden and reenvision traditional narratives about wilderness history, culture, and values to respectfully include diverse stories, varied experiences, and relationships between wilderness, other social forces, and historical events.

AUTHOR'S NOTE: To reflect the collaborative nature of this work, we have listed authors alphabetically by last name following the first author. This is intended to convey the equality and value of knowledge contributed by all authors while also recognizing the additional organizational and editing efforts assumed by the first author.

For some, the material in this document may feel uncomfortable, uneasy, or threatening. For others, it may provide a welcome bridge in learning and application of diversity, equity, inclusion, and justice to the niche field of wilderness within the broader discipline of conservation and land management. We encourage all readers to use the ideas and perspectives in this article as opportunity for dialogue: an invitation to explore, appreciate, and acknowledge the perspectives of others, and motivation to learn, reflect, and grow more fully.

Natural resources communicators, including those who work in interpretation, advocacy, or for the media, hold incredible power in shaping perceptions of public lands and wilderness. Communicators control or influence whose voices are elevated or excluded, which perspectives history is recounted from, and how information is distributed and to whom. In this article, we present an assessment designed to understand diverse perspectives about wilderness and tools to develop more inclusive communications strategies and practices. We begin with the social context in which this topic is positioned.

George Floyd's murder by police in May 2020 prompted a nationwide racial reckoning. In the years following these events, many conservation nonprofits, government land management agencies, research institutions, and higher education institutions have responded with commitments to diversity, equity, inclusion, and justice. The Sierra Club's president Michael Brune published a blog post that immediately brought the organization – arguably the first large, national wilderness organization to publicly address racism in conservation – into the environmental justice spotlight. Brune's post linked the Sierra Club's long-time idolization of John Muir and the conservation culture he helped create to the perpetuation of institutional racism. Brune (2020) wrote, "The whiteness and privilege of our early membership fed into a very dangerous idea – one that's still circulating today.… It allows [Sierra Club members] to overlook, too, the fact that only people insulated from systemic racism and brutality can afford to focus solely on preserving wilderness."

About six months later, in January 2021, President Joe Biden officially recognized diversity, equity, inclusion, and justice as part of his inaugural priorities and pillars of today's government. Through Executive Order 13985 (2021) his administration established that "affirmatively advancing equity, civil rights, racial justice, and equal opportunity is the responsibility of the whole of our government." The following month, the University of Montana, like many other higher-education institutions before it, took actions to address equity by creating the Office of Inclusive Excellence for

Student Success. In its Diversity, Equity, and Inclusion Plan, last updated in September 2021, the University of Montana commits to "an aggressively introspective approach to identifying the equity gaps unique to our institution, flagging the policies and practices that contribute to these gaps, and implementing new policies and practices that will bridge them." Although the US Civil Rights Act was signed into law more than 50 years ago, the same year as the Wilderness Act, the quick succession of the previously mentioned events provides social context wherein the University of Montana's Wilderness Institute proposed an audit of its interpretive wilderness content.

The purpose of this article is to identify communications barriers, explain why certain language and concepts specific to wilderness may privilege some individuals or groups while excluding others, and suggest strategies for producing more inclusive communications materials. To address this purpose, we describe how and why a Wilderness Inclusivity Review Committee of individuals with systemically excluded identity characteristics was formed to conduct an audit of wilderness communications that we refer to as a reflective assessment. Through this assessment, we present diverse interpretations of key aspects of wilderness and how they are communicated.

Figure 1 - Hiking in the Oregon's Mt. Hood Wilderness. Credit: Kimm Fox-Middleton.

Among the top 25 most popular TED talks, Nigerian feminist author Chimamanda Ngozi Adichie (TED 2009, 0:13) warns of "the danger of the single story." She describes how a repeated, definitive interpretation, legitimized through literature and media by those with power, can marginalize different representations of the same thing. When one story becomes the only story, this can create an incomplete picture – in this case, of wilderness. Moon and Pérez-Hämmerle's (2022) work similarly suggests that language driven by dominant worldviews can marginalize people through real social and ecological consequences. Our diverse interpretations of wilderness are thus presented to broaden and enrich the current single story of wilderness – its history, culture, values, and meanings.

Understanding and relaying a multifaceted, inclusive wilderness story is critical for land management agency and nonprofit employees looking to forge respectful connections with wilderness visitors, employees, partner groups, volunteers, and students, especially those who may have experienced discrimination in the outdoors in general, or within wilderness specifically. We intend for this reflective assessment to assist communications, public affairs, visitor services, interpretation, outreach, education, and land management professionals with inclusive language concepts specific to wilderness.

In this article, we first begin by sharing how terms and definitions were used by the review committee and within the reflective assessment. Next, we examine previous literature to better understand the underlying historical and social context of the wilderness story. We discuss process, creation, and purpose of the review committee and the implementation of the reflective assessment. Then, we present the potential inclusivity barriers to wilderness revealed by the reflective assessment under the four themes of Wilderness History and Culture, Fundamental Wilderness Qualities, Gender Assumptions, and Access to Wilderness. Finally, using examples we discuss how awareness and understanding of these potential barriers can help communicators broaden and reenvision traditional narratives about wilderness history, culture, and values to respectfully include diverse stories and varied experiences.

Terms and Definitions

We have chosen specific terms to refer to different types of people. Throughout this article, we use the term "systemically excluded groups" to refer to all types of people who have been, and continue to be, discriminated against by racist or colonialist policies. Although other adjectives such as "marginalized" and "historically excluded" are used widely, language that victimizes those who are oppressed or confines oppression to the past can fuel continued discrimination (First Nations Development Institute 2018; Younging 2018). "Systemically excluded" better recognizes exclusion as ongoing and systemic within everything from hiring systems to social norms (Race Forward: The Center for Racial Justice Innovation 2015; Smithsonian National Museum of African American History and Culture 2022).

There are many different types of systemically excluded groups. For example, some Americans of African descent may consider

Figure 2 - Hiking in Montana's Great Bear Wilderness. Credit: Antonio Ibarra/Montana statewide photographer for Lee Newspapers.

themselves to be African Americans, while others may prefer to be referred to as Black (Harmon 2021). Although there are various popular terms, we chose specific terms including BIPOC (Black, Indigenous, and People of Color [those who do not identify as White]), African American, Indigenous, LGBTQIA+ (lesbian, gay, bisexual, transgender, queer/questioning, intersex, asexual/agender, plus others), women, Latinx, AAPI (Asian American and Pacific Islander), and people with disabilities, for example, when it is necessary to refer to people in groups where context necessitates distinction (Kanigel 2019; Race Forward: The Center for Racial Justice Innovation 2015). Since people have mixes of identity characteristics – such as race, gender, economic status, ability, and so forth – certain individuals may self-identify as members of more than one systemically excluded group. For example, someone who identifies as an African American transgender person may consider themselves to be part of systemically excluded groups based on both race and gender, separately and/or together. We acknowledge that these terms may change over time as systemically excluded groups assert greater control over the language used to describe themselves (Harmon 2021). Those working directly with systemically excluded groups should strive to understand how these groups identify themselves and the language with which they do so.

Although the term "intersectionality" was coined decades ago (Crenshaw 1989), its application to environmentalism is more recent (Thomas 2022). Intersectionality identifies and acknowledges how bias and prejudice against individuals with different but overlapping identity characteristics can create compounding systems of discrimination or disadvantage (TED 2016). For example, African American women face both racial and gender discrimination that is unique and different from discrimination faced by White women or African American men. Intersectional environmentalism identifies and acknowledges how social inequities influence environmental perceptions and connections (Intersectional Environmentalist Council 2022; Oglesby 2021; Thomas 2022). Application more specifically to wilderness means that society cannot ignore the ways in which poverty and climate justice, for example, influence people's access to and understanding of wilderness. Throughout this reflective assessment, we identify ways in which social forces and spheres of discrimination compound, overlay, and/or intersect in ways that present barriers to inclusive communications about wilderness.

Background

We feel it is important to provide the underlying historical and social context that is missing from the traditional wilderness narrative but is necessary to facilitate understanding of wilderness critiques through an equity lens. African American author and wildlife ecologist Dr. Drew Lanham described the process of acknowledging historical and systemic racism in wilderness akin to cleaning out a wound, a process that is painful and requires baring of the affected flesh to preclude infection during healing (Bob Marshall Wilderness Foundation 2021) – a process that the Sierra Club began with its rebuke of John Muir (Brune 2020).

Several authors have provided assessments of wilderness and conservation history from noncolonial perspectives. Indigenous author Gilio-Whitaker (2019) described the formation of public lands and wilderness through Indigenous land dispossession, and Ybarra (2022) recounted a second wave of land dispossession that took place in the Desert Southwest and has affected generations of Mexican American settlers. Theriault and Mowatt (2018) focused on the complex and nuanced role of wilderness as both a place of oppression and refuge for enslaved African Americans pre- and post-Civil War and during Jim Crow, and Taylor (2002, 2016) chronicled a broad-reaching and detailed history of land policy discrimination against Indigenous peoples, African Americans, members of the Latinx community, AAPI, and other systemically excluded groups. And Reilly's (2021) work revealed the important, yet hidden, contributions to the wilderness movement from female advocates. Together, these examinations demonstrate the lack of systemically excluded groups and their stories within the traditional wilderness narrative – one that recounts history from the perspectives of well-known White male environmentalists such as John Muir, Arthur Carhart, Bob Marshall, Howard Zahniser, Aldo Leopold, and others.

Critiques of wilderness also include those from authors who discuss discrimination within wilderness and public land philosophy, recreation, and management from relational, racial, and sexual perspectives. Specifically, Indigenous authors Bayet (1994), Gilio-Whitaker (2019, 2020), LaPier (2021), and Standing Bear (1933) have challenged a core tenet of wilderness and public lands – that of nature absent and separate from people – as a fundamental and profound disconnect between Indigenous and White land relationships that is dehumanizing to Indigenous peoples and represents a present-day extension of colonial oppression. Fletcher et al. (2021) further suggested that the absence of reciprocal relationships between people and land, inherent in a wilderness definition absent of people, has resulted in ecosystem degradation in some landscapes. In the context of recreation, land dispossession, enslavement, and other forms of intergenerational trauma have served as barriers and constraints to participation in outdoor recreation by systemically excluded groups (Dietsch et al. 2021; Johnson 1998). Intimidation, fear of physical harm, and wariness around being the only person of color in a remote, White-dominated outdoor space have also been drivers of decisions by BIPOC around where and whether to participate in outdoor recreation (Graham 2020). And with a lack of recognition of the different ways in which systemically excluded groups connect with nature (Graham 2018; Theriault and Mowatt 2018), management-imposed restrictions on traditional recreation and subsistence activities have influenced outdoor recreation participation and relationships with wilderness (Davis 2019).

In relationship to sexual perspectives, Mortimer-Sandilands and colleagues (2010) have asserted that predominant heterosexual nature relationships have subverted queer ecologies. The advancement of queer ecology, ecology through the lens of gender and

sexuality that exist outside of heterosexuality, serves as an antidote to heteronormativity in shaping how scientists examine and communicators interpret the environment (Interpretation4U 2020). Overall, these relational, racial, and sexual critiques of wilderness are intersectional and illustrate diverse perspectives that challenge norms about how wilderness is interpreted and communicated.

Reflective Assessment Process

Scholars recognize that the "social positions people occupy affect the meanings people ascribe to wilderness experiences and the role wilderness plays in their lives" (Meyer and Borrie 2013, p. 315). Further, scholars decolonize knowledge generation by legitimizing identity-centered lived experiences and other diverse ways of knowing (Goodrid 2018; Smith 2012). In April 2021, the Wilderness Institute convened a Wilderness Inclusivity Review Committee of 12 individuals whose social positions and lived experiences were essential to the committee's work. To find appropriate and willing members for the committee, the Wilderness Institute asked longtime wilderness advocates and BIPOC and LGBTQIA+ speakers from previous National Wilderness Workshops for recommendations. The request asked for introductions to people, primarily those with current ties to wilderness advocacy or stewardship, who possess varied racial, gender, and ability characteristics that are underrepresented among wilderness professionals and visitors. These recommendations produced other recommendations in snowball sampling fashion, and ultimately 12 people volunteered to offer their expertise and perspectives as part of the review committee.

The committee membership included individuals with different and varied identity characteristics – African American, Indigenous, Latinx, AAPI, White, male, female, lesbian, Christian, educated, and having a disability – and diverse professions, social and age classes, and economic status – twentysomethings, early and mid-career professionals, and seasoned employees approaching retirement in the fields of wilderness stewardship, interpretation, higher education, and communications as agency employees, nonprofit volunteers, instructors, and students.

The review committee's work was derived from the collective lived experiences of its members, their intergenerational familial customs and cultures, and relayed experiences from those within their social and professional circles. This followed the work of Goodrid (2018), Meyer and Borrie (2013), and Dietsch et al. (2021) where lived experiences across race, gender, and sexual identity revealed different perspectives in wilderness/human connections and outdoor recreation participation. Review committee members also collectively had both Western science and Indigenous knowledge backgrounds and viewed these as complementary lenses through which to examine the environment and conservation issues (Learn 2020; Smith 2012).

Initially, the review committee undertook an evaluation of select content on Wilderness Connect, a partnership project between the Wilderness Institute, Arthur Carhart National Wilderness Training Center, and Aldo Leopold Wilderness Research Institute. Wilderness Connect curates the predominant online wilderness resource library where more than

400,000 people (Google 2022) learn about wilderness annually. The evaluated content included a wilderness history timeline, a list of influential figures in the wilderness movement, and a biography of John Muir. The review committee evaluated this content both before and after proposed inclusive language editing. However, the review committee agreed after this initial evaluation that the committee's scope required expansion to include a more detailed cataloging of exclusive communications elements, both in language and concept. Creating such a catalog could then guide future rewriting of interpretive content. The review committee agreed that identifying exclusionary elements of wilderness was a prerequisite to further developing a common understanding around challenges within wilderness communications. Thus, the themes that follow from the reflective assessment represent this important prerequisite step.

Wilderness Inclusive Communications Reflective Assessment

Consistent with diverse approaches to generating and legitimizing knowledge, in the following, we present the review committee's cataloging of exclusive wilderness communications in the form of a reflective assessment that organizes distinct barriers to inclusive communications about wilderness under four key themes. Within each theme, we describe the barriers in detail to reveal why wilderness may be perceived as unwelcoming, undesirable, or unrelatable to individuals from systemically excluded groups. This work appears in its original form, authentic to the interpretations and knowledge cocreated by the review committee, with supportive literature included.

Wilderness History and Culture

Wilderness advocates often place the history of the wilderness movement as starting in the early 1900s with the formation of the Sierra Club, the damming of Hetch Hetchy Valley, and the rise to prominence of stars like John Muir. Others place wilderness history as beginning in the 1950s when Howard Zahniser began drafting the Wilderness Act of 1964. However, the social forces shaping the events during both time periods were set in motion centuries before. European settlement of the Americas; widespread Indigenous land dispossession and persecution; enslavement of African Americans; and subjugation of women, members of the Latinx and LGBTQIA+ communities, and other systemically excluded groups are important precursors recognized by the review committee that impacted the early wilderness movement and continue to influence wilderness culture. The following are exclusionary elements identified and discussed by the committee in relationship to wilderness history and culture.

Colonialism

Many, though not all, public lands, including what are now wilderness areas, are part of Indigenous peoples – as essential to existence as vital organs are to the human body. During early colonization of the country, land ownership under the Doctrine of Discovery – European nations having absolute rights to lands in the New World – was used to justify taking land – first, from Indigenous peoples who did not view land as property, and later, from Mexican and poor White

settlers. Prior to becoming today's public lands, these lands changed hands many times, often through force or coercion.

Other oppressive ideologies relevant to public lands have grown out of colonialism and Manifest Destiny including portraying Indigenous peoples and enslaved African Americans as savages and simpletons, subjugating them under the guise of necessary paternal guardianship, prioritizing the stories of settlers and pioneers, adopting utilitarian land–human relationships that place humans outside of and in control of nature, and creating a national identity centered around rugged individualism (Finney 2014; Gilio-Whitaker 2019; Henberg 1994; Smith 2012). Many of these oppressive ideologies suppressed and continue to eclipse long-standing land stewardship by Indigenous peoples and other systemically excluded groups.

Utilitarianism

Taylor (2016) connects colonialism with utilitarianism. She wrote that "White settlers saw the land as a commercial product" and themselves as "masters with dominion over it," while Indigenous peoples viewed themselves as "custodians and stewards of the earth" (p. 11). Thus, wilderness can be referred to as a "resource." Plant and animal contents have been cataloged according to the dominant norms of Western science. Lands are characterized by the benefits derived from or produced by them. Based on this norm, people and culture can be decoupled from wilderness, eclipsing the symbiotic relationship humans have had with land since time immemorial.

The review committee discussed how viewing wilderness as a "resource" has encouraged capitalistic itemization, valuation, and quantification. Such views also drove Indigenous land dispossession and have forced the loss and erasure of sacred connections to land and nature (Taylor 2016). Although early advocates championed protection of lands that they deemed had no economic value to extractive industry, we now have complex economic valuation systems that quantify in dollars the value of public lands for everything from ecosystem services to increases in private property values for properties near wilderness areas. Commodification of land, even in terms of nonextractive uses, such as recreation, frames land as a material object rather than as a self-determined subject.

Founding White Institutions of Conservation

In 1892, a small group of academics, scientists, artists, environmentalists, and students at the University of California formed the Sierra Club at a time when the university enrolled few women and no students of color. More than 40 years later, eight White men are credited with forming The Wilderness Society, despite women representing half of those in attendance at its first meeting. The history of the wilderness movement chronicles the formation of conservation institutions like these during post-reconstruction America when most, if not all, institutions were formed to be of service to Whites and excluded BIPOC.

Taylor (2016) described the evolution of today's conservation movement, and by extension the wilderness movement, in the context of racism, sexism, class conflicts, and nativism through lenses of race and gender relations, power, and environmental identity (p. 9). The review committee discussed how early

activists adhered to the inequity-containing prevalent social dogmas of the time and how a long history of gender and racial exclusion has resulted in organizations that largely continue to cater to and can be relevant only to privileged Whites.

Absence of BIPOC in Conservation

Conservation history has traditionally focused on deceased historical founders, many of whom were associated with founding White conservation institutions. BIPOC are largely absent from typical conservation narratives because they were excluded from participation in traditional conservation roles, or they did not fit into accepted definitions of what constitutes a conservationist (Finney 2014). As a result, their stories and historical connections to now-wilderness lands have been eclipsed.

The review committee discussed how these eclipsed connections often center sacredness regarding the natural world, an element that has largely been lost within conservation's dominant view of nature as commodity. Further, on the one hand, conservationists often blame the poor and BIPOC for environmental degradation and biodiversity loss, and governments have long devised laws to criminalize traditional land use practices (Jacoby 2014; Taylor 2016). On the other hand, conservationists romanticize the relationships that BIPOC have with the environment, what has been referred to as ideas of the ecologically noble savage (Gilio-Whitaker 2019). This is particularly the case for Indigenous peoples whose relationships with and connections to land can be homogenized, stereotyped, and mischaracterized.

Seymour challenged the ways in which current environmental campaigns primarily use images of White, heterosexual, suburban, nuclear families to get people to care about environmental issues (Rachel Carson Center 2015). Finney (2014), Martin (2004), and White (2018) sampled and analyzed the prevalence and types of images of BIPOC in media sources like Outside, Time, and Ebony magazines and National Park Service brochures and digital guides. These studies show the same predominantly White outdoor recreation and environmentalist identity. Such practices have and continue to alienate BIPOC from early and current conservation efforts.

Culture of Conservation

Given the visibility of the White, privileged, colonial, and utilitarian origins of the wilderness and conservation movements, the review committee examined certain attributes that have become associated with identifying as a conservationist, environmentalist, and wilderness advocate, including serious, alarmist, arrogantly academic, grandiloquent, authoritative, pejorative, and dismissive of the lived experiences and cultural practices of others, among other negative descriptors (Seymour 2018, p. 17). Although often not explicit, these attributes set a particular clique tone within wilderness discourse and culture.

Specific to wilderness, advocates often elevate wilderness as the epitome of nature experiences and preservation status. These qualities have created exclusivity, meaning that the many other people who do worthy wilderness or conservation work may not want to identify as conservationists or wilderness advocates due to the off-putting and unrelatable attributes now associated with these labels. Even for those wanting the label of

wilderness advocate, the review committee discussed how wilderness culture can expect one to follow an often unsustainable employment cycle that includes unpaid internships, multiple years of seasonal-only fieldwork, frequent relocation and isolation, and retiree and volunteer burnout. Especially for BIPOC, these attributes of wilderness job culture can be incompatible with values like family, stability, work-life balance, community, and home.

Foundational Wilderness Qualities

Wilderness advocates elevate the Wilderness Act, the singular law governing management of all US wilderness areas, as the gold standard for land protection. Indeed, the lands protected under the law provide sharp contrast to our increasingly built world. At a time of remarkable social, public health, and climate upheaval, the respite they provide is increasingly valuable. Yet, foundational concepts within the law drawing from colonial systems of thought – what Finney (2014, p. 47) described as underlying assumptions that presume a universality of White privileged ideals – can dismiss certain types of land–human relationships and perpetuate exclusive and narrow beliefs about what those relationships should look like. The review committee examined how these concepts can become barriers for systemically excluded groups.

Wilderness and Untrammeled Equal Unpeopled

The words "wilderness" and "untrammeled" are used within the Wilderness Act (1964) to define land as separate from people and have no equivalent concepts or translations in many non-English languages, including Indigenous languages. This can convey what is inherently a Western view of land–human relationships that largely erases Indigenous relationships with and Traditional Knowledge of lands that were originally ancestral homelands and remain essential to Indigenous identities and ways of life (Gilio-Whitaker 2020).

Purity

Although the word "pure" is not used in the Wilderness Act (1964), the concept of purity is suggested through language, including "unimpaired," "man himself is a visitor who does not remain," "land retaining its primeval character," "affected primarily by the forces of nature," and "imprint of man's work substantially unnoticeable." As with "wilderness" and "untrammeled," the review committee explored how these words and phrases can collectively romanticize wilderness as an unadulterated landscape, perpetuate humans as "other," suggest that humans sully the land, and prolong the myth of wilderness as unchanging and static, theories that are now seen as outdated by the scientific community.

A purist view of wilderness can perpetuate White dominance by negating and ignoring the role Indigenous peoples played in changing the landscape over time and their symbiotic relationships with the land. The review committee also examined how presenting wilderness as untouched by human hands can trigger the trauma of historical dehumanization that includes portraying Indigenous people as animals. Further, framing wilderness areas as vignettes of the natural world suggests human dominance over land, rather than acknowledging natural and

climatic change and evolution.

Solitude

In accordance with the Wilderness Act, US wilderness management agencies purposely manage wilderness to provide opportunities for solitude, and many visitors seek it. Outdoor media feature solitude in recreation imagery. For some, solitude can be a bridge through which to connect with nature. Yet, for others, racial, gender, and economic systems of oppression can make valuing solitude difficult, inaccessible, or undesirable. Engebretson and Hall's (2019) analysis of historical documents and hearings associated with the Wilderness Act suggests that remoteness, in terms of distance, absence of other people, and absence of the sounds of civilization, define the meaning of solitude. Yet, in a KIRO 7 News interview about African Americans in the outdoors, University of Washington social scientist Kathleen Wolf said, "This wilderness solitude thing seems very much to be a White Western European sort of preference. And that's not shared by all cultures" (Sun 2022, para. 30).

Since solitude in wilderness is traditionally defined as a wilderness experience in the absence of other humans, this can suggest a mutually exclusive choice between solitude and shared experience. The review committee discussed how some people and cultures, instead, connect to nature in communal ways and don't necessarily frame their experiences using normative wilderness vocabulary like "solitude." People with disabilities connect to wilderness through shared experiences, although some strive for solitude. Further, solitude continues to evoke discomfort and fear for many women, members of the LGBTQIA+ community, and BIPOC, due to a long legacy of violence in the outdoors, continued harassment in the outdoors today, and varying cultural norms about groups, socialization, and criteria for safety.

Gender Assumptions

How some people understand and express gender is very different than it was in 1964 when the Wilderness Act was written. Although some cultures have long had much more malleable definitions of gender and gender roles, gender norms within the dominant American culture have evolved much more slowly. Definitions of gender and gender roles are more nuanced now and can be fluid. The review committee discussed how gender is no longer considered strictly binary or static, meaning that male and female are no longer the only choices with which to identify oneself. Separate and distinct definitions exist for sex assigned at birth, gender identity, and gender expression.

Exchanging pronouns (e.g., he/him, she/her/hers, they/them, she/they, etc.) is becoming more common in social and work settings. This practice helps ensure that members of the LGBTQIA+ community define the language used to address them. Yet, "so much of conservation has been built on a toxic male model" (Bob Marshall Wilderness Foundation 2021, 22:22). The review committee considered how reexamining the traditional wilderness narrative, including historical and current assumptions about male-female binary roles, can increase inclusion for women, members of the LGBTQIA+ community, and a society that is embracing gender diversity.

Stereotypical Masculinity

Throughout the Wilderness Act, as we see in many other laws written in the past, the word "man," for many, connotes able-bodied, cis-gender, White, Christian, middle- upper-class men, as opposed to humankind as it may have been intended. In the past, this was common practice, but today it can perpetuate a binary view of gender that excludes women, those who may not identify as either male or female, and those who may not identify as strictly male or female.

Language or media that elevates masculinity often does so by equating cis-gender, White males with ruggedness, ingenuity, individualism, and strength for wilderness travel (Mortimer-Sandilands et al. 2010; Olson 1938). Given that current conservation and wilderness culture is born of its history, Mortimer-Sandilands et al. (2010) suggested that wilderness remains a hetero- and hyper-masculine space where "ideals of whiteness, masculinity, and virility" are explored (p. 14). The review committee considered how this, coupled with continued use of the word "man," can perpetuate a stereotypical cis-gender, White, male nature experience and connection involving manliness, vigor, prowess, and mastery over nature that marginalizes the experiences of those outside this stereotype.

Female Frailty

Women conservationists are still largely invisible within the traditional wilderness narrative despite their significant contributions. This is true for White women and even more pronounced for women of color, who face discrimination and erasure due to both gender and race. Although Kaufman (2006) and Reilly (2021) elevate unacknowledged women's roles in the formation of national parks and wilderness areas, membership, leadership, and decision-making within early conservation efforts were dominated by men (Taylor 2002). The review committee discussed how women have been frequently described using language that characterizes them as "soft" and implies a nurturing rather than leadership role. Married conservation women, such as Mardy Murie, are still often referred to in context or association with their husbands, as opposed to acknowledging their distinct conservation roles separately. This leads to the erasure of many women's contributions to the evolution of the wilderness movement.

Access to Wilderness

Access was defined by the review committee as connoting the degree to which a person feels welcome within wilderness and the ease or difficulty with which that person can visit wilderness. It includes, but is not strictly limited to, the physical act of entering or being within a wilderness area. Preferential, cultural, philosophical, educational, and financial aspects of access are parts of the definition and usage of the term.

Challenge

Challenge features prominently in wilderness marketing and media as a battle between people and the land, or more benignly as "roughing it" in the outdoors. Certainly, perseverance despite adversity, overcoming personal mental or physical barriers, and character building, are reasons many seek challenge in a wilderness setting. However, the review committee explored

how challenge can also take a negative form in activities such as "peak bagging" that pit humans against nature and elevate an oppositional relationship definition, which can diminish Indigenous sacred views of land–human symbiosis. The ubiquity of seeking challenge in wilderness does not resonate with visitors who do not view challenge as enjoyable or desirable.

For some cultures, living with the land was and remains a way of life rather than a glamourized leisure activity (Taylor 2016). The review committee considered cases where camping, hiking, or swimming outdoors can instead conjure memories of family history rooted in trauma, such as tougher living conditions or poverty; incarceration in remote camps; field or hard labor; and lynchings related to immigration, mass African American migration from the rural South to cities during the mid-1900s, and escape to freedom in the North by enslaved African Americans using the Underground Railroad before and during the Civil War.

Ableism and Ageism

Wilderness recreation is predominantly a White leisure activity, and wilderness visitors are generally White, young, athletic, and adventurous (Martin 2004). As with age discrimination, disability has long been slighted within historical wilderness narratives and current public land recreation and management conversations (Cram et al. 2022). The review committee discussed how omitting the full spectrum of wilderness recreation experiences, appropriate assistive devices, and trails and settings that appear accessible may fuel assumptions that access to wilderness areas purposely excludes older visitors and outdoor enthusiasts with disabilities. When pictured, people with disabilities are often White, which excludes and others those BIPOC with disabilities by failing to recognize the intersection of racial and ability discrimination.

Classism and Education

Assumptions about class and education include base levels of knowledge, skill, and technology access that may not be understood or accessible by those of lesser means or schooling. Class and education are often closely linked and can intersect with race/culture, ability, and gender to compound intentional and unintentional discrimination. The review committee considered topics like campsites, camping, hunting, and winter sports that often include a focus on gear, which assumes a certain level of knowledge about gear needed, how to use that gear, and the material means to purchase that gear. Online permit systems, another example, often preclude access by those on the disadvantaged end of the digital divide including people who cannot afford to pay for expensive broadband Internet services.

Further, the Outdoor Foundation (2021) reports that in 2020 46% of those who participated in outdoor recreation earned $75,000 or more annually, yet during the same year the average household incomes of African American and Hispanic families were $45,870 and $55,321, respectively (Shrider et al. 2021). Tellingly, travel distance, transportation, and travel costs were the top three reasons non-White survey respondents gave for not visiting national parks (Taylor et al. 2011).

Figure 3 - 24th Infantry (Mounted), Yosemite Buffalo Soldiers (African American) near a road in the forest. Courtesy of Yosemite National Park.

Implications for Practice

Development and use of this reflective assessment are intended to help communicators identify barriers to inclusivity specific to wilderness. This assessment focuses on the scope of communications, which can influence formal and informal internal dialogue, relationships with partners, interactions with volunteers, outreach to the public, and some aspects of agency and institutional culture.

Understanding why systemically excluded groups may find wilderness unapproachable, unrelatable, undesirable, or offensive is a first step in evaluating the inclusiveness of existing communications efforts before exploring feasible options, alternatives, and changes. It is this understanding that the reflective assessment strives to provide. We now transition from understanding to application by first supplying a specific example from Wilderness Connect that links the themes and barriers from the reflective assessment to suggested treatments, followed by a summarization and generalization of overall treatments. Table 1 shows an analysis of select sections of Wilderness Connect, their connections to the four themes and barriers identified by the review committee, and suggested treatments. While not all themes and barriers are present in any single section on Wilderness Connect, the example application illustrates content that is barrier heavy and shows how barriers from multiple themes can appear simultaneously.

For example, the first three inclusivity issues identified in Table 1 (the first three rows) apply to Wilderness Connect's timeline and are contained within all four themes and nine of the total 13 barriers. This historical timeline, accessed online in December 2022, spans the year 1500 to present and includes people, events, and imagery that chronicle the formation of the wilderness movement. The timeline focuses on able-bodied, White, male conservationists like John Muir and Gifford Pinchot and highlights events from colonizer stories, such as the settlement of Jamestown, Virginia, the founding of The Wilderness Society, and the creation of Grand Canyon National Monument. The timeline omits Indigenous

Wilderness Connect Section	**Inclusivity Issue**	**Theme(s)**	**Barrier(s)**	**Treatment**
Timeline	Starts with colonization of the US in the year 1500	Wilderness History and Culture	Colonialism	Allow choice in viewing information geographically (default), using a map, or chronologically to acknowledge multiple ways of organizing and relating to knowledge. Start the chronological display with time immemorial.
	Prioritizes events and people that reinforce a narrow Eurocentric, colonial narrative	Wilderness History and Culture, Gender Assumptions, Access to Wilderness	Colonialism, Founding White Institutes of Conservation, Absence of BIPOC in Conservation, Stereotypical Masculinity, Female Frailty, Ableism and Ageism	Balance and broadly include traditional and systemically excluded people and events.
	Excludes Indigenous land connections	Wilderness History and Culture, Foundational Wilderness Qualities	Colonialism, Utilitarianism, Absence of BIPOC in Conservation, Wilderness and Untrammeled Equal Unpeopled, Purity	Include and acknowledge Indigenous habitation and land management practices.
	Uses colonial place-names and references	Wilderness History and Culture	Colonialism	Elevate Indigenous place-names and include co-created land acknowledgments.
	Omits significant events of oppression or softens their impacts	Wilderness History and Culture	Colonialism	Describe oppressive events honestly and offer multiple perspectives of their meanings and impacts.
	Victimizes systemically excluded people and groups	Wilderness History and Culture	Colonialism	Prioritize the agency and self-determination of systemically excluded people and groups. Couple later resilience with earlier tragedy and oppression to avoid victimization.
	Omits systemically excluded people and groups in accompanying imagery or portrays them in stereotypical ways	Wilderness History and Culture	Colonialism, Absence of BIPOC in Conservation	Diversify accompanying imagery by portraying systemically excluded people and groups in positive empowering ways that avoid stereotypes.
People	Includes mostly deceased White men	Wilderness History and Culture, Access to Wilderness	Absence of BIPOC in Conservation, Ableism and Ageism	Balance deceased and living traditional wilderness figures with women, BIPOC, members of the Latinx community, members of the LGBTQIA+ community, people with disabilities, and others.
	Narrowly defines influence within the wilderness movement	Wilderness History and Culture	Absence of BIPOC in Conservation, Conservation Culture	Broadly define influence within the wilderness movement by including actors with traditional and diverse ties to wilderness.

Table 1 - Analysis of inclusivity issues in two sections of Wilderness Connect accessed in December 2022, the relevant themes and barriers, and suggested treatments for the inclusivity issues.

land connections by describing land–human relationships from select colonial perspectives, such as in a quote from Daniel Boone crediting the settlement of Kentucky to its transition from a howling wilderness inhabited by savages and wild beasts to a fruitful field.

In the last column of Table 1, the review committee suggests specific treatments for these inclusivity issues. First, the committee recommends a modified display featuring both geographically and chronologically organized information that allows viewers to toggle between the two display types – a timeline and an interactive map. Starting the chronological display with time immemorial better respects Indigenous land relationships, and presenting information by location better recognizes how some non-time-centric cultures organize information. In both geographical and chronological displays, including a richer selection of events, such as the founding of maroon communities in what are now North Carolina wildernesses (villages formed by escaped slaves in remote locations like swamps), expands a currently narrow narrative. Regardless of the display type, the content featured should balance traditional and eclipsed actors, events, and places. Yosemite National Park, for example, plays an important role as the place of inspiration for traditional conservationist John Muir and renowned nature photographer Ansel Adam, but it is also where the Buffalo Soldiers, African American soldiers that were part of the 9th and 10th Cavalry and the 24th and 25th Infantry, became America's first backcountry park rangers in 1866. Rewriting a currently colonial-heavy narrative to include systemically excluded people, places, and events alongside carefully chosen colonial actors could convey a history of wilderness that resonates with many perspectives. A more inclusive historical narrative should also acknowledge ancestral and current Indigenous homelands, recognize places and events of Indigenous significance, and include Indigenous place-names, such as Neníisótoyóú'u (Long's Peak) within the Rocky Mountain National Park Wilderness. The review committee suggests the application of the treatments in Table 1 as methods for remediating exclusive communications largely by diversifying a currently homogenous narrative of wilderness history and the people who influenced it.

"Application of inclusive communications strategies can help communicators broaden traditional narratives about wilderness to respectfully include diverse stories and varied experiences."

Inclusive Communications Strategies

Inclusive wilderness communications require incorporating content, definitions, and perspectives that are culturally relevant to systematically excluded groups (Sene-Harper et al. 2022). Application of inclusive communications strategies (Table 1) can help communicators broaden traditional narratives about wilderness to respectfully include diverse stories and varied experiences. Table 2

Strategy	Outcomes
Co-create communications with diverse partners	Wilderness communications include rich and varied perspectives that are grounded in greater cross-cultural understanding and respect and originate from genuine, long-lasting, collaborative partnerships
Recognize how racial bias influences deference and attention in communications decision-making	Systemically excluded elements are deliberately given equal or greater deference and attention, as compared to traditional elements, by wilderness communicators
Legitimize a greater range of types of knowledge and stories	Systemically excluded ways of knowing and narratives are deliberately given equal or greater prominence, priority, and distinction, as compared to Western science and traditional storytelling, in wilderness communications
Provide appropriate and broader context by including intersectional environmental connections	Wilderness communications explain the relationships between wilderness and other environmental, social, political, economic, racial, sexual, and other types of societal issues and forces
Balance the types of information framings and organizational structures used	Wilderness communications provide choice and/or deliberate variation in the ways information is assembled, presented, related, grouped, and sorted (e.g., chronological, spatial, visual, linear, circular, etc.)
Balance traditional and systemically excluded elements	Systemically excluded actors, events, places and place-names, perspectives, and land–human relationships are given equal or greater placement within wilderness communications while retaining and interweaving carefully chosen traditional elements
Broaden narratives and imagery to deliberately describe and show variation in how people relate to the environment	Wilderness communications include different people (e.g., race, gender, body type, etc.) and full spectrums of outdoor settings (e.g., remote to nearby nature) and activities (e.g., elite and challenging to accessible)
Portray systemically excluded people in resilient and empowering ways	Wilderness communications depict and include systemically excluded people in authentic and non-stereotypical ways through deliberate care in choosing people, places, and activities that preserve cultural integrity and the context in which these are presented

Table 2 - Inclusive communications strategies and outcomes.

generalizes and summarizes treatments from Table 1 into inclusive communications strategies and outcomes that can be applied to any type of wilderness communications.

Discussions, dialogue, and active listening with different partners provide insights into the ways that systemically excluded groups relate to wilderness (or not) and how to best include their values through authentic descriptions of land–human relationships and nature. Smith (2005) suggested that "to discover such alternative understandings of wilderness we will need to look beyond the canonical nature writers" (p. 280). Lanham (Bob Marshall Wilderness Foundation 2021), Thomas (2022), Ybarra (2022), Finney (2014), and Reilly's (2021) critiques of the absence of certain stories within the dominant wilderness narrative suggest wilderness communicators should expand beyond traditional actors to include more diverse voices. A long-term commitment to co-creating inclusive communications with diverse partners can ensure diverse voices are authentically and respectfully represented (Bob Marshall Wilderness Foundation 2021). We argue that an audit conducted by a group

with rich and varied representation can reveal the identity characteristics, settings, and land–human relationships that are both prevalent and absent within interpretive materials and visual resource libraries.

Imagery in interpretive materials should deliberately include different people, background settings, and outdoor activities (Finney 2014; Martin 2004) and that Indigenous or noncolonial place-names should be used that support ongoing efforts to decolonize geographic naming systems (McGill et al. 2022; Necefer 2018). Communicators should learn to recognize how racial bias influences deference and attention (Levine et al. 2021) when choosing whose voices and places matter. Communicators should expand the types of knowledge deemed legitimate (Smith 2012) and acknowledge intersectional environmentalism (Intersectional Environmentalist 2021; Intersectional Environmentalist Council 2022; Thomas 2022). For additional sources, Kanigel (2019), the First Nations Development Institute (2018), and Younging (2018) provide language resources that promote respectful dialogue with and about systemically excluded groups, including appropriate terminology and nuanced conceptual advice for how to avoid common pitfalls like victimization and stereotyping.

Public lands and wilderness communicators hold incredible power over public perceptions and meaning derived from place. Communicators determine what social forces are related to wilderness and how those relationships are conveyed. Communicators influence whose stories are included or eclipsed and whether systemically excluded groups are portrayed as victims or resilient, tenacious, creative contributors. Communicators choose which publication and organizational formats (e.g., linear, nonlinear, chronological, spatial) to use and whether those formats respectfully and honestly portray diverse experiences. Finally, communicators control what information is distributed via which outlets. We hope that this work empowers communicators with resources and knowledge to make informed decisions and that it inspires commitment to exploring and understanding diverse perspectives about wilderness.

Disclaimer: The findings and conclusions in this article are those of the authors and do not necessarily represent the views of the Bureau of Land Management, US Fish and Wildlife Service, US Forest Service, or National Park Service. IJW

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LISA RONALD is the former wildlands communications director at the University of Montana's Wilderness Institute where she oversaw Wilderness Connect for nearly 20 years. She now works for American Rivers; email: lronald@americanrivers.org.

SALAH AHMED is a visual information specialist and California interpretation and education lead with the Bureau of Land Management; email: saahmed@blm.gov.

KATIE BLISS is the deputy division manager in the Division of Training at the US Fish and Wildlife Service's National Conservation Training Center. She formerly directed the Arthur Carhart National Wilderness Training Center and is a founding member of National Park Service Allies for Inclusion; email: katie_bliss@fws.gov.

JESSE CHAKRIN is the director of the Yosemite Leadership Program; email: jchakrin@ucmerced.edu.

TANGY EKASI-OTU is the wilderness and Wild and Scenic Rivers specialist for the Forest Service's Washington Office and former Hispanic Access Foundation fellow; email: tangy.wiseman@usda.gov.

KIMM FOX-MIDDLETON is the wilderness interpretation and outreach specialist at the Arthur Carhart National Wilderness Training Center. She is an Environmental Professionals of Color member and former diversity, equity, and inclusion trainer for the National Park Service's Pacific West Region; email: kimm_fox-middleton@fws.gov.

JENN HARRINGTON is a Cree and Metis tribal member and Native American natural resource program coordinator at the University of Montana's W. A. Franke College of Forestry and Conservation. She is a former wilderness ranger; email: jennifer.harrington@umontana.edu.

SHELTON JOHNSON is a park ranger at Yosemite National Park. He is an author, poet, playwright, and actor in a stage production about Yosemite's African American military history entitled "Yosemite through the Eyes of a Buffalo Soldier, 1903"; email: shelton_johnson@nps.gov.

TINA MAZZEI is a volunteer outing leader with the Sierra Club's Gay and Lesbian Sierrans; email: tina_mazzei@yahoo.com.

JESSI MEJIA graduated in 2022 from the University of Montana's Environmental Journalism Graduate Program. She is the former high country program coordinator at Glacier National Park and is now working as a freelance journalist and photographer; email: jessica.leigh.mejia@gmail.com.

ROGER OSORIO is a park ranger at Charles Young Buffalo Soldiers National Monument and former youth leader with Southern Appalachian Wilderness Stewards and Groundwork Hudson Valley; email: roger_osorio@nps.gov.

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The McKenzie River in Central Oregon. **Photo credit:** Pixabay

STEWARDSHIP

Wilderness Perspectives: Zahniser's Support for the Authentic Wilderness Experience

by JESSE ENGEBRETSON

Jesse Engebretson

When many of us picture Howard Zahniser, we think of one image. With a focused look on his face, we see Zahnie looking directly into the camera in his backyard in Hyattsville, Maryland, wearing a custom-tailored suitcoat. On the outside, the coat is unremarkable. But, under its outer layer, it speaks volumes. Zahnie's Georgetown tailor, E. Sye Silas, modified the coat to include multiple oversized pockets that were often filled with information on the wilderness bill that Zahnie would share with lawmakers on the Hill. While this iconic image reminds us that Zahnie was, in the words of David Brower, "the constant advocate" of the wilderness bill and a deft and tireless Washington lobbyist, it obscures that, inside, his wilderness thinking was also profound, multidimensional, and big. When he thought of the authentic wilderness experience, he did not simply mean the passive observation of nature in a regimented wilderness area. For him, it was more than that.

Zahnie's dedication to the passage of the wilderness bill was rooted in providing opportunities for an authentic experience based, in part, on wilderness's capacity to foster intimate connections with the natural world. He felt that experienc-

ing wilderness could lead to a "humility to know ourselves as the dependent members of a great community of life" (Zahniser 1957, p. 200). Expanding on this, he critiqued modern humans as "less and less aware of their dependance on other forms of life and more and more misled into a sense of self-sufficiency and into a disregard of their interdependence with the other forms of life with which they – together – derive their existence form the solar center of the universe" (Zahniser 1957, p. 201). This is not language typically associated with the bureaucratese of Washington lobbyists and is an attempt, I think, to capture the impact of authentic wilderness experiences.

As the readers of this journal know, regulations can sometimes be implemented to limit the number of people allowed in a wilderness area – or prespecified zones in an area – at one time. Such limited-entry areas are becoming more common, such as the establishment of the Central Cascades Wilderness Permit system, which limits both day and overnight use in the Mt. Jefferson, Mt. Washington, and Three Sisters Wilderness areas. Although these actions may be needed to properly steward wilderness, further administrative changes may also be needed to ensure opportunities for an authentic wilderness experience as such limits are established. Looking back into history can help us determine what may be necessary.

In the first hearing of the wilderness bill in 1957, Zahniser briefly discussed a report from the Library of Congress's Legislative Reference Service. In 1948, members of Congress had requested this study by Charles Frank Keyser to provide background for potential legislative action on wilderness designation, which was prompted by Zahniser's lobbying (Congressional Quarterly 1964). This report sheds light on postwar thoughts on wilderness and the wilderness experience and is a valuable, and often overlooked, piece of wilderness history. Zahniser's response to Keyser's survey was briefly discussed at the hearings, and The Wilderness Society's original and unaltered response to it was entered as evidence by Zahniser in 1957 during the first hearings on the National Wilderness Preservation Act (Zahniser 1957; Zahniser 1949).

Figure 1 - Howard Zahniser. Courtesy of wilderness.net.

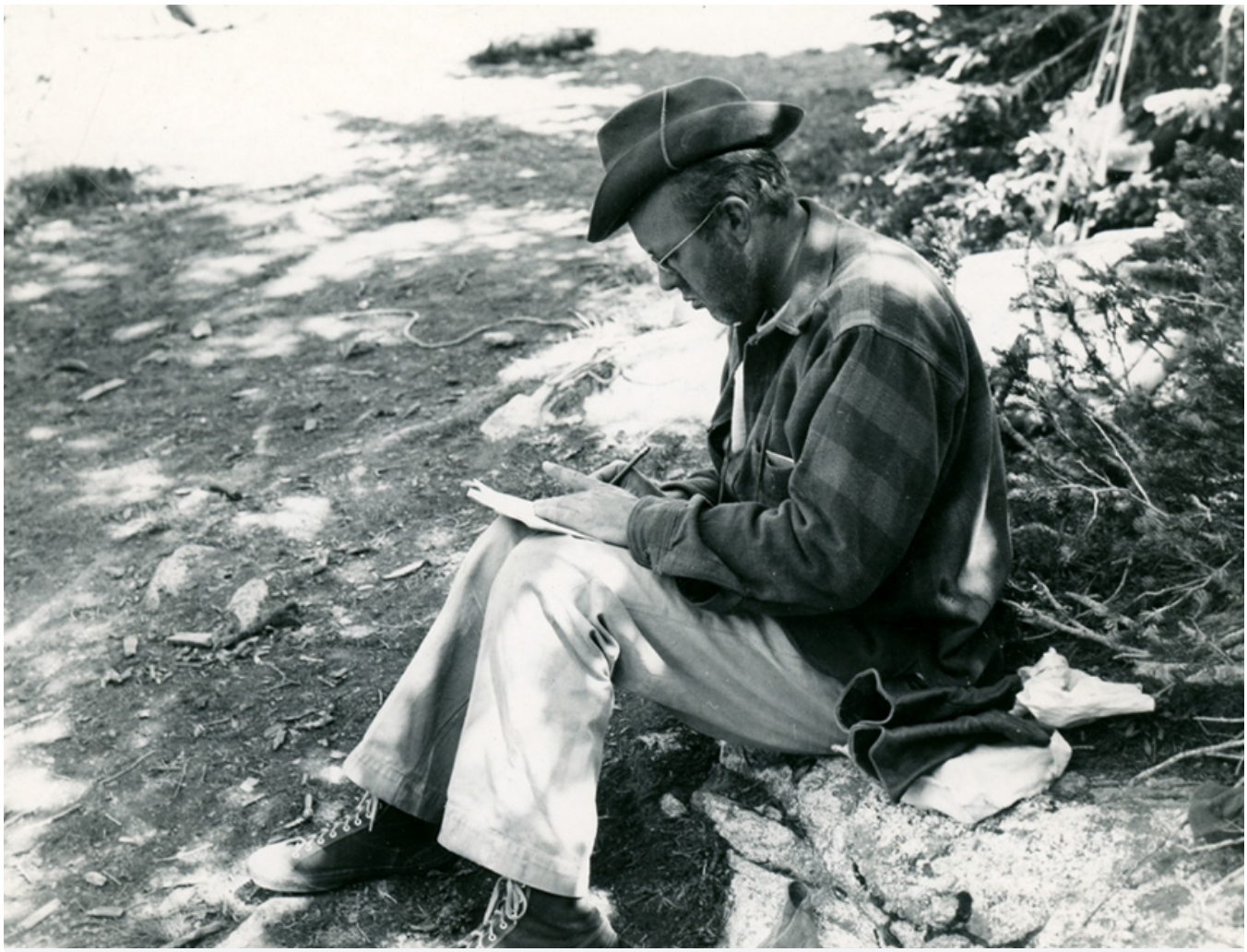

Figure 2 - Howard Zahniser. From the Conservation Collection in the Genealogy, African American and Western History Library at the Denver Public Library.

Keyser's survey asked many open-ended questions, including, "What do you consider permissible uses of wilderness areas?" Zahnie's response has clear implications for current management, such as limited-entry areas:

> *Eventually it may be that wilderness use will have to be rationed. This would seem to be the alternative to administering the wilderness for the accommodations of large numbers of people at a time, which would jeopardize the wilderness itself and the wilderness "atmosphere" and at the same time would require regulation or regimentation of the visitors in such a way is to destroy "the freedom of the wilderness" and to nullify the escape from restrictions that is so important a part of the wilderness experience (Zahniser 1957, p. 193)*

Later in the survey, Zahnie takes the perspective of a wilderness manager and describes the managerial dilemma of limiting "the numbers of users at any one time or surround users with such restrictions as are required in 'crowded' natural areas of parks." To him, the "true wilderness

choice seems certain to be the limitation of numbers of users of such an area at a time, on the basis of preserving not only the wilderness but also the authenticity of the wilderness experience" (Zahniser 1957, p. 194).

"As we conjure images of Zahnie, we should both appreciate the image of a lobbyist with complex and multidimensional meaning obscured by a tailored suit as well as a wilderness visitor deep in thought and reflection about humans' role in a more-than-human world."

It seems certain that Zahnie would support modifying restrictions in newly established limited-entry areas to ensure the "authenticity" of the wilderness experience in its preservation of the "freedom of the wilderness." Thus, if our stewardship of wilderness areas and the wilderness experience is to be informed by the act's chief architect, wilderness managers could modify and loosen direct restrictions (e.g., mandatory camping setbacks from water and trails fire restrictions) in areas where they limit the numbers of wilderness visitors allowed at one time. Such a proposal would ideally preserve the opportunity for an authentic wilderness experience that is relatively unencumbered by the regimentation of rules and regulations that can confine the wilderness visitor.

In this light, we return to a different and largely ignored image of Zahnie. His custom-tailored suit is absent and he's sitting on an unknown trail. He's unshaven and unaware of the camera, writing and seemingly deep in thought. Such an image complicates the caricaturized narrative of Zahnie as only a Washington lobbyist. Like other wilderness champions before him, he was deeply engaged with the natural world and, to him, an unconfined, and thus authentic, wilderness experience was one that could facilitate humans' felt understanding that we, along with nonhuman nature, are "dependent members of an interdependent community of living creatures that together derive their existence from the sun" (Zahniser 1957, p. 199). Thus, as we conjure images of Zahnie, we should both appreciate the image of a lobbyist with complex and multidimensional meaning obscured by a tailored suit as well as a wilderness visitor deep in thought and reflection about humans' role in a more-than-human world. IJW

JESSE ENGEBRETSON is an assistant professor in the Department of Recreation, Hospitality, and Parks Management at California State University, Chico: email: jengebretson@csuchico.edu

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Women camp near a glacier in Wrangell-St. Elias National Park and Preserve, an area which contains nearly ten million acres of designated wilderness, and has a array of connections to, and differing meanings for, many groups of people. **Photo credit:** National Park Service

SCIENCE + RESEARCH

The Future of Wilderness Research:

A 10-Year Wilderness Science Strategic Plan for the Aldo Leopold Wilderness Research Institute

by JASON J. TAYLOR, TERESA N. HOLLINGSWORTH, CHRISTOPHER A. ARMATAS, KELLIE J. CARIM, KIRA L. HEFTY, OLGA HELMY, LISA M. HOLSINGER, DANETTE PAIGE, SEAN A. PARKS, LAUREN E. REDMORE, JACLYN F. RUSHING, ERANA J. TAYLOR, and KATHERINE A. ZELLER

Aldo Leopold Wilderness Research Institute, USDA Forest Service, Rocky Mountain Research Station, Missoula, MT USA

Aldo Leopold Wilderness Research Institute staff

"I am glad I will not be young in a future without wilderness"
– Aldo Leopold

The Earth is changing faster than at any time in recorded history. Globally, we are facing large-scale losses in biodiversity and associated ecosystem function, changes in disturbance regimes, and widespread human migration and cultural loss (e.g., IPCC 2021). In the United States, we face many related challenges, including intensifying wildfire and climatic events, species and habitat loss, increasing demand for environmental and social justice, and rapid social change such as urbanization.

In 1964, the Wilderness Act codified formal protections for lands we know today as designated wilderness collectively, the National Wilderness Preservation System (NWPS), the most environmentally protected public lands in the United States. Wilderness is not only part of our national story. It also provides myriad benefits: from spiritual renewal and recreation opportunities to clean air and water, habitat for plants and wildlife, food and economic security, and opportunities to conduct scientific studies. Consequently, wilderness is important to many people as part of our collective past, present, and future. Wilderness can mean many different things to different people and expectations for uses, such as recreation and subsistence activities, vary depending on differences in cultural background, belief systems, and education, to name a few. Long-term protection required by law, combined with an increasing rate of climate change and a growing understanding of how Indigenous peoples cared for the lands now designated as wilderness, results in a complex wilderness stewardship landscape.

The Aldo Leopold Wilderness Research Institute story

The Aldo Leopold Wilderness Research Institute (Leopold Institute) is the only federal research group in the United States dedicated to development and dissemination of knowledge needed to steward the 112-million-acre (44,920,106-ha) National Wilderness Preservation System (NWPS) comprised of 800+ units managed by two US Departments and four agencies, from Puerto Rico to Alaska. We have a long history of conducting and sharing science in support of the NWPS and broader conservation needs, as well as collaborating with management, Tribal, academic, nongovernmental organization, community, and other partners within the US and internationally.

The Leopold Institute was established in 1993 to serve as a "model for integrated research and management to advance the understanding of the social, cultural, and ecological significance of wilderness and wildlands." The Institute's core work is interagency. That is, in addition to being administered by the US Department of Agriculture (USDA) Forest Service, Rocky Mountain Research Station, the institute works to address the wilderness research needs of an Interagency Wilderness Policy Council (IWPC). This responsiveness is defined by an interagency agreement among the USDA Forest Service, Department of the Interior (DOI), Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), National Park Service (NPS), and US Geological Survey (USGS). Further, the Institute participates on an Interagency Wilderness Steering Committee (IWSC), a coordinating body that provides a mechanism for wilderness science to be cooperatively shared with federal wilderness managers.

The Leopold Institute's vision is "a world where science, wilderness, and relationships between all people and wild lands thrive." Toward this end, we aspire to be the premier institution for wilderness stewardship research, both nationally and internationally. We intend to be the focal point for scientists and managers from different disciplines and backgrounds who seek to conduct, communicate, and learn about research that addresses the challenges of wilderness stewardship.

Addressing this complexity would benefit from need-driven, collaborative, and inclusive science.

The Aldo Leopold Wilderness Research Institute (hereafter, Leopold Institute) is housed within the USDA Forest Service Rocky Mountain Research Station; however, it is an interagency institute that supports stewardship of the NWPS and broader conservation needs. Its mission is "Advancing wilderness stewardship through transformational science." Within the USDA Forest Service, Research and Development Deputy Area, mission-driven programs are formalized in a Research Work Unit Description (i.e., a strategic plan or "science charter") that is renewed on roughly 10-year cycles. In 2021, we developed a new strategic plan and science charter (hereafter, strategic plan) for the Leopold Institute to address key partner-identified wilderness research needs.

Developing a strategic plan for the Leopold Institute was a complex task, because: (1) science needs that are relevant to effective stewardship of the NWPS are diverse and expansive; (2) identifying our priority science needs required operating within the guiding policy for Leopold Institute scientists (e.g., the OPM Research-Grade Evaluation Guide), while taking into consideration the needs of management agencies and partners, as well as knowledge and opinions of a diverse range of wilderness stewards and interested parties; and (3) our capacity to conduct science is finite, shaped by the expertise and number of current Leopold Institute staff. In this article, we first describe our multipartner process for engaging a broad wilderness community that included all wilderness management agencies in the United States. (USDA-FS and US-DOI, BLM, FWS, and NPS) and other national and international partners, and then we introduce the strategic plan and Research Priority Areas that will guide the Leopold Institute's science agenda for the next decade.

Multipartner Process

Our deliberate partner engagement process relied on Q-methodology (Stephenson 1954), a structured and statistically rigorous approach, to understand perspectives on the wilderness research priorities as identified by those who participated in the process. Q-methodology (Brown 1980; Watts and Stenner 2012; Armatas et al. 2018) involves a rank-ordering exercise, known as the Q-sort, which provides insight into the values and preferences held by participants about a topic of interest (Steelman and Maguire 1999). Specifically,

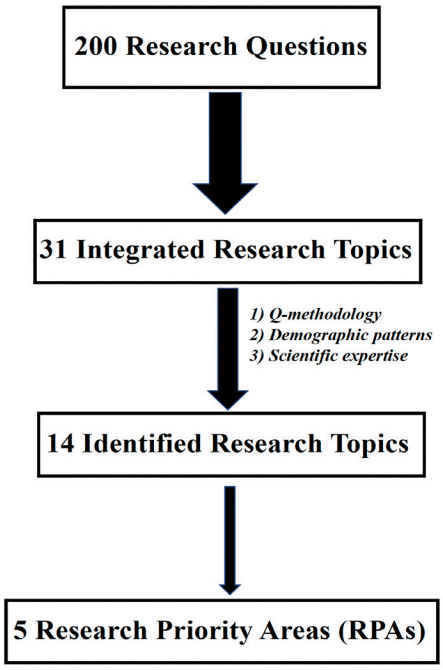


Figure 1 - Conceptual framework depicting our method for condensing and integrating more than 200 potential research questions into five Research Priority Areas that form the basis for the Leopold Institute 10-year strategic plan.

it required partners to rank research priorities based on their professional and personal experiences. Because Q-methodology requires participants to evaluate trade-offs (i.e., research topics are prioritized relative to one another), it was particularly useful to planning since the Leopold Institute has finite resources, and therefore cannot address all the research topics that may be important or of interest to our many partners.

Q-methodology does not aim to measure the prevalence of any viewpoint (although this can be determined from partner input), but instead aims to explore and identify differing perspectives that can be thought of as lines of discourse in a conversation. It uses purposeful sampling to identify a group of participants who are likely to capture the diverse range of opinions around a topic. Participant perspectives are expressed primarily through the Q-sorting exercise, whereby 25–50 statements are arranged along a quasi-normal distribution from highest to lowest priority. Then, resisting a central tendency of opinion, statistical analysis of participant Q-sorts yields a limited number (often 3–5) of shared viewpoints.

We developed Research Priority Areas through the following seven, chronologically ordered, steps (Figure 1):

1. **Develop of an initial potential set of Research Questions**. Called the concourse in Q-methodology, concourse development served as an initial exploration of the innumerable statements around the topic of interest (i.e., research questions in our case). Leopold Institute scientists developed an initial concourse of 178 potential Research Questions, which was derived from the research needs outlined in previous science planning efforts (previous charters can be downloaded at https://leopold.wilderness.net/), literature focused on proposed wilderness and conservation science directions (Sutherland et al. 2009; Watson and Armatas 2018), and knowledge of Leopold Institute scientists and staff.

2. **Expand the list of potential Research Questions through national and international partner engagement**. The shared draft list was intended to represent the needs of a group of people who hold a diverse range of perspectives around the topic of interest; therefore, it was developed through strategic or purposeful (not random) sampling. The initial concourse was shared with a list of partners to elicit feedback, with the specific request to add other important research questions that may be missing. We sent this opportunity for engagement (via web application) to 160 people, mailing lists, organizations that represented agencies, tribes, NGOs, universities, interested public, special interest groups, and others in the US and globally. In turn, many of these people forwarded the opportunity for input to their networks and organizations. Additionally, the opportunity for engagement was posted on the Leopold Institute interagency website, available for anyone to participate. In total, the response rate included 232 unique visits to the web application and 117 total comments on our draft concourse. Regionally, we had responses from 31 states and Washington, D.C., in the United States and 24 international visits to the application with eight commenters. This partner engagement was made available from March 30–April 19, 2021, and resulted in an expansion of the concourse to more than 200 Research Questions.

3. Distill the concourse. We filtered the 200+ Research Questions into a "Q-set," which is a tractable set of statements that broadly represent the ideas in the concourse and are sorted by participants (Watts and Stenner 2012). This effort generated 31 hierarchically integrated Research Topics for prioritization. These integrated Research Topics were intended to span broad social-ecological issues that incorporated research questions in a way that could be ranked by partners.

4. Prioritize Research Topics. Returning to the partner list and interagency website, we invited open participation to prioritize the 31 integrated Research Topics, based on individual views/opinions, using Q-methodology implemented through a web application. The resulting prioritized needs were known as the "Q-sort" and the respondents were known as the "P-set." To conceptualize a "diverse" range of perspectives, we employed dimensional sampling (Arnold 1970). Partners provided information about demographics, including affiliation (USDA Forest Service, BLM, FWS, NPS, USGS, Tribal, university, state agency, NGO, and other); location (International, Eastern US –defined as any state east of the Rocky Mountains – Western US, and Alaska); and self-identified role (manager, policy maker, scientist/researcher, federal/Tribal/state/NGO, wilderness stewards, interested public), which provided our dimensional sampling framework. In total, we had 175 complete responses (the P-set), which included 35 NPS, 35 university, 33 BLM, 29 Forest Service, 17 Tribal, 15 FWS, and 11 other respondents. This second phase of partner engagement took place between June 1–July 14, 2021.

5. Analyze input on research priorities and perspectives. Data analysis was both quantitative (summarizing response variation and means across the whole sample, identifying different perspectives with factor analysis, and examining patterns across and within various demographic groupings) and qualitative (conveying meaning to each factor array with the aid of information gathered during partner workshops). Analysis also identified where there was consensus, contention, and ambivalence among the research needs and perspectives (Armatas et al. 2014).

Patterns across and within demographic groups: The Q-sorting demographic data allowed us to use descriptive statistics to assess patterns in rankings across and among groups in an aggregate analysis. We assessed means, medians, high and low rankings across all participants, as well as within affiliation, location, and self-identified role. This analysis is limited in that our sample was nonrandom, and thus interpretation of our patterns cannot be used to assume broader patterns among agencies and other groups.

Evaluation of partner perspectives: We used factor analysis (PCA) in PQMethod (Schmolck 2014), a freely available software for analyzing Q-methodology data. Specifically, we used varimax rotation and refined with manual flagging at 0.05. Factor analysis allows for many unique partner perspectives to be combined or pared down to a limited number of typified viewpoints or "archetypes" expressed as a factor array, which is a Q-sort defined by all those participants that significantly load onto a particular factor or perspective. Each archetype is defined by participants that share a similar viewpoint or perspective.

Integrated research topics used for partner prioritization. Partners were asked to rank the importance of each topic from highest to lowest priority (see Figure 1).

1. Wilderness as a control to understand the effects of management actions outside of wilderness
2. Wilderness to understand ecosystem resources (e.g., fire, water, plants) relatively free of modern anthropogenic effects
3. The influence of wilderness on people's view of nature (e.g., does wilderness foster pro-environmental behavior)
4. Diversity, equity, and inclusion in wilderness (e.g., impacts of laws, regulations, and policies on DEI)
5. The wilderness experience (e.g., therapeutic benefits) and visitor preferences (e.g., noise, permit systems)
6. The relationships between wilderness-managing agencies, and the public (e.g., how to build trust)
7. Opportunities/challenges of special provisions in wilderness (e.g., commercial uses) and emerging issues (e.g., mountain biking)
8. Disturbance in wilderness (e.g., social-ecological effects of wildfire, effects of climate on disturbance events)
9. The unique value and needs of wilderness in Alaska (e.g., ANILCA, accelerated climate impacts)
10. Technology in wilderness (e.g., the role technology plays in defining the wilderness experience)
11. Integration of multiple knowledge/value systems (e.g., Indigenous knowledge) and opportunities for comanagement
12. Opportunities/challenges for developing partnerships for shared stewardship of wilderness
13. nfluences/limitations of wilderness governance (e.g., effect of formalizing wilderness character monitoring)
14. Ecological interventions (i.e., trammeling) in wilderness (e.g., prescribed fire, removal of invasive species)
15. Management of cultural (e.g., pictographs) and paleontological (e.g., dinosaur fossils) resources
16. Trends in wilderness use (e.g., recreational, and other uses of wilderness through time)
17. Conflict between different uses and/or user groups (e.g., stock users and hikers)
18. Supporting inventory and monitoring (e.g., refining indicators of wilderness character, long-term vegetation change)
19. Impacts of wilderness use on ecological resources (e.g., dogs on wildlife; pack animals on invasive species)
20. Approaches to mitigate and restore ecological resources impacted by recreation or other wilderness activities
21. Wilderness for critical life support systems (e.g., public water supplies, air quality, pollination, carbon storage)
22. Wilderness for biodiversity conservation (e.g., habitat connectivity, wilderness as refugia)
23. The relationship between wilderness and nearby communities (e.g., economic and population growth impacts)
24. Opportunities for/challenges of expanding wilderness designation (e.g., understanding public support for more wilderness)
25. Cumulative impacts of environmental (e.g., pollution) and social stressors (e.g., influence of social media) on wilderness
26. Effects of climate change in wilderness
27. Translating wilderness research for sharing with diverse users, partners, and the public
28. Evaluating the effectiveness of knowledge transfer (e.g., wilderness science and outreach efforts)
29. Challenges/opportunities to managing Wild and Scenic Rivers (e.g., understand uses, trends, and needs)
30. Evaluating the effectiveness of stewardship and management of wilderness (e.g., are invasive species treatments working)
31. The influence of definitions/language (e.g., 'wilderness', 'wild', 'naturalness') on the wilderness concept and management

6. Conduct public workshops to clarify input. We conducted five public workshops with partners to share results to date and to understand the nuances and context within the typified perspectives. During the workshops, we presented the final factor solution and asked partners: (1) do any of the perspectives resonate with you, and if so, which one(s); (2) why do the perspectives resonate with you, and/or what is your reasoning for prioritizing the research topics as you did; and (3) what might you name the perspectives? In total, 33 people from the BLM, EPA, Forest Service, NPS, Arthur Carhart National Wilderness Training Center, state governments, universities, and nongovernmental organizations attended the workshops. Attendees spanned a variety of roles, including science leadership, communications and outreach, wilderness program management, and unit-level oversight (e.g., superintendents).

7. Translate research needs into a strategic plan. The partner engagement and analytical steps shared above developed a robust, albeit targeted, multi-angle understanding of wilderness research needs. These research needs were narrowed to a tractable, strategic list through several deliberate steps. We identified the highest-priority Research Topics by leveraging the five highest-ranking Research Topics from each perspective identified through the factor analysis, along with the five highest-ranking Research Topics from our demographic descriptive analysis from each of the NWPS management agencies and Tribal respondents. Then, Leopold Institute scientists identified which of these Research Topics they could address based on expertise and opportunity, and determined if other topics, based on expertise and current research, should be considered in the new strategic plan. Research Topics were then grouped into themed bins that ultimately became Research Priority Areas (RPAs), the focus of the new strategic plan. Leopold Institute leadership and scientists then generated overarching research questions that would develop core knowledge needed to meet the intent of each of the RPAs. We derived these overarching questions from a combination of detailed research needs identified earlier in the partner engagement process and expert opinion, including intimate awareness of outstanding needs within disciplinary fields among the scientists. Finally, scientists were asked to identify if, and how, overarching questions might be interrelated, acknowledging that addressing questions in one RPA might support other questions in other RPAs. In short, the new RPAs and accompanying strategic plan for the Leopold Institute emerged from intersecting partner perspective priorities, demographic patterns, and scientific expertise.

The rankings (by mean) of priority Research Topics of all participating partners based on means (n = 175).				
Research topic	**Max**	**Min**	**Median**	**Mean**
****Wilderness for biodiversity conservation**	4	-4	2	1.571
****Ecological interventions in wilderness**	4	-4	2	1.171
****Effects of climate change in wilderness**	4	-4	1	1.091
****Integration of multiple knowledge/value systems and opportunities for co-management**	4	-4	1	0.966
****Disturbance in wilderness**	4	-4	0	0.943
**Approaches to mitigate/restore ecological resources impacted by wilderness activities	4	-4	1	0.846
****Evaluating the effectiveness of stewardship and management of wilderness**	4	-4	1	0.657
****Supporting inventory and monitoring**	4	-4	1	0.651
****Wilderness for critical life support systems**	4	-4	0	0.44
****Wilderness to understand ecosystem resources relatively free of modern anthropogenic effects**	4	-4	0	0.32
****Trends in wilderness use**	4	-4	0	0.257
Cumulative impacts of environmental and social stressors on wilderness	4	-4	0	0.223
The relationship between wilderness and nearby communities	4	-4	0	0.063
Impacts of wilderness use on ecological resources	4	-4	0	0.006
++Wilderness as a control to understand the effects of management actions outside of wilderness	4	-4	0	-0.01
****Diversity, equity, and inclusion in wilderness**	4	-4	0	-0.01
**Opportunities-challenges of special provisions in wilderness and emerging issues	4	-4	0	-0.03
++Opportunities-challenges for developing partnerships for shared stewardship of wilderness	4	-4	0	-0.14
**The influence of wilderness on people's view of nature	4	-4	0	-0.2
Conflict between different uses and/or user groups	4	-4	0	-0.22
****The wilderness experience and visitor preferences**	4	-4	-1	-0.35
Translating wilderness research for sharing with diverse users, partners, and the public	4	-4	0	-0.4
Opportunities-challenges of expanding wilderness designation	4	-4	-1	-0.54
Management of cultural and paleontological resources	4	-4	-1	-0.6
The relationships between wilderness-managing agencies, and the public	4	-4	-1	-0.66
Influences/limitations of wilderness governance	4	-4	-1	-0.71
Technology in wilderness	4	-4	-1	-0.76
Challenges-opportunities to managing Wild and Scenic Rivers	4	-4	-1	-0.86
Evaluating the effectiveness of knowledge transfer	4	-4	-1	-1.03
The influence of definitions/language on the wilderness concept and management	4	-4	-2	-1.29
++The unique value and needs of wilderness in Alaska	4	-4	-2	-1.31
Bold indicates Research Topics the Leopold Institute addressed through five integrated Research Priority Areas (RPAs).				
** indicates the top 15 research priorities from our partner engagement.				
++ indicates Research Topics not identified in the top five that are incorporated into RPAs				

Table 1 - The rankings (by mean) of priority Research Topics of all participating partners based on means (n = 175). highest.

Results

Patterns across and within Demographic Groups

In reviewing Research Topic rankings, we observed patterns across all participants that were influenced by affiliation, region, and identified role. The participants were selected using a purposeful (not random) approach. Therefore, trends and priorities of the full sample should be interpreted within the context of the sample only and not the general population. Across all participants, the Research Topic with the highest priority on average was *"Wilderness for biodiversity conservation"* (mean = 1.571), and the Research Topic with the lowest priority was *"The unique value and needs of wilderness in Alaska"* (mean = -1.314) (Table 1). The possible range of scores for a Research Topic was -4 to +4, and surprisingly, every Research Topic had a maximum value of 4 and a minimum value of -4, which indicates that every Research Topic was ranked the highest at least once by a respondent, as well as ranked the lowest at least once by another respondent (Table 1). We also observed geographic patterns, such as Alaskan respondents ranking *"The unique value and needs of wilderness in Alaska"* higher in importance than average (third highest in Alaska vs. lowest priority overall).

Evaluation of Partner Perspectives

Analyzing partner input, we identified that Research Topic rankings generally organized into three groups, with little overlap between the groups. There were three primary perspectives

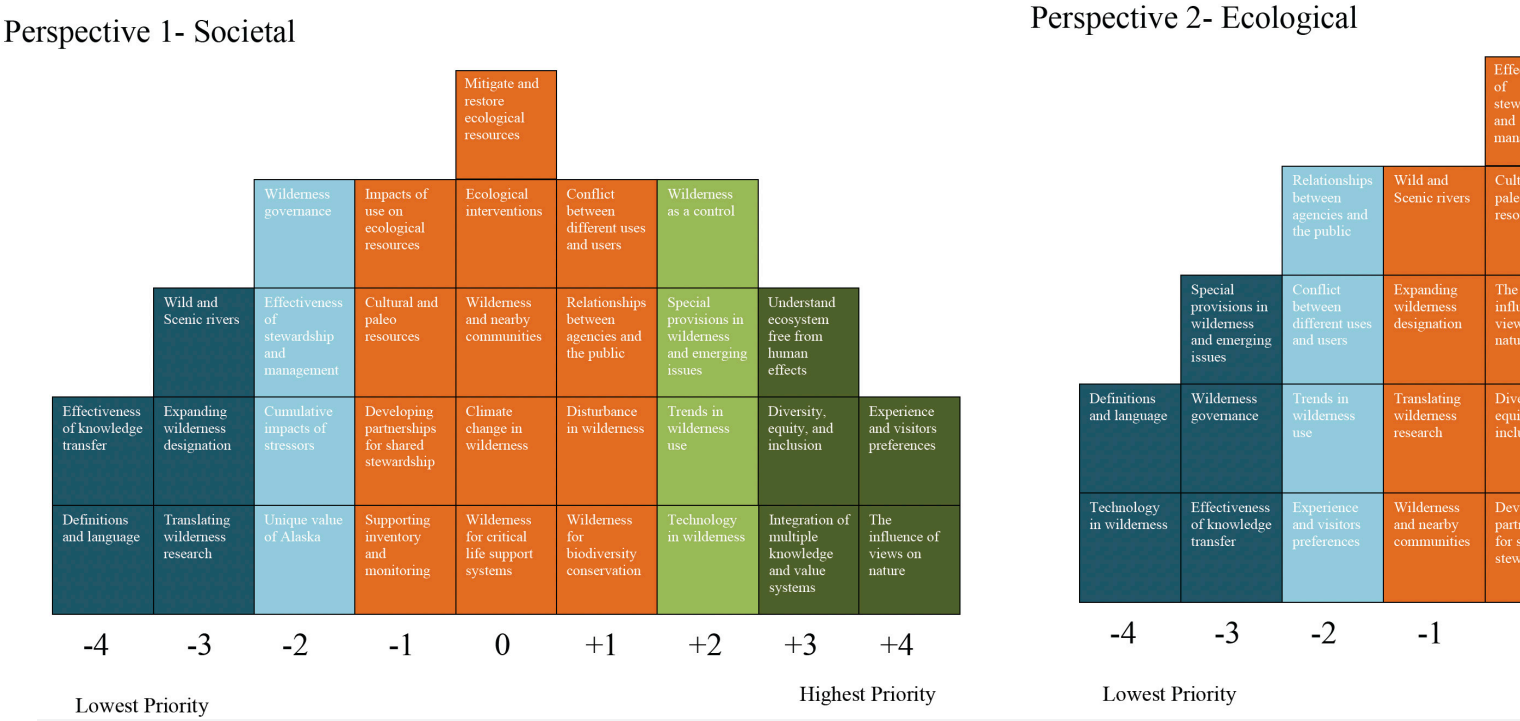


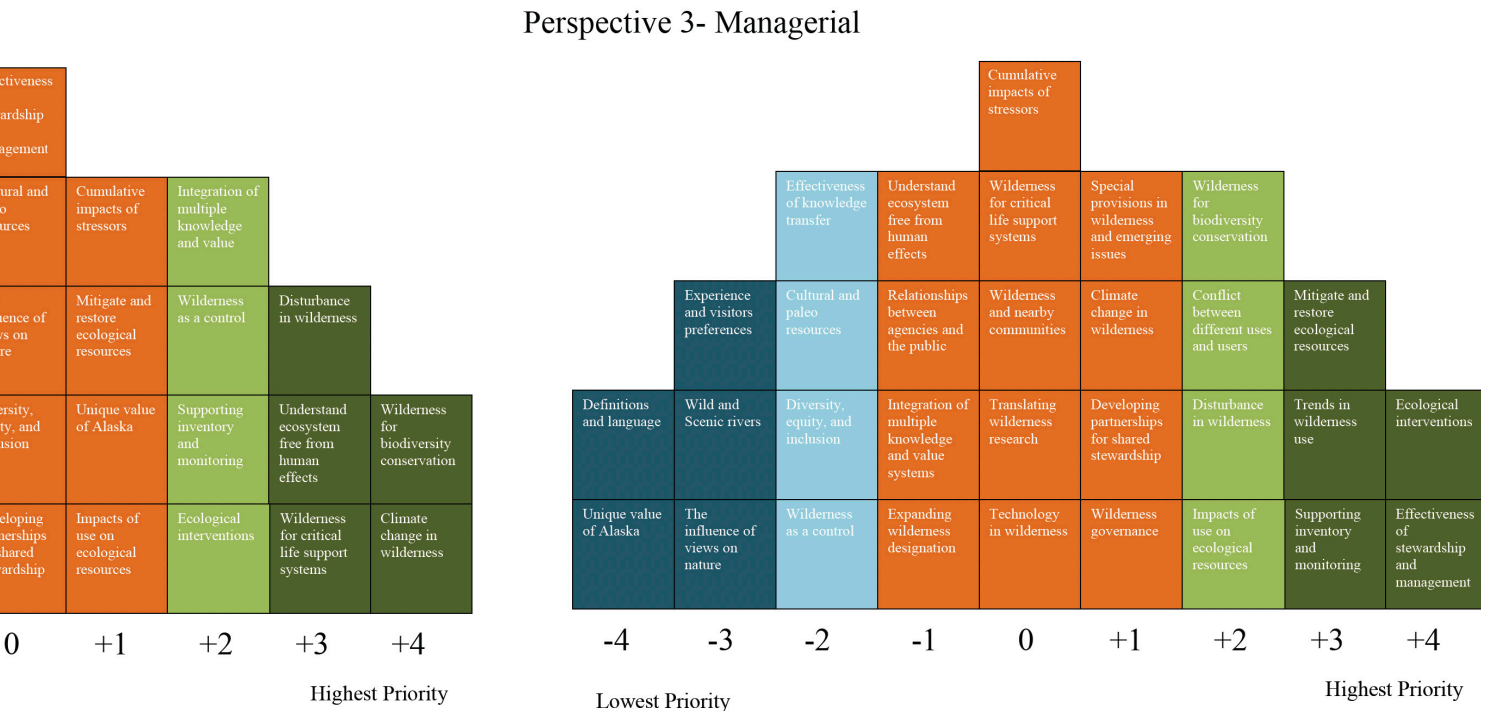
Figure 2 a-c - Research Topics "perspectives" as defined by factor analysis, i.e., typified partner responses, (a) Perspective 1 has societal topics ranked hig

(called "typified responses") that emerged from the input, where rankings for all participants within a given, typified response were similar (with some variation) to one another. The three perspectives were ultimately labeled: **Perspective 1 – Societal, Perspective 2 – Ecological,** and **Perspective 3 – Managerial,** since the types of questions that had the highest priority in each group were largely societal, ecological, or managerial, respectively (Figures 2a, 2b, 2c). These results are consistent with overall patterns across demographic groups (comparing Figure 2 to Table 1).

Translating Research Needs into a Strategic Plan and Science Charter

Intersecting the five highest Research Topics from each perspective (social, ecological, and managerial) (Figure 2), along with the five highest-ranked Research Topics from our descriptive analysis from each of the NWPS management agencies and Tribal respondents resulted in an initial selection of 15 priority Research Topics (out of 31 possible) for further consideration (Table 1). Of those 15 Research Topics, Leopold Institute scientists identified 11 they could address based on expertise and opportunity.

Three additional Research Topics (*"Wilderness as a control to understand the effects of management actions outside of wilderness," "Opportunities/Challenges for developing partnerships for shared stewardship of wilderness,"* and *"The unique value and needs of wilderness in Alaska"*), while not identified in the top five Research Topics from each perspective or agency and Tribal



ghest, (b) Perspective 2 has ecological topics ranked highest, and (c) Perspective 3 has managerial topics ranked highest.

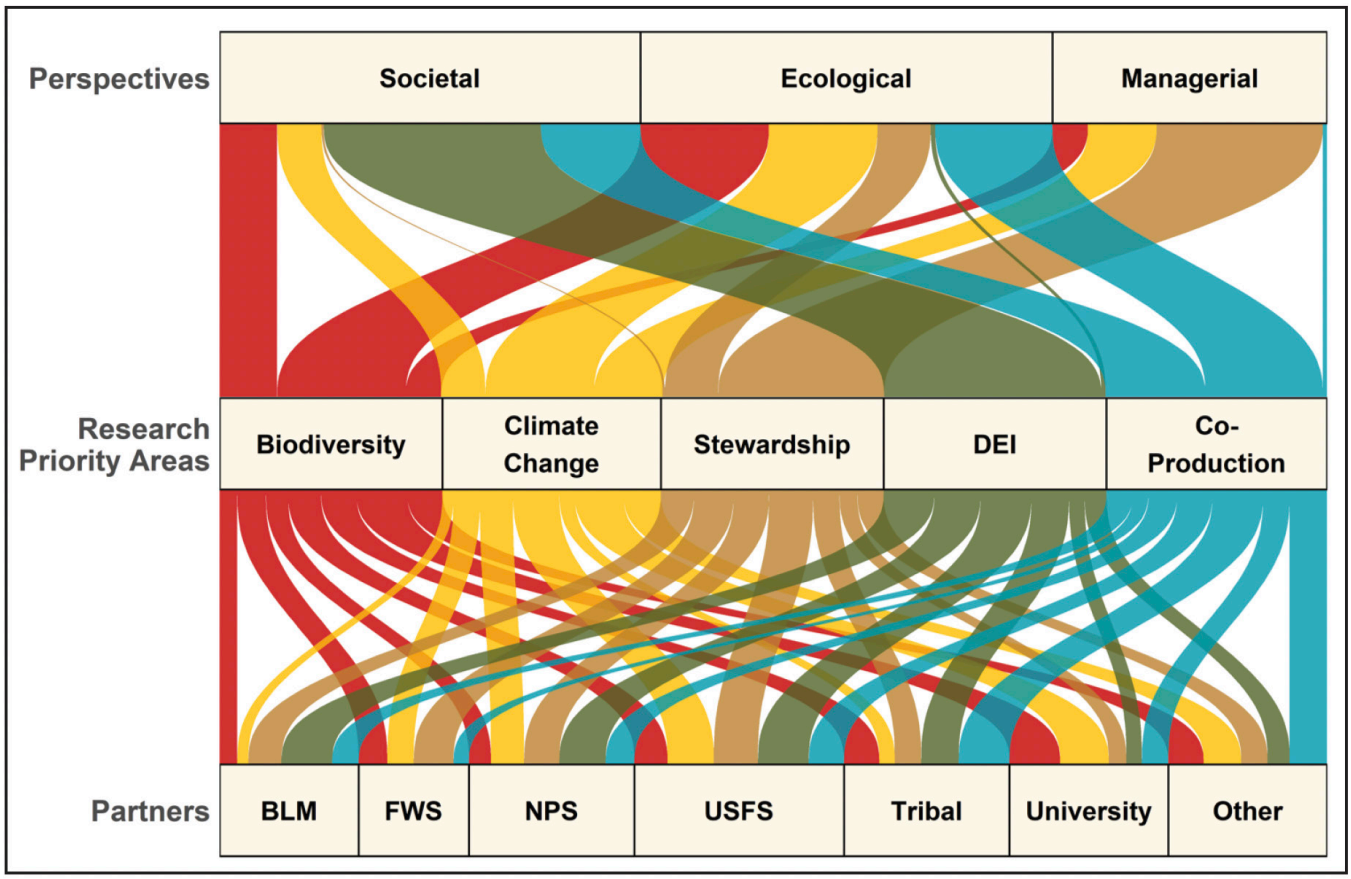


Figure 3 - The Leopold Institute Research Priority Areas, as identified through the partner engagement process and the influence of partner priorities and perspectives on those RPAs. The width of the lines indicates the influence of each perspective (based on additive z-scores, from the Factor Analysis) and partner priority (based on mean ranking) to each RPA.partners based on means (n = 175). highest.

responses, were identified by Leopold Institute scientists or leadership as important to include in our strategic plan. Each of these added topics was on the higher side of importance for at least one perspective, and additionally, each directly aligned with needs identified by managerial or research partners through informal dialogue. A total of 14 identified Research Topics (out of 31 considered and ranked) were ultimately carried forward (Table 1) as part of our strategic plan. Toward creating a more tractable and manageable number of programmatic priorities, the 14 identified Research Topics were thematically integrated to create five RPAs. Collectively the RPAs capture both perspective (typified response from our Q-methodology factor analysis) and raw (based on source data mean rankings) research needs and provided the foundation upon which the Leopold Institute strategic plan was developed (Figure 3).

Research Priority Areas

RPA1. Biodiversity Conservation (labeled as "Biodiversity" in figures): Develop an understanding of the values, opportunities, and challenges for wilderness to support biodiversity conservation in an era of unprecedented change. This RPA includes research topics: *"Wilderness for biodiversity conservation," "Wilderness to understand ecosystem resources relatively free of modern anthropogenic effects,"* and *"Wilderness for critical life support systems."* To address RPA1, the Leopold Institute will advance wilderness-relevant biodiversity conservation knowledge across multiple temporal and spatial scales by addressing the following, overarching research questions (Figure 4):

h. *How well does the NWPS cover the diversity of ecoregions and ecosystems within the US, and where are key areas of ecological importance that remain unprotected?*

i. *Are wilderness and protected areas sufficiently large, distributed, and connected to support long-term viability of biodiversity and critical (human) life support systems?*

j. *What are the benefits and limitations of wilderness for supporting fish and wildlife biodiversity and related human uses (e.g., subsistence)? (Link to RPA4)*

RPA2. Climate Change and Disturbance (labeled as "Climate change"): Improve knowledge about the impacts and consequences of climate change and climate-disturbance interactions, including wildland fire, relevant to wilderness stewardship. This RPA includes research topics: *"Effects of climate change in wilderness," "Disturbance in wilderness,"* and *"Wilderness as a control to understand the effects of management actions outside of wilderness."* To address RPA2, the Leopold Institute will advance knowledge related to climate change, disturbance, and wilderness by addressing the following, overarching research questions (Figure 4):

a. *How do climate change and climate-mediated disturbances, such as fire, affect biodiversity, ecosystem processes, and connectivity in wilderness? (Link to RPA1)*

b. *How does wilderness contribute to a broader understanding of the effects of climate change and climate-disturbance interactions on landscapes, ecosystems, and people?*

c. *Do wilderness areas serve as climate refugia and/or stepping stones for biodiversity at multiple scales, and if so, how? (Link to RPA1)*

d. *How will climate change affect human–nature relationships within the wilderness context? (Link to RPA4)*

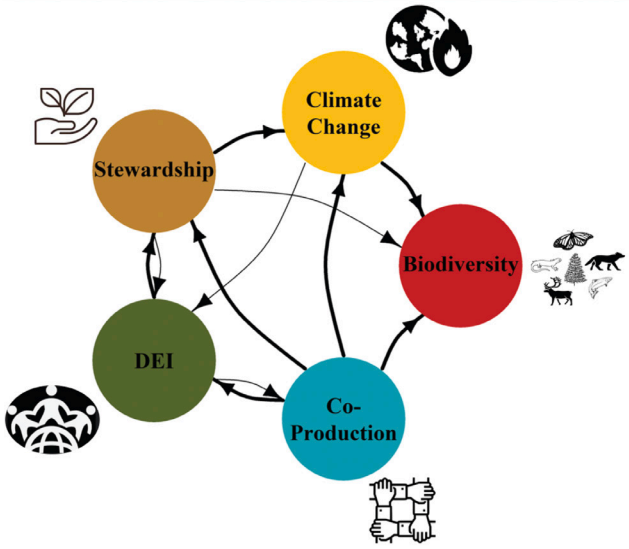


Figure 4 - Linkages (arrows) between research questions within the Leopold Institute Research Priority Areas (see Figure 3). RPAs with linkages have research questions that are interconnected. Thicker arrows represent multiple research questions within an RPA that connects with another RPA.

RPA3. Stewardship Effectiveness (labeled as "Stewardship"): Examine the effects and effectiveness of wilderness stewardship decisions, including the potential for and effects of management interventions. This RPA includes research topics: *"Evaluating the effectiveness of stewardship and management of wilderness"* and *"Ecological interventions in wilderness."* To address RPA3, the Leopold Institute will develop an understanding about the effectiveness of and opportunities for wilderness management interventions and other decisions, in the context of climate change and other drivers, by addressing the following, overarching questions (Figure 4):

a. *What is the spatial and temporal variation in management objectives and interventions across the NWPS?*

b. *How do wilderness stewardship decisions and practices affect wilderness character, visitor preference, biodiversity, and ecosystem function? (Link to RPA1, RPA4, and RPA 5)*

c. *What are the short- and long-term social-ecological trade-offs (benefits and costs) of resisting, accepting, or directing wilderness ecosystems in the context of climate change? (Link to RPA2)*

RPA4. Relevance and Inclusivity (labeled as "DEI"): Expand our understanding of wilderness relevance, experiences, inclusivity, and use amid social-ecological change. This RPA includes research topics: *"Trends in wilderness use," "The wilderness experience and visitor preferences," "Diversity, equity, and inclusion in wilderness,"* and *"The unique value and needs of wilderness in Alaska."* To address RPA4, the Leopold Institute will advance knowledge around wilderness use, experience, and relevance relative to a changing society by addressing the following, overarching research questions (Figure 4):

a. *What is the relevancy of wilderness to a diverse America, and how has that changed over time?*

b. *How do underrepresented and underserved communities define and engage with wilderness and what social-ecological factors affect their relationships with wilderness?*

c. *What is the impact of DEI wilderness programming, and how can wilderness managers increase inclusive use of, and experience in, wilderness for historically excluded groups? (Link to RPA3)*

d. *How does the Alaska National Interest Lands Conservation Act interact with the Wilderness Act and affect the wilderness use opportunity? (Link to RPA3 and RPA5).*

RPA5. Shared Stewardship (labeled as "Co-production"): Improve our understanding of co-production approaches and abilities to harmonize multiple knowledge systems toward more inclusive wilderness stewardship. This RPA includes research topics: *"Integration of multiple knowledge/value systems"* and *"Opportunities/Challenges for developing partnerships for shared stewardship of wilderness."* To address RPA5, the Leopold Institute will advance knowledge around harmonizing multiple ways of knowing to support co-producing wilderness stewardship by addressing the following, overarching research questions (Figure 4):

a. *How can Western and Indigenous knowledge systems be harmonized to create a more inclusive and richer understanding of wilderness character and improve best practices for wilderness research, stewardship, and management interventions? (Link to RPA1, RPA2, RPA3, and RPA4)*

b. *How/what does co-produced stewardship look like in practice? And how can we leverage this understanding to improve wilderness research, stewardship, and planning efforts? (Link to RPA1, RPA2, RPA3, RPA4)*

"...we recognized that wilderness stewardship is complex; wilderness areas are part of the larger social, cultural, political, and ecological landscapes in which they exist. In addition, the benefits, values, threats to, and stewardship of wilderness commonly have social and ecological opportunities and consequences both within and outside of wilderness."

Discussion

In developing our strategic plan, we recognized that wilderness stewardship is complex; wilderness areas are part of the larger social, cultural, political, and ecological landscapes in which they exist. In addition, the benefits, values, threats to, and stewardship of wilderness commonly have social and ecological opportunities and consequences both within and outside of wilderness. Further, while there is obvious benefit in both basic and applied science, the Leopold Institute leans toward applied research that supports stewardship of the NWPS. Therefore, we strived to develop broad RPAs that have an interdisciplinary focus, and that are inclusive of managerial, ecological, and social perspectives. Here, we discuss the relevance of our chosen RPAs in the context of wilderness science and regional, national, and international priorities.

RPA1: Biodiversity Conservation

Biodiversity is essential for the functioning of ecosystems and human well-being. The Millennium Ecosystem Assessment (2005) highlighted the consequences of biodiversity loss as well as the degradation of ecosystem functionality. Therefore, the conservation of biological diversity (including genetic, species, biological communities, ecosystems, processes, and landscapes) has become an increasingly important goal globally, and specifically for many protected areas, including wilderness (Mittermeier et al. 2003). Effective stewardship of biodiversity requires understanding the patterns of biodiversity across and among wilderness and similarly protected areas, the mechanisms underlying the persistence of biodiversity in a wilderness setting, the effects of wilderness management on biodiversity and natural-resource-dependent people, the role of wilderness areas as potential hubs of biodiversity in a diverse matrix of land ownership and management, and conversely, the limitations of wilderness designations to protect biodiversity.

Areas designated as wilderness (the NWPS within the US, and IUCN Category Ib, internationally) receive a strict form of protection. This level of protection may promote and protect biodiversity by providing safe havens, or refugia, for animals and plants and be particularly important for species of conserva-

tion concern under increasing environmental stress (Watson et al. 2014; Pacifici et al. 2020). If protected and connected by corridors, wilderness may help mediate the effects of fragmentation and climate change, allow for the natural flow of ecological processes, and maintain gene flow and species viability (Belote et al. 2016). Wilderness areas provide an opportunity to investigate what may be one of the best-case scenarios for species persistence, maintenance of biodiversity, and ecosystem function in an era of unprecedented change.

RPA2: Climate Change and Disturbance

Earth's average surface temperature has risen about one degree Celsius since the late 19th century, driven largely by increased carbon dioxide emission and other human activities (Marcott et al. 2013). Human influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years, with most of the warming occurring in the past 40 years (IPCC 2021). Climate change affects ecological systems via direct impacts such as drought and glacial melt, as well as indirectly through changes in disturbance regimes. The protection of landscapes relatively free from direct alteration by modern development, such as wilderness, may buffer impacts of climate change. This buffering capacity could be localized, whereas wilderness provides refuge for climate-sensitive species. It may also be broad scale with benefits to society outside wilderness boundaries, such as water retention that buffers floods and drought and carbon storage. In addition, wilderness has the potential to provide a reference point, or research control, for understanding how changes in broad-scale drivers affect landscapes that are both less and more impacted by modern development.

Climate change is resulting in increases in area burned by wildland fire in the western United States and North American boreal forests including Alaska (Kasischke and Turetsky 2006; Abatzoglou and Williams 2016; Parks and Abatzoglou 2020), which is arguably one of the most pervasive and prevalent disturbance agents affecting both wilderness and nonwilderness globally (Bowman et al. 2009). Recent wildfires in the western United States and Alaska are thought to have burned in a manner that is considered "uncharacteristically severe" compared to fires that burned in past centuries (Duffy et al. 2005; Mallek et al. 2013; Haugo et al. 2019). As wildfire increasingly threatens ecosystem sustainability and communities broadly, lessons learned from fire in wilderness may help more effectively understand and manage fires outside of wilderness.

The impacts of a changing climate on how people interact with, and experience, wilderness resources are likely to be significant. Social impacts of climate change on wilderness spans a diversity of people, economies, and values. For example, peak season and travel patterns could be affected, as well as recreation opportunities, cultural resources, and distribution of fish and game species. Furthermore, it is unclear how climate change will impact different groups of people disproportionately when wilderness is, for instance, traditional homelands of Indigenous Americans, a place to connect to the natural world for urban Americans, and a hazard to forest-proximate residents concerned about

wildfire. Understanding how climate change will impact wilderness ecosystems, as well as people's relationships with wilderness, can provide stewards with the knowledge and feasibility of potential adaptation approaches. Increasing wilderness-relevant climate change knowledge can inform best practices for stewardship of wilderness recreation, help us understand the relevance of wilderness for broader society, and ultimately may promote the preservation of wilderness areas in general.

RPA3: Stewardship Effectiveness

The 1964 Wilderness Act and subsequent wilderness legislation identify wilderness as "an area where the earth and its community of life are untrammeled by man" and "retaining its primeval character and influence." The Wilderness Act further directs that wilderness be "protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; and (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation."

Values related to both naturalness and wildness are central to the wilderness concept (Cole and Yung 2012). However, managers and scientists have increasingly questioned the feasibility and meaning of maintaining naturalness, as historically defined, in wilderness (Landres et al. 2000). There is a growing awareness that (1) past Indigenous land management practices often produced the landscapes identified today as "wilderness," and (2) Indigenous Knowledge can broaden understanding of natural ecosystems (Fletcher et al. 2021). Contrary to earlier assumptions that natural ecosystems are stable and self-regulating, scientists now know that natural ecosystems are highly dynamic. Scientists also now know most of the world's ecosystems, including the most remote wilderness areas, have been modified to some extent by human activity. Considering increased knowledge about historical and current human influence on wilderness areas, "naturalness" may no longer fully capture the evolving and expanding perspectives on wilderness values. Human activities, including climate change, are altering wilderness ecosystems, and therefore managers must decide if intervention(s) may be appropriate (Hobbs et al. 2010).

Management decisions, both inside and outside wilderness areas can affect the structure and functioning of wilderness ecosystems. Understanding the cascading effects of these decisions across spatial and temporal scales can inform how management actions are influencing wilderness character and help target passive management activities that promote biodiversity conservation and ecosystem function across wilderness boundaries. Restoring and/or maintaining the natural function of ecosystems, particularly in the face of climate change, may involve management interventions that create trade-offs in wilderness qualities on different time scales. Understanding trade-offs between the costs and benefits of implementing management interventions, as well as the temporal scale of impacts to wilderness character associated with management inside of wilderness, may help prioritize whether, and if so, which,

management interventions are necessary to preserve wilderness character for future generations.

RPA4: Relevance and Inclusivity

The opening lines of the Wilderness Act state: "An Act to establish a National Wilderness Preservation System for the permanent good of the whole people." Today, we have yet to meet that ideal. There remain varying opportunities, or lack thereof, to access wilderness for people who were historically excluded from wilderness; for example, Indigenous Americans, people of color, immigrants and new Americans, people with disabilities, and people who identify as LGBTQIA+. The study of diversity, equity, and inclusion in wilderness is especially important when you consider the origins of wilderness in contrast to our increasingly diverse society.

There is a long history of forced removal of Indigenous Americans and other people of color from lands that became wilderness. Early romantic ideals of wilderness conceptualized a place devoid of humans, mostly in the western United States, that is often inaccessible to all except the "rugged" individual – for most of recent history, white, upper-class men (e.g., Stankey 1989; Deluca and Demo 2001; Johnson et al. 2004; Corliss 2019; Davis 2019). This, in part, is an artifact of who had political power, and who counted or could vote at the time wilderness designations were made. Further, shifts in demography, changes in technology, environmental changes, variation in uses, and an emerging understanding of the traditional knowledge that shaped the environment settled by Europeans all bring opportunity and complexity to wilderness stewardship. Adding to the complexity and opportunity, wilderness areas in Alaska, totaling more than 57 million acres (23,067,081 ha) or just over half of the NWPS, are legislatively mandated through the 1980 Alaska National Interest Lands Conservation Act as "inhabited wilderness," particularly as it relates to subsistence use by rural residents (Starkey 2016).

A better understanding of the evolution of wilderness values, uses, and experiences as well as improved delivery of wilderness benefits is needed to foster wilderness stewardship that protects opportunities for all Americans. This includes evaluating temporal and spatial trends in use, how experiences and trends vary based on social-ecological factors, and the preferences, barriers, and incentives to wilderness access for communities that have been historically excluded from and/or underserved with respect to federally designated wilderness. Improved information on how societal demographics are changing and how those changes impact the way people value and use wilderness has important implications for successful wilderness stewardship and improving the relevancy of wilderness.

RPA5: Shared Stewardship

Co-production brings together people with different knowledge, expertise, and experiences to determine specific problems and to cooperatively define the scope and context of those problems (e.g., Campbell et al. 2016). The co-production process includes identifying potential research questions and research methods, and make scientific inferences and develop strategies to address those problems. Co-production acknowledges the interdependence between fact and values,

with an overarching goal to build investment in both knowledge and outcomes and requires that all partners are willing to engage with humility and are open to ideas different from their own. Wilderness research and stewardship may benefit from participation of multiple partners who are invested in problem development and improved outcomes; however, such co-produced work is often challenging to put into practice given that partners have different life experiences, values systems, worldviews, and areas of expertise.

Research and management decisions are often made without directly incorporating multiple worldviews. Biocultural approaches to wilderness stewardship aim to consider the diversity of life in all its manifestations, thereby acknowledging a plurality of worldviews and human–nature interactions (Gavin et al. 2015). Such approaches are particularly inclusive of different ways of knowing, including local ecological knowledge, cultural values, traditional practices, and natural scientific knowledge. Harmonization of multiple ways of knowing through a biocultural lens would increase our understanding of wilderness use, experience, importance, and the very meaning of wilderness. The Leopold Institute is committed to using, and advancing through research, a biocultural lens to co-produce wilderness stewardship with a diversity of partners, including managers of wilderness, Indigenous tribes and community members, scientists, policy makers, NGOs, interested publics, and others.

Translating Research Needs into a Strategic Plan and Science Charter

Firsthand experience of several coauthors has shown us that strategic planning efforts often successfully identify an extensive "library" of needs and equally often fall short of the hard decision-making needed to move from that extensive list to strategic, priority-based, capacity-relevant, program direction. The Leopold Institute, consisting of five research-grade scientists and several supporting scientists and staff, is charged with development and dissemination of knowledge needed to steward the 112-million-acre (44,920,106-ha) NWPS, all 800+ units managed by two US Departments and four agencies, from Puerto Rico to Alaska. The scope of this responsibility compared to the size of our team dictates that it is not possible for us to address all wilderness research needs. Therefore, establishing focal research themes that addressed the highest priority needs was essential to advancing a sustainable and relevant program of work.

Our intention in developing a new strategic plan for the Leopold Institute was to identify roughly five Research Priority Areas. Our process to get there was supported largely through the science and logistics around deploying Q-methodology, followed by deliberate program leadership decision-making. In this way the Leopold Institute engaged in a stepwise effort, which included almost 200 partners, to identify five Research Priority Areas from an initial list of more than 200 potential research questions. We acknowledge that our final Research Priority Areas will not align with all partners' priority research needs. Five Research Priority Areas, with three to five overarching questions each, is well short of 200 potential questions, which in turn is likely well short of the actual need, both nationally and globally. In the end, we strived to develop broad RPAs that have an interdisciplinary focus; are inclusive of managerial, ecological, and

social perspectives; and that could be addressed based on expertise and opportunity at the Leopold Institute. We are hopeful that our inclusive approach to developing a strategic plan and science charter at the Leopold Institute will help ensure that our research efforts address the most pressing questions and generate meaningful knowledge related to wilderness and wilderness stewardship over the next decade. IJW

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JASON J. TAYLOR is director of the Aldo Leopold Wilderness Research Institute (ALWRI) and a landscape ecologist with more than 20 years of federal and local government service.

TERESA N. HOLLINGSWORTH is deputy director of ALWRI and a plant ecologist with experience in disturbance-driven ecosystem ecology.

CHRISTOPHER A. ARMATAS is a research social scientist at ALWRI focused on wildlands stewardship through a social-ecological lens.

KELLIE J. CARIM is a research ecologist at ALWRI focused on population structure, and persistence of aquatic species.

KIRA L. HEFTY is a biological scientist at ALWRI with a background in wildlife distribution, biodiversity, and landscape connectivity modeling.

OLGA HELMY is a science delivery specialist at ALWRI with a background in graphic design, data visualization, and interpretive writing to communicate science to diverse audiences.

LISA M. HOLSINGER was an ecologist at ALWRI with more than 15 years' experience conducting geospatial analyses of natural resources.

DANETTE PAIGE is a support services specialist at ALWRI and the initial contact for visitors to the institute.

SEAN A. PARKS is a research ecologist at ALWRI focused on changes in fire regimes within and outside wilderness.

LAUREN E. REDMORE is a research social scientist at ALWRI focused on the relationships between people and the environment with consideration for wider historical and political contexts.

JACLYN F. RUSHING is a social scientist at ALWRI with a background in recreation and protected areas management.

ERANA J. TAYLOR is a postdoctoral research ecologist at ALWRI focused on climate change adaptation in wilderness.

KATHERINE A. ZELLER is a research biologist at ALWRI focused on integration of spatial ecology, landscape ecology, wildlife biology, and biostatistics.

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Shifting Baseline Syndrome among Whitewater Outfitters and Guides: Implications for Conservation and Wilderness-Focused Enterprises

by HOWARD L. SMITH, ROBERT G. DVORAK, MICHAEL TUREK, and RICHARD DISCENZA

Howard L. Smith

Robert G. Dvorak

Michael Turek

Richard Discenza

The COVID-19 pandemic reintroduced people to semi-wild lands and bona fide wilderness as a way to achieve refuge from society-induced lockdowns and self-quarantine (Hansman 2020). For many, the pursuit of outdoor adventures in the pandemic/post-pandemic era represented a refreshing return to past experiences such as camping under the stars, hiking a trail, birding around an alluring lake, rafting a frothing river, or another activity they were accustomed to away from home (Rice et al. 2020). For others, their path to the outdoors was entirely new and by no means a "reintroduction." These new sojourners inevitably appreciated wildness and the natural environment in a new light; an experience not related to a past observed baseline but rather informed by various facts, falsehoods, attitudes, myths, and legends about wildness conveyed in the media and on the internet as well as by social communication among family, friends, and acquaintances (Watkins 2021).

Biological degradation and widespread habitat loss driven by climate change coupled with heightened population impact are challenging the very integrity of wilderness. Less outdoor-experienced visitors may not be as sensitive to these environmental changes due to so-called generational amnesia (Jones et al. 2019) where prior generations' knowledge vanishes when younger generations are not informed, lack pertinent experiences, or otherwise overlook key information that older generations attempt to transmit to them. More outdoor-experienced people may also suffer a type of personal amnesia as they attempt to cope with environmental change (Papworth et al. 2009). It may be easier, even necessary, for outdoor-experienced people to conveniently forget details about prior environmental conditions simply to cope with the current environmental changes confronting them. Together these generational and personal forms of amnesia can be conceptualized as a "shifting baseline syndrome" (hereafter SBS); that is, biological change is inaccurately perceived. In essence, when SBS is present, people tend to see biological change as less severe or interpret gradual change as an accepted norm. The condition of the natural environment is misinterpreted due to the lack of information, perspective, or experience with past conditions. Most importantly, the existence of SBS engenders a dilemma that threatens society's ability to address conservation and environmental crises.

SBS initially was explored from the perspective of fisheries and ocean ecology (Pauly 1995) as well as landscape architecture (McHarg 1969). Eventually, SBS became generalized to represent widespread change affecting society (Olson 2002). Although SBS has deep roots in ecology, conservation, and wilderness-related literature, limited understanding exists about the impact of SBS on those professionals and outdoor providers who safely guide the public through the vicissitudes of wilderness travel and experience. Research has almost exclusively used a public-level natural resources/conservation focus while eschewing interest in commercial operators and concessionaires. It can be argued that those working in environmental- and conservation-related enterprises/entities should be the least likely candidates to experience either generational or personal amnesia linked to SBS. However, the SBS literature highlights that stakeholders active in the environmental and conservation arenas are equally susceptible to the "extinction of experience" (Hathow et al. 2019; Wu et al. 2011; Soga and Gaston 2018) and may develop an increased tolerance for degraded conditions (Bilney 2014; Pauly 1995; Vera 2010).

Arguments can be made about the resistance of SBS developing in wilderness outfitters, guides, rangers, resource managers, and others. On the one hand, they can be intimately connected with the natural environment and thus personally witness the realities of environmental and biological changes occurring around them. With frequent field experiences, they should be less likely to develop SBS because of their immediate awareness of environmental change, however subtle it may be. On the other hand, personally intense environmental perceptions can erode over time as constant challenges to

the environment accumulate. These professionals and practitioners may gradually adapt their perceptions to accommodate changes that they are forced to accept over time.

This article explores the SBS phenomenon among whitewater guides and outfitters and examines the implications for wilderness stewardship and conservation. Competitive business strategies used by Colorado whitewater outfitters to maintain their firms' sustainability were studied longitudinally to ascertain the extent of change. Shifts in essential business strategies such as protecting client safety, expanding services/products, and maintaining websites as a key marketing effort were examined from the perspective of SBS; specifically, how and in what ways outfitters respond to mounting environmentally related challenges in the whitewater rafting sector relative to these strategies.

If concessionaires/outfitters are progressively compromising on key business processes such as internet design and content, service expansion, or service quality due to coping with persistent SBS-related environmental pressures, it may be appropriate for them, professional associations, governmental agencies, and advocacy groups to consider possible remedies, enlightened policies, and supportive assistance. This study's findings regarding whitewater outfitters may offer preliminary evidence about the need to build an agenda of interventions that address SBS-related erosion of recreational experiences by conservation professionals and wilderness stakeholders.

Studying Shifting Baseline Syndrome

The state of Colorado has diverse and vibrant river systems as well as very active and well-regarded outdoor professional associations advocating for members. For example, the Colorado River Outfitters Association (CROA) represents approximately 50 members who benefit from the organization's political advocacy and technical assistance. CROA's website (https://www.croa.org/) gives the public an opportunity to choose among outfitters who serve 20 rivers. In addition, the website provides access to video tutorials on whitewater safety, river comfort, river ratings, and river management agencies. CROA offers an annual convention for its members focusing on key current topics such as river licensing, pricing, and risk management, and it sponsors an "Annual Commercial River Report" containing a wealth of information about river use and economic indices. In sum, due to its advocacy and member support, CROA creates a strong setting for investigating the SBS among whitewater guides and outfitters.

Website assessment is a prevalent research approach in the recreation, hospitality, and tourism fields (Ip et al. 2011). To explore the influence of SBS among whitewater guides and outfitters, the websites of 44 Colorado whitewater rafting firms were examined in 2005 and 2022.

The overall framework for this study draws from classical business literature (cf. Porter 1980; Hart et al. 2003) underscoring that firms respond to changing external pressures by altering their competitive strategies and tactics to remain profitable. For example, when the outdoor action camera industry grew rapidly from 2005 to 2015 with the advent of GoPro's "Hero" line, competi-

Figure 1 – Raft master's guided whitewater rafting on the Arkansas River through the Royal Gorge in Canon City, CO. Photo by Jackalope West on Unsplash.

tors shifted their business strategies by rapidly adding features (product diversification), offering applications (service diversification), and lowering prices (value proposition management) to address the technological disruption. Nonetheless, by 2016 the industry was in rapid decline because the external environment changed dramatically as smartphones gave customers not only an excellent camera but also a direct connection to social media for sharing video content. The disruption for action cameras is in many respects analogous to rapid climate change that now confronts whitewater rafting firms and thus could be creating SBS.

The investigation focused on five strategies with accompanying tactics that operationalize each strategy shown in Table 1. Outfitters utilize three main strategies: safety (e.g., they maintain a clean record for accidents and client injury/death), product/service diversification (e.g., they add amenities to their trips such as gourmet meals and kayaking), and value proposition management (e.g., they lower costs and prices to give more value) to attract more whitewater clients and thus achieve sustainability. Outfitters and guides use two additional strategies in trying to attract clients: networking relationships (they form partnerships with various corollary recreation/hospitality entities such as inns, motels, and restaurants to support clients), and firm credibility (e.g., they use brochures, websites, and associated information dissemination to embellish clients' knowledge about their firms essential for informed consumer

purchase decisions). As rapid climate change increasingly takes attention from outfitters, they may either shift their perceptual baseline to lower their concern about the change (i.e., enact SBS) and/or they may redirect attention from managing their strategies/tactics to the climate change thus neglecting best business practices (and in the process creating business-centric SBS).

Tactics related to firm strategies were analyzed (verified by two of the authors to ensure reliability) for change over time. These tactics were assessed utilizing information presented on each firm's website and assigning a value using a seven-point Likert scale (1 = strongly not present/disagree; 7 = strongly present/agree) based on prior research methodology (Kline et al. 2005; Crawford et al. 2013). As an illustration, with respect to the tactic of equipment safety, each firm's entire website was studied to identify specific references to the type of rafts that are used and explanations regarding why those rafts are advantageous (e.g., not only for having fun when running a river but also ensuring that clients would survive catastrophes such as "flips" or "swims"). Equipment was broadly defined to include personal flotation devices, emergency equipment (e.g., satellite telephones), accompanying guide kayaks to assist in rescue, and assorted gear that may not be required by regulatory bodies but is indicative of prudent concern about client safety.

It is informative to note that in 2005, 44 firms were assessed compared to 37 firms in 2022 due to fewer firms listed by the CROA. Possible explanations for attrition include consolidation among firms, inconsistent river flows due to climate change that chase firms out of business, the pandemic in 2020–2021, growing regulatory constraints (e.g., permitting limitations), economic and financial factors, and generational changes (e.g., outfitters retiring from the business).

Results

Table 2 presents descriptive statistics for the assessment of each whitewater firm's strategies and tactics during 2005 and 2022. The 2005 data indicate that the firms were rated highly (using the seven-point scale: >4.50) on 8 of the 13 (61.5%) tactics, especially regarding service diversification (6.82) and pricing (6.18). The firms were rated lowest in 2005 for client participation (2.68), website currency (3.16), use of testimonials (3.23), and sharing links to other important related organizations (3.39). Overall, the firms were rated highest for strategies pertaining to client safety, product/service differentiation, and value proposition.

A different overall impression surfaced for the 2022 data. The highest ratings (using the seven-point scale: >4.50) for tactics included length of operations (5.22) and pricing (5.03) along with added amenities (4.95), service diversification (4.95), and site currency (4.54). The product/service diversification strategy had two tactics that were rated as relatively high (4.95). The lowest-rated tactics were firm responsiveness to client queries (3.16) and equipment safety (3.38). A total of 8 of 13 tactics were rated as neutral (4.00) or higher in 2022, equivalent to the 2005 assessment. Only 5 of 13 (38.5%) firms recorded ratings greater than 4.50 in 2022 compared to 8 of 13 (61.5%) in 2005. By contrast only two tactics, client

Colorado whitewater rafting company strategy and tactic variables

Strategies	Tactics	Examples of Indicators Used to Assess Tactics (Extent of Website Detail About Each Tactic)
Client Safety		
	Equipment Safety	Type/quality of rafts; flotation devices; emergency gear
	Guide Training	Certifications; river miles covered; #/type of rivers rowed
Product/Service Diversification		
	Added Amenities	Special meals & trip themes; glamping; lodging; gear
	Services	Personal trips; fishing; hiking; other rivers; photography
Value Proposition		
	Pricing	Explanations of pricing; bundled services; discounts
	Participation	Spectator vs. active crew roles; client vs. team member
	Responsiveness	#/type of clever ways for clients to engage with firm
Networking Relationships		
	Links	Referrals to lodging, transportation, sites of interest
	Professional Assoc.	#/type of relations with industry & regulatory entities
Firm (Street) Credibility		
	Age of Operations	Year (and convincing facts) the firm was founded
	Testimonials	#/type/ingenuity in displaying client recommendations
	Website Impression	Professional presentation; innovation; simulation
	Site Currency	Latest date that website was created/updated

Table 1 – Colorado whitewater rafting company strategy and tactic variables

Colorado whitewater rafting company strategy comparisons: 2005 versus 2022

	Strategy Assessment 2005					Strategy Assessment 2022					
Strategies	n	Min	Max	Mean	SD	n	Min	Max	Mean	SD	P-value
Client Safety											
Equipment Safety	44	1	7	4.84	1.90	37	1	7	3.38	2.18	0.00**
Guide Training	44	1	7	5.25	2.03	37	1	7	3.97	2.41	0.00**
Product/Service Diversification											
Added Amenities	44	1	7	4.66	2.07	37	1	7	4.95	1.97	0.75
Services	44	6	7	6.82	0.40	37	1	7	4.95	2.03	0.00**
Value Proposition											
Pricing	44	1	7	6.18	1.56	37	3	7	5.03	1.61	0.00**
Participation	44	1	7	2.68	2.19	37	1	7	3.41	2.14	0.22
Responsiveness	44	1	7	5.59	1.63	37	1	7	3.16	1.92	0.00**
Networking Relationships											
Links	44	1	7	3.39	2.19	37	1	7	4.32	2.33	0.11
Professional Assoc.	44	1	7	3.70	2.45	37	1	7	4.19	2.17	0.52
Firm (Street) Credibility											
Length of Operations	44	1	7	5.30	2.43	37	1	7	5.22	2.10	0.58
Testimonials	44	1	7	3.23	2.54	37	1	7	3.92	2.03	0,30
Website Impression	44	1	7	5.50	1.65	37	1	7	4.41	1.94	0.00**
Site Currency	44	1	7	3.16	2.67	37	1	7	4.54	2.85	0.05*

*$p \leq 0.05$

**$p \leq 0.01$

Table 2 – Colorado whitewater rafting company strategy comparisons: 2005 versus 2022

responsiveness (3.16) and equipment safety (3.38) in 2022 were rated equal to or below 3.39 versus the four lowest-rated tactics in 2005 (i.e., client participation, website currency, use of testimonials, and sharing links).

The average mean score for the 13 tactics in 2005 is 4.61 compared to an average mean score of 4.27 in 2022, suggesting that the whitewater rafting firms were not extensively maintaining their websites (i.e., updating/improving existing content, integrating new information, redesigning the site, incorporating technological innovations, building client relationships, and promoting ease of access). Diminishing maintenance can erode website effectiveness as far as convincing readers/prospective clients about safety, product/service diversification, value proposition, network relationships, and firm credibility. Decreasing attention to website effectiveness is captured quite clearly as 6 of the 13 (46.2%) tactics in 2022 were rated lower than in 2005 at a level of statistical significance $p < 0.001$: equipment safety, guide training, service diversification, pricing, client responsiveness, and website impression.

Alarmingly, the greatest consistent decline in tactics occurred for client safety and value proposition, tactics that are certainly very important to clients who want good value for their dollar while at the same time seeking a safe float. Clients who have never rafted a river before, or never floated a particular river usually have active anxiety about what to expect and whether they will return safely. Outfitters have to assuage this anxiety in order to secure the person as a paying customer. An effective way to temper this anxiety is by informing them through web content, video clips of safety equipment/procedures (à la CROA's video clips), and client testimonials. Value is a preeminent concern among customers in the tough economic times fostered by the pandemic. Whitewater rafting firms are challenged to convince customers that they will derive the most fun and adventurous memory for their dollars.

Only one tactic rating (7.7%) is improved in 2022 compared to 2005 at a statistically significant level: site currency ($p<0.05$). This result suggests that whitewater rafting firms in 2022 were doing a better job of documenting that their website is current compared to 2005. However, documenting website currency is not the same as extensively maintaining website content, integrating technology, facilitating access, stimulating internet client relations, or website redesign. It should be noted that 5 other tactics (38.5%) recorded improved scores but not at a statistically significant level. Thus, 46.2% of the firms were rated as showing improvement in their 2022 tactics compared to 2005 but not at an acceptable statistical threshold.

Colorado whitewater rafting firms showed greater erosion in their tactics rather than improvement for 2022 compared to 2005. A total of 6 tactics showed declines at a statistically significant level while 5 displayed improvements. From a practical viewpoint, the 2022 results merit concern. Three of the firms' five most important strategies related to client safety, product/service diversification, and value proposition appear to have declined. The very essence of a sustainable business model for wilderness-focused enterprises

Figure 2 – Photo by Kelly Wood on Unsplash.

hinges on client safety, product/service diversification, and a viable, as well as competitively functional, client value proposition. In sum, these results deserve careful attention from whitewater rafting firms as they address the substantial challenges facing every wilderness- and conservation-focused enterprise and institution.

Implications for Wilderness Outfitters and Guides

That whitewater firms appear to be neglecting intrinsic enterprise strategies is not all that surprising because people tend to like doing that which they do best (Buckingham 2005). Running rivers, not managing the internet, is consistent with the rugged individualism of American guides and outfitters. On the other hand, their hard-working lives become much more difficult when the businesses they have guided suddenly go out of business. At those moments they realize that attrition is possible in their competitive business environments. This finding appears to be substantiated by the fact that 16% fewer members of the Colorado River Outfitters Association firms operating in 2005 were conspicuously absent 17 years later in 2022.

Attention to good business practices, such as website maintenance and redesign, is an effective way for firms to remain solvent. The internet offers one of the very best value propositions for marketing and building fruitful connections with clients, both past and prospective. Con-

sequently, this study's results imply that degraded/declining internet presence by whitewater firms is a powerful motivation to rethink how investments in websites can pay impressive returns. Most whitewater personnel are out in the field during rafting season while their websites dutifully inform client perceptions despite their absence. Even though outfitters may not enjoy managing their websites, few other options are available that possess such a high payoff as far as attracting and retaining clients.

Client safety, product/service diversification, and managing the client's value proposition form three pillars for successful business strategy among whitewater firms. This study suggests that Colorado whitewater firms could improve the content of their websites that conveys facts and detail about equipment safety and guide training. Within the website analysis, it was easy to distinguish between those firms that made a strong case for client safety and those that did not. Moreover, many firms failed to communicate and underscore the underlying value proposition associated with their pricing. Younger clients are typically very savvy in using websites to compare competitors. Firms in this study could do a better job in explaining why their prices offer value for clients, and they could improve on enabling clients to connect with them. Whitewater firms could be more enthusiastic about making a deeply personal connection with clients, a relationship that is more than simply digital.

"Perhaps foremost is the realization that the phenomenon of shifting baseline syndrome may be impacting the outfitter and guide industry in subtle but often significant ways."

Implications for Wilderness-Focused Enterprises and Public Conservation

Although this study's findings have practical significance for wilderness outfitters and guides as far as competitive strategy and long-run business sustainability, the results also suggest inherent concerns about the future of wilderness experiences and conservation. Perhaps foremost is the realization that the phenomenon of shifting baseline syndrome may be impacting the outfitter and guide industry in subtle but often significant ways. This study raises a question about why whitewater firms are not doing a better job of investing in their main website connection to the public and prospective clients. Is this change explained by SBS? Are professionals in the outfitter and guide industry devoting mental and physical resources to coping with environmental and natural resource change to the detriment of operating their business effectively? Additionally, are conservation and natural resources personnel correspondingly susceptible to SBS?

The many dedicated people who invest themselves in recreational-centered careers, resources management, and outdoor employment face a difficult predicament. Most are devoted to protecting and preserving wildlands at a time when global changes are occurring with greater frequency and much deeper magnitude. Yet these ardent agents have virtually few, if any, resources or discernible strategies for addressing the very problems that loom over them. How long have they been fighting to protect and preserve our forests, mountains, oceans, deserts, rivers, swamps, and Earth? Earth Day began on April 22, 1969. Since that milestone alone, public sensitivity about environmental degradation has been present for more than 50 years. And despite the many victories that have occurred in the intervening 50-some years, powerful, formidable challenges continue to exist.

What about people who have joined in conservation and environmental battles through advocacy, professional management, or as described in this study, as wilderness- and conservation-focused enterprises? What sort of damage and attrition have occurred to them over these decades? Some have experienced burnout and/or possibly post-traumatic syndrome due to drastic environmental changes (Legault 2020). Others may gradually fall prey to SBS whether as a means to cope with the pressures they face or by the necessity to achieve equilibrium with their coworkers or the public they serve. This study's findings about enterprise strategy devolution by Colorado's whitewater rafting guides and outfitters may be illustrating the indirect consequences of SBS. For a host of reasons mentioned earlier, the principals in these firms may experience a form of personal amnesia and neglect of intrinsic enterprise strategies in order to cope with acknowledging an environment that is depressing and constrained.

This study's findings appear to discover the presence of SBS among Colorado whitewater outfitters and guides as an explanation for devolving business strategies associated with their firms. From 2005 until 2022 the data show decreasing emphasis on fundamental strategies that are most related to sustainable enterprises – attention to consumer value proposition, safety, and credibility. This decrease occurs at precisely the time that rather ominous external pressures are increasing such as climate change affecting river systems, economic inflation, and pandemic-driven suppression of client demand. Normally when encountering such threats enterprises increase their attention to, and emphasis on, the most fundamental strategic pillars essential to financial sufficiency. However, the opposite trend was found in this study.

Decreased attention on these fundamental business strategies may be associated with the accumulated stress or pressures accompanying environmental changes in recent years. In this respect, widespread climate change directly affects rafting firms' ability to operate at previous operating levels. As climate change persists it is entirely plausible that outfitters' attention drifts from their business operations to continuing intractable climate problems. Essentially, whitewater guides and outfitters have limited means of controlling these global forces, so they gradu-

ally cope, resulting in a shifting baseline about the weather/climate as well as about inherent business practices in their firm.

Outfitters and guides in this study may also be experiencing generational amnesia; that is, they are not effectively passing their more traditional environmental perceptions to recent professional generations. Generational amnesia implies that new age groups may not be able to conceive of the sublime beauty in rafting down Glen Canyon because they cannot remember or reminisce about what they have not experienced. As elders pass on, new generations lose this memory. If new professional cohorts were able to resurrect or embrace the memories, their baseline might be different from that which they presently experience; their baseline might not shift.

The SBS concept also suggests that outfitters and guides could lose interest in altering their practices because it undermines the rationale to continually revise how they guide, or how their firms conduct business. And when it comes to website design and content, outdoor-focused individuals are more likely to emphasize what they love … rafting rivers rather than managing technology at the home office. Thus, the existence of SBS may not only be significant at the client level but at the guide/outfitter/firm level as well.

Public conservation is at risk when the greater population displays a form of amnesia about how environmental degradation has occurred over the years. Many have capitalized on this amnesia to promote a rosy future about global climate change that now increasingly appears to be catching up with us. By the same token, our ability to safely raft Wild and Scenic Rivers is on the threshold of collapsing as too many want access to what has become too little due to global climate change. In the balance hangs the entirety of conservation and our planet.

We are at a seminal crossroads moment. Currently every potential whitewater client can still dream of someday adventuring to Colorado to experience a thrilling ride through Class 4 and 5 rapids. This dream exists because Wild and Scenic Rivers and lakes belong to all of us, whether we live on a 100-acre ranch or in a rented room. These water resources are a bedrock institution in the US, as critical as the US Bill of Rights.

Understanding SBS can often seem abstract. But, with our current threats to reduced resources, outfitters and clients must decide whether to maintain our powerful natural resource base and whitewater experiences for all or to relegate this unique participatory opportunity to the wealthy and well-connected. The time to decide is now. In the balance hangs the entirety of whitewater rafting, conservation, and our planet. ijw

HOWARD L. SMITH is a professor in the Milgard School of Business at the University of Washington Tacoma; email: smithhl@uw.edu.

RICHARD DISCENZA is a professor and dean emeritus at the University of Colorado at Colorado Springs; email: rdiscenz@uccs.edu.

ROBERT G. DVORAK is editor in chief of IJW and professor in the Department of Recreation, Parks, and Leisure Services Administration at Central Michigan University; email: dvora1rg@cmich.edu.

MICHAELTUREK is an assistant teaching professor of Business Analytics at the Milgard School of Business, University of Washington Tacoma. Michael serves as director of analytics programs and is an associate director for the Milgard Center for Business Analytics; email: turekmd@uw.edu.

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Bandhavgarh National Park. **Photo Credit:** Suyash Keshari.

Wilderness Vignettes: India's Tigers

by SUYASH KESHARI and BHAVNA MENON

EDITOR'S NOTE: Bandhavgarh National Park is in the heart of Central India. It is spread across 1,538 square kilometers, and has one of the highest densities of tigers in the world. It also hosts more than 40 species of mammals and 250 species of birds. Suyash spends 250+ days inside this park and has grown up in the region. He knows the landscape inside out and has a deep understanding of its wildlife. He has followed many tigers since they were just cubs, all the way to adulthood.

The Story of Tigress Solo

by Suyash Kehshari

If there is any individual that has had a decisive role to play in my personal and professional life – besides family – it has to be tigress Solo. I had known her since she was a cub herself and followed her life for almost eight years. We grew up together. Her mother was the first tiger I saw in Bandhavgarh National Park, and I followed her for nearly a decade before she passed away. I witnessed Solo overtaking her mother's territory. I spent countless hours with her or in search of her. Through this tigress, I learned the importance of family, of living in the moment, being ruthlessly loyal and ambitious but at the same time caring and loving. I saw her miss 10, maybe 15 hunts before successfully bringing down her prey – each

Suyash Keshari

"Never had I ever felt such a boundless and inseparable connection as I felt in that moment with Solo."

Figure 1 – Tigress Solo after the fight. Photo by Suyash Keshari.

failed attempt bringing her closer to starvation. Through this I learned to never give up. A tigress taught me all this and more. A tigress called Solo. In October 2020, Solo was poisoned. This is her story.

Solo was born to Rajbehra female – a tigress famed among safari goers across the world – she was quite the showstopper at the time, controlling one of the most extensive and pristine territories in Bandhavgarh National Park. Solo and her three siblings – two females and a male – were born in 2012 in a deep cave that Rajbehra's mother, Jhurjhura, had frequented. While Solo's mother, Rajbehra, and grandmother, Jhurjhura, were named after the areas they resided in, Solo got her name because of the behavior she displayed from a very young age – the tendency to be independent, venture away from her siblings in curious pursuits and be alone – being the solo female among a litter of four. As I continued to delve deeper into Solo's life, I started recognizing her movement patterns and routines. I understood which game trails and paths she preferred most, and even which she avoided due to thorny bushes or uneven ground. I learned of her favorite waterholes, caves for resting, and trees for scent marking. All this helped me learn about her movement patterns in such detail that it became easier to predict where she would be seen next. Tigers prefer the path of least resistance and love to walk on the soft sandy safari tracks in Bandhavgarh. The game trails and pugdundees used by Solo almost always led to a road, where her pugmarks would indicate if she has passed recently or some time ago. If you are a seasoned tracker, you can easily tell if a pugmark is fresh, if it

Figure 2 – Solo and Bamera sizing each other up. Male tigers are noticeably bigger than female. Photo by Suyash Keshari.

belongs to a male or female, and whether the tiger is walking, trotting, or running. Tigers are highly solitary cats and separate from their mothers within two to three years of birth. As Solo grew bigger and stronger, she pushed out her siblings to other territories and slowly captured her mother's area – secluding Rajbehra to a small pocket of the forest where she would spend the rest of her life.

Just as Solo was beginning to establish her dynasty, trouble ensued. Her first litter of cubs were killed within a few weeks of birth. It is unclear who fathered these cubs – much of the lives of tigers remains secret – but it was confirmed that a male named Mangu killed them. It was incredibly tragic, but in the jungles, it is about the survival of the fittest. Male tigers who do not father the cubs will kill them and mate with the female to ensure the future of their own progeny. Its nature's brutal way of ensuring the balance. Solo's second litter of five cubs were born in mid-2018, fathered by Mangu. One of them was born weak and passed away within two weeks of birth. After this loss and that of her first litter, Solo's personality became more aggressive toward other tigers, and it culminated into one of the most difficult sightings of my life.

It was January 4, 2019. Solo was now about seven years old. I was in the Sehra grassland area of her territory when alarm calls of Sambhar deer alerted me to a big cat's presence. In the distance, we saw a bulky figure approaching the base of a hill where Solo kept her cubs – who were just about two months old. As we approached the figure, it gave itself away as a male tiger known as Bamera Son. With his fluffy winter coat and mane in full glory, he

Figure 3 – Solo and Bamera. Photo by Suyash Keshari.

looked bigger than ever. Though a beautiful sight, I was instantly alarmed because he was not the father of Solo's cubs and trespassing in her favorite area. Within a few minutes, he picked up on Solo's scent, and made his way toward her cave. And then everything happened with incredible speed. In an instant flash of blood and fury, Solo came thrashing down from the hill, almost crashing into Bamera Son, the forest around seemed to be shattering with the roaring sounds of the two tigers. It felt like the ground was shaking, and my legs began to give way in the jeep. The tigers were enveloped by thick bamboo, but the fight continued harder than ever, evident from the shaking of foliage as the two tussled about. At some point, the two separated, and Bamera Son made a dash for the road, with Solo in tow. Bamera Son's mouth was bleeding, but what I saw next haunts me till this day – Solo, trotting behind him with her chest ripped open, skin hanging down and blood oozing out. As the two came onto the road, Bamera Son crouched down in a show of submission, bringing the fight to a decisive victory for the female, but at a massive cost. Solo continued to size him up, determined to push him away. Despite being half his size, she had somehow managed to defeat him and save her cubs. Bamera Son submitted to her once he realized that she would fight till death. My eyes were full of tears, and my hands had never felt so weak. My stomach turned, and I felt sick knowing that I could not do anything to help her. I could not interfere with nature.

As Bamera Son walked away, Solo approached my vehicle – her stomach was completely empty, it looked as if she was

Figure 4 – Tigress Solo. Photo by Suyash Keshari.

starving – her chest flapped open, and she was bleeding from her mouth, hind legs, paws, and shoulders. I feared for her survival and that of her cubs. She came and stood just a couple meters from my jeep and gazed at me with her amber eyes as if wanting to say something. Her eyes looked full of pain and distress. That is the moment captured on this large portrait of Solo. I have seen tigers thousands of times, spent countless hours with them, and know many of them very intimately, but never had I ever felt such a boundless and inseparable connection as I felt in that moment with Solo. A day later, Solo was tranquilized by the Forest Department, and her wounds were stitched up. Solo survived. And so did her cubs. Solo was a fighter.

Unfortunately, this was not the end of her struggle. Solo's territory was traversed by nine different tigers. This was highly unusual and dangerous for her well-being and the safety of her cubs. Ideally, for every four to five females, there is one dominant male that overlaps their territory, mates with them, and protects their cubs from intruding males. But our tiger reserves have become islands of paradise surrounded by an ocean of concrete, farmlands, and mines. Tigers are unable to disperse into newer habitats. If the tigers go out of the reserve, they risk running into conflicts with humans or even worse being poached or run over by speeding vehicles and trains. The remaining pockets of connecting forests are simply too narrow and deprived of food and water for the tigers to be able to disperse successfully. Solo's problems got bigger when her chest opened back up during a difficult hunt, forcing the Forest Department to tranquilize her again to stitch her wounds – a process that is incredibly stressful for the tiger. And this process repeated itself several times. Solo grew weaker and weaker. Somehow, she was still able to provide for her cubs, as all four were quite healthy and growing at a fast pace.

Solo was in her prime, and her cubs represented the future of this troubled species, but I quickly realized that if they were to survive till adulthood, they would require more space. Bandhavgarh National Park was already overcrowded with tigers. The carrying capacity is approximately 65 tigers, but the real count was 124. In June 2020, a new female started asserting her dominance in Solo's territory. And when the park reopened in October – after the monsoons – Solo and her cubs went missing. A search party found them two weeks later in the outskirts of the park near a small hillock bordering a village. While Solo's cubs looked healthy as ever, she appeared quite weak and stressed

Figure 5 – Solo sleeping in pain the next day. Photo by Suyash Keshari.

– a gash healing on her shoulder was a sign of a brutal fight during the monsoons. But she was successful at protecting her cubs and keeping them healthy. Things got out of hand when she was forced to seek respite in the periphery of the park and started preying on cattle. Solo and her cubs had nowhere else to go, and nothing else to eat. Every other territory in Bandhavgarh National Park was occupied. On October 17, 2020, Solo was found dead along with two of her female cubs next to a cattle carcass. The other two went missing. One female cub was seen sometime later but she too disappeared. The male was never found. To this very day, the official reports claim that the "tigress was found dead under unnatural circumstances." Interviews of the field guards and the veterinarian, however, point to the fact that Solo and her cubs died from poisoning of the carcass by humans, perhaps in retaliation to the cattle killings, or worse – for poaching. This news devastated me. It felt like one of the worst personal and professional losses. I had been working toward conservation in Bandhavgarh National Park with all my heart and soul. But at hearing this, I felt like giving up on everything I do. Solo came out victorious from every challenge but lost to humans. I felt completely hopeless. After a couple weeks of mourning, I summoned the courage to return to Bandhavgarh National Park to continue my work, reminding myself that there are still more tigers to protect, habitats to conserve, people to be influenced, and lives to be changed.

Rest in peace and power Solo. This is dedicated to you. And I will remain dedicated to your kind. IJW

SUYASH KESHARI is a wildlife presenter, filmmaker, and conservationist from Central India, email: SuyashKeshari96@gmail.com.

Communities and Conservation

by Bhavna Menon

Bhavna Menon

I first visited a tiger reserve when I was 8 years old. I had bullied my family into changing the course of our holiday persuading them from visiting yet another urban destination to one in the wilderness. My first unforgettable brush with wildlife took place at the Kanha Tiger Reserve (KTR), India.

As I stood mesmerised by a herd of spotted deer grazing in the distance, I celebrated the idea of standing on hallowed land that belonged to tigers and diverse flora and fauna. At that time, I did not know much about what lay beyond the vast meadows, the foliage of the sal trees, and the charisma of the tiger itself. Forward to the winter of 2017 when I was much older (and presumably wiser). The then Field Director of KTR connected with us via The Last Wilderness Foundation (an NGO that I was then working with as their program manager) on undertaking projects in the landscape. That was when I crossed the meadows and grasslands of the forest into the homes and courtyards of the community of people who lived around the reserve.

"Along with an understanding of the inevitability of human-wildlife conflict, came an appreciation of how much the tiger's forest provides in terms of day-to-day resources and livelihoods."

Kanha is home to the Baiga community. The Baigas are a forest-dwelling indigenous tribal community in Central India and are recognised as a member of the Particularly Vulnerable Tribal Group (PVTG). The Kanha Forest Department was keen to engage with the Baigas to reduce their dependency on the forest. The tribe traditionally collected mahul (Bauhinia Vahlii)

Figure 6 – Examples of Baiga jewellery. Photo by the Last Wilderness Foundation

leaves from within the forest in large numbers. The leaves were used to make leaf bowls and plates which were then sold. This large-scale collection was resulting in habitat degradation as well as a possible chance of conflict of the tribe with wildlife. Accordingly, the Forest Department wished to provide the tribe with an alternative source of livelihood.

It took almost a year of dialogue, numerous visits to the village, and innumerable cups of chai with the community to understand the possibilities of livelihood engagement with them. One day, as I chased some of the children around in a local game, an elderly lady from the community sat down to watch and cheer us on. I was no match for the energy of the children, and soon sat down exhausted next to her. I couldn't help but notice a black thread around her neck with some beautiful silver coins strung on it. When I asked her, she told me that she had made the necklace, and that jewellery had always been a traditional part of the Baiga culture.

Based on the 'mataram's' (mataram is a term used for elderly women or grandmothers in the village) information, we decided to arrange a meeting of the community members with the Forest Department to understand whether the community members would be keen to pursue a livelihood initiative that would provide them income as well as protect them from coming into conflict with animals. To our delight, they responded positively to the potential opportunity. Today women and men from the buffer zone villages of Kanha are significantly involved in the jewellery

Figure 7 – First group of Pardhi guides for the "Walk with the Pardhi's" initiative. Photo by the Last Wilderness Foundation.

making process with resources provided by the Department and consequently, less dependent on the mahul leaves as a source of income. This has not only helped in maintaining the health of the forest, but has also helped in the revival of a skill set that is economically viable for the community members.

Within the same landscape but in a very different terrain, I have also had the honor to work with the Pardhis. A traditional hunting community, the word 'Paradh' literally translates as "to hunt." Blessed with excellent knowledge of the forests, birds and animals, the Pardhis were once used by the Maharajas and British colonizers for hunting purposes. However, as time moved forward, and the Wildlife Protection Act of 1972 came into force, the Pardhi community was left behind. Once lauded for their skill sets but now viewed as criminals, the Pardhis saw little opportunity in mainstream society. They were discriminated against as 'mere hunters' unfit for regular jobs. As the community members continued their practice of hunting, the effects were soon evident on the health of the forests of the Panna Tiger Reserve. In 2009, tigers were declared extinct in Panna. It was at this flashpoint that the then Field Director of the reserve met with the elders of the community. He promised them education as well as a safe space for their children via hostels if they would give up their traditional weapons and hunting practices. Today, Panna boasts two hostels meant for Pardhi children. The aim is to provide the children with a quality education that will help in weaning the next

Figure 8 – Village posters to create awareness on living safely in proximity to tigers. Photo by the Last Wilderness Foundation

generation away from a life of hunting and towards a different existence. During my time in working with the Pardhis, we were able to provide some much-needed support to the children. Today, we have our first batch of graduates who are not only looking at a bright future in our society but have become changemakers for an entire community, mobilising more and more parents to send their children to school and encouraging more families to give up hunting. Additionally, Pardhi youth in the community have eagerly grabbed at a chance for change. After much deliberation, the members of the community came up with the concept of 'Walk with the Pardhis.' This walk, which was the first of its kind in the landscape (initialised in association with Taj Safaris and Forest Department, Panna Tiger Reserve) utilized the amazing animal tracking and call mimicry skills of the Pardhi community members. While knowledge of the forests and flora/fauna is the main attraction, the walk allows participants a chance to understand the perspectives of the community, reduces stigma, and provides the community with a source of income. Today, via these educational and livelihood opportunities, Panna Tiger Reserve, where once tigers were declared extinct, boasts a population of 60 + tigers. In fact, the last decade has not seen a single case of tiger poaching – largely due to the efforts of the Pardhis, who now walk the forest not as hunters, but as its protectors.

On the subject of skill sets and livelihood

opportunities, it was the summer of 2012 when I first visited the Damna village of the Bandhavgarh Tiger Reserve. With human-wildlife conflict rife across the landscape, the community members resisted the idea of their children being taken for a tour of the reserve to view tigers via our project - The Villages Kids Awareness program. We assured the families that the children would be safe with us. The villagers decided that the only way the children would be allowed to visit was if an elder first 'inspected' the trip. Elder Golu Singh, 84, saw four tigers with us on his foray into the forest. As he bowed his head in reverence to the family of tigers, he also watched them move past him harmlessly. The myth of the 'dangerous tiger' was just broken. Golu Singh's validation laid the foundation of our project, and we were able to engage close to 96 villages in the buffer zone of the reserve in a massive conservation outreach program that emphasised the need to protect and create a safe passage for both people and wildlife. Our project also emphasized the community's pivotal role in protecting the last of our remaining wild spaces. During the 8-year running of the program, conflict reduced significantly. We met community members who were willing to support the idea of tiger conservation despite past incidents that had injured or killed family members. Along with an understanding of the inevitability of human-wildlife conflict, came an appreciation of how much the tiger's forest provides in terms of day-to-day resources and livelihoods.

Today, as we celebrate 50 years of Project Tiger in India, let us take a moment to appreciate the role played by people in the tiger's realm. Of their promise, of their engagement, of their sacrifices, and most of all, of the idea of coexistence made possible by their resilience, understanding, respect, and love for the wild. As we ask community members of the forest to respect their end of the partnership, it becomes crucial to balance the scales by accepting them for who they are, learning from their skills, and providing them the fair chance they truly deserve.

BHAVNA MENON is a wildlife conservationist, freelance writer, and director of conservation at Aaranyachar (a wildlife tourism company in India); email: bhavna.menon1@gmail.com

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Digital Reviews:

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UTAH SILVESTRE

Hosted by Amy Dominguez and Olivia Juarez. Available on Apple Podcasts and Spotify. Available in both English and Spanish.

https://suwa.org/utah-silvestre-podcast-miniseries/

The world of podcasting has exploded in the last 15 years, and today there are shows on nearly any topic imaginable. Podcasts are convenient, oftentimes free, and offer a great way to learn more about something of interest to listeners. Fortunately, this powerful and relatively new medium is being utilized more and more within the wilderness and conservation community. Continuing a review of some of the more solid options available, this issue of *IJW* looks at *Utah Silvestre*, a miniseries produced by the Southern Utah Wilderness Alliance (SUWA) and featured on their *Wild Utah* podcast.

SUWA's *Wild Utah* podcast focuses largely on the public lands of Southern Utah's redrock wilderness. The Utah Silvestre miniseries, hosted by Olivia Juarez, recognizes that this redrock wilderness is embedded in and deeply connected to the wellness, history, tradition, and future thriving of Hispanic and Latino/a/x communities. Emphasizing the importance of public lands and wilderness protection to these often unjustly underserved and overlooked communities, *Utah Silvestre* adds a crucial voice and perspective to the conversation around these valued American landscapes.

Episode 1 offers an excellent primer for listeners on the often-confusing system of public lands and the suite of federal agencies that manage them. This is of particular importance to those who grew up in urban areas or have otherwise had very little exposure to public lands, whether as a concept or as physical spaces open and available to all members of the American public. Host Olivia Juarez effectively and clearly explains the public lands concept, emphasizing the notion that they are held in trust for all and must, by law, be managed in the public interest.

Episode 2 is a powerful look at how wilderness and public lands affect the daily lives of all members of the American public, with special emphasis on their importance to largely urban Black, Brown, and low-income communities. Juarez deftly connects the fate of wild public lands with the health and wellness of these communities while highlighting the disproportionate burdens placed on them by industry and historically unjust land use policies. Directly linking wilderness protection with clean air and clean water and, perhaps most significantly, with addressing the climate change emergency, Juarez stresses that "harm happening out in the wilderness is directly harming you and your community."

Episode 3 is a fascinating dive into the deep, long-standing cultural ties that exist between the Latino/a/x communities and the lands of the Southwest. This historical connection, along with an ongoing stewardship responsibility, is eloquently summed up in a phrase, translated from the original Spanish, that means "inheritance of the place that holds my heart."

Rounding out the series, Episode 4 educates listeners on the opportunities they have to speak up in support of protections for wilderness and public lands, while also urging them to get outside to enjoy all that these special places have to offer.

Utah Silvestre offers a much-needed perspective on wilderness and American public lands from a community that has been historically excluded from the conversation. For this reason and many others, it is well worth a listen. IJW

REVIEWED BY **Patrick Kelly, IJW media and book review editor; email: Patrick.ram.kelly@gmail.com.**

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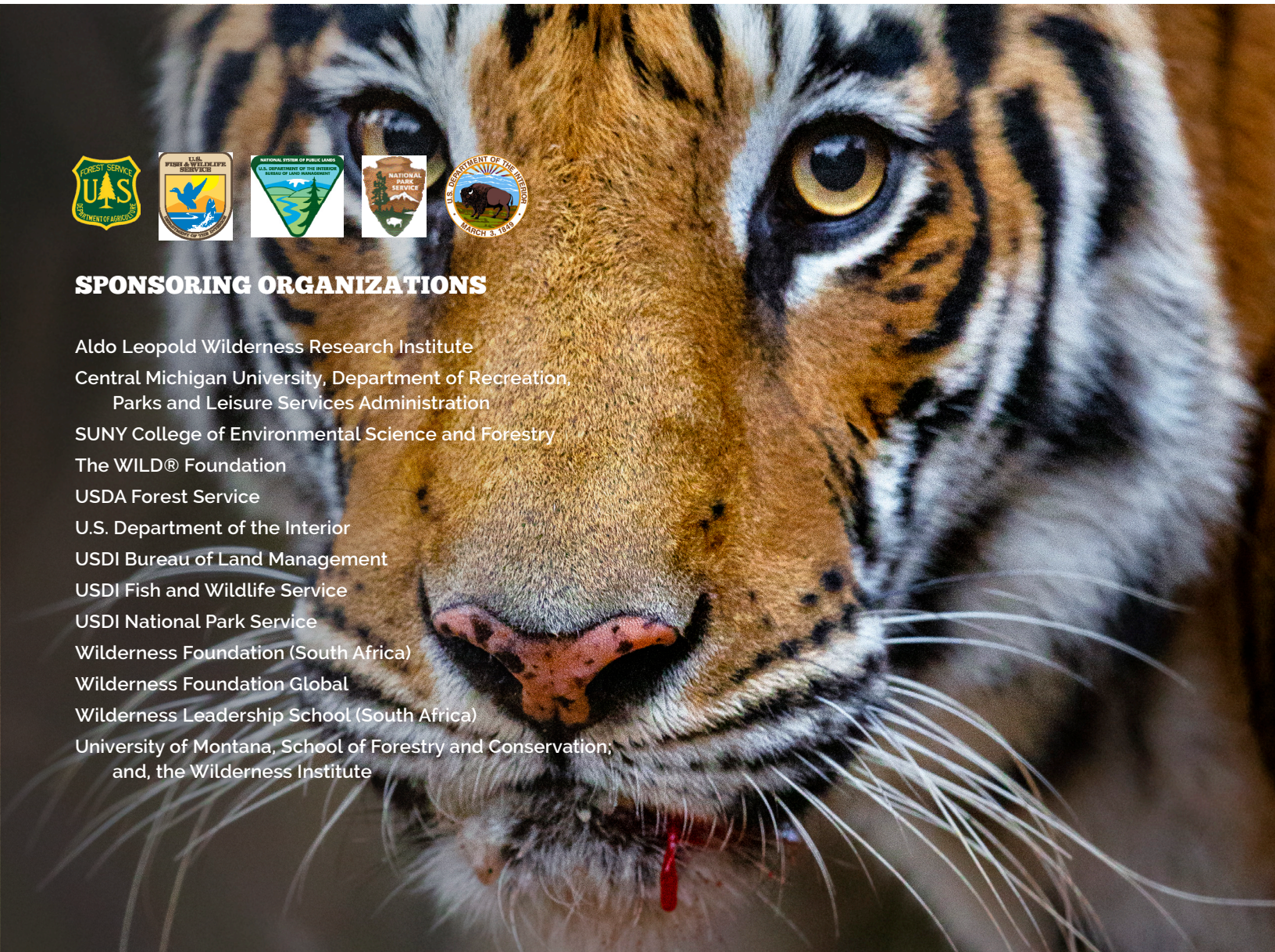

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