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William T. Borrie

*University of Montana - Missoula*, [bill.borrie@umontana.edu](mailto:bill.borrie@umontana.edu)

Robert G. Dvorak

*University of Montana - Missoula*

Alan E. Watson

*Aldo Leopold Wilderness Research Institute*

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# Threats and Changes Affecting Human Relationships with Wilderness: Implications for Management

Robert G. Dvorak, William T. Borrie, and Alan E. Watson

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**Abstract**—For wilderness managers, the ability to recognize threats and changing conditions is vital. While these threats are typically associated with resource and social conditions, they can also be investigated relative to wilderness relationships. This paper explores how threats and changes may be affecting human relationships with wilderness and the possible implications for management. Previously, threats have been conceptualized as affecting ecosystem integrity or stakeholder values. This paper suggests these conceptualizations should be expanded to also consider the meanings and relationships attributed to wilderness. From such a lens, threats such as global climate change, wildland fire, and invasive species can dramatically influence both the wilderness landscape and the meanings associated with its character. They fundamentally alter the place in ways that conflict with personal histories and previous experiences. Thus, managers must be charged with finding ways to protect and foster these human relationships. Addressing threats to these relationships may also require managers to develop approaches that mitigate or adapt to these relationships over time. These approaches need to proactively define and protect a diversity of meanings and values to ensure ongoing human relationships with wilderness.

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## Introduction

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For wilderness and protected area managers, the ability to recognize external threats and changing conditions is vital for responsive and proactive management. Threats such as global climate change, habitat fragmentation, invasive species, and wildland fire, among others, are

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Robert G. Dvorak is an Assistant Professor, Department of Recreation, Parks, and Leisure Services Administration, Central Michigan University, Mount Pleasant, MI 48859 U.S.A. E-mail: dvora1rg@cmich.edu.

William T. Borrie is a Professor of Wildland Recreation Management, Department of Society and Conservation, University of Montana, Missoula, MT 59812 U.S.A.

Alan E. Watson is a Social Scientist, Aldo Leopold Wilderness Research Institute, Missoula, MT 59801 U.S.A.

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increasingly affecting and influencing wilderness landscapes and character. While such threats and changes have typically been associated with impacts on natural resource and social conditions, a growing view in wilderness research is to investigate the effects of these threats and changes on human relationships with wilderness. This view suggests that to define and protect wilderness character, managers must go beyond monitoring aspects of wilderness itself to instead describe, monitor, and understand human relationships with wilderness (Watson 2004).

The purpose of this paper is to explore how external threats such as climate change may be affecting human relationships with wilderness. It examines how threats and changes are uniquely characterized from a relationship perspective, and investigates several examples of these threats. Finally, it considers how the current and future role of wilderness and protected area management may be shaped by these external threats.

## Wilderness Threats and Relationships

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### Conceptualization of Threats

The idea of external threats to wilderness is in itself not a new concept. A large body of literature exists that examines how various threats and external factors influence both resource and social conditions in wilderness. Scoping and identifying current and potential threats are also important components of wilderness and protected area planning. However, to conceptualize these threats relative to human relationships with wilderness is a slightly different notion. It is, therefore, appropriate to first characterize more traditional views of wilderness threats before examining these issues from a relationship lens. This is not to say that these views are wrong, inappropriate or even mutually exclusive. Instead, it is to demonstrate how thinking and research has progressed to investigate and address wilderness threats.

Because one of the primary purposes of wilderness designation has been the protection of natural ecosystems (Cole and Landres 1996), examining threats relative to ecosystem integrity has been a dominant view. This view investigates the linkage between external threats and ecological wilderness attributes and provides direction for future action and management. For example, Cole and Landres (1996) have previously suggested that some of the most significant

threats to wilderness ecosystems include the introduction of invasive species, recreational use, and wildfire management. Dawson and Hendee (2009) have described other potential threats to wilderness that include habitat fragmentation and isolation, urbanization, and technological developments. Together these researchers have emphasized the need for further research and knowledge regarding the influence and outcomes of these threats.

Another common view of external threats to wilderness has been from a values perspective. This perspective prioritizes external threats to wilderness relative to stakeholder values. While attributes such as intact ecosystems and unmodified landscapes remain important, these qualities of wilderness have been negotiated and defined by different stakeholder groups. For example, Shroyer and others (2003) identified the high priority values in a South African context as wilderness-type experiences, intact/unmodified landscapes, and sacred pools/landscapes. Threats to these values included privatization, commercialization, off-road vehicles, and pressures to produce incomes or subsistence. In a Brazilian wilderness context, Magro and others (2007) discussed clean air, clean water, and cultural values as import qualities to protect. These qualities need defense from pollution, external activities on adjacent lands, and invasions on historical and cultural resources. While the identification of these threats obviously relates to an ecological perspective, it also demonstrates the importance of contextualizing values and threats within the local cultures and community. Thus, the value of wilderness, and the reasons to protect it, become more than the ecological processes and services provided.

## Human Relationships with Wilderness

While previous views of wilderness threats have focused on monitoring social and biological changes related to ecological integrity and individual values, we would argue that such perspectives are not fully comprehensive. This is not to say that previous views are not valuable. The knowledge and experience that has been gained by focusing on wilderness threats is extremely important for wilderness stewards to meet their mandates and responsibilities. Continuing to mitigate impacts on social and biological changes also remains important. However, we argue that managers are responsible for other things beyond setting conditions. There has always been “something intangible” about wilderness that lies at the heart of its meaning and character. It is these things that we believe can be addressed by considering the human relationship with wilderness that individuals create.

The notion of a relationship can be conceptualized in many different forms. From interpersonal connections to buyer-seller interactions, it demonstrates characteristics such as trust, commitment, and loyalty. However, a relationship at its core is constituted by dynamic interactions between two individuals or entities that exist over time. It does not form from a chance meeting, but instead is an ongoing exchange where both parties are interdependent on one another. The experiences that exist between the two have created trust and meaning that is valued by both. When applied in a wilderness context, such a relationship represents the ongoing connection that individuals form with the landscape. It has been created by the interactions we have within a wilder-

ness setting and encompasses the meanings that we imbue within wilderness features.

A relationship perspective shifts management focus from single visits by users and visitors to understanding the ongoing connection stakeholders have with a wilderness. Because the importance of short term outcomes decreases when considering relationships, management must instead consider changes in values and meaning over time. More specifically, Watson and Borrie (2003) have suggested the importance of long-term monitoring in understanding the quality of experiences and changes in meanings. Thus, to protect wilderness character, monitoring changes in values and meanings is critical. This gives threats to these meanings as much importance as external threats to social and biological conditions. However, when threats are contextualized relative to wilderness relationships, they may impact individuals in ways that social and biological forces do not. This creates a situation where wilderness and protected area managers may be unskilled or uncomfortable to manage beyond social and biological aspects. It is, therefore, important to build on the typical knowledge of threats to wilderness by characterizing the effects of external threats on human relationships with wilderness.

## Threats to Human Relationships

**Climate Change**—No external threat resonates more with this relationship perspective than global climate change. While commercialization, water quality, and loss to ecosystem integrity can individually be considered as important threats, the global scope of influence that climate change has on wilderness relationships is impossible to ignore. We argue that climate change is the precursor and driving force to many of the most critical threats facing wilderness and protected areas today. It is responsible for changes in patterns and cycles that are being witnessed globally. Thus, many threats that appear as isolated conditions can be found to correlate with climate change.

One instance of how climate change threatens relationships with wilderness is its effects on temperature sensitive species (Locke and Mackey 2009). For example, rising global temperatures are causing rising ocean temperatures. These increases lead to coral reef bleaching that destroys critical fish habitat. This loss can then lead to the absence of iconic species such as the clown fish, made internationally recognizable by the popular movie *Finding Nemo*. Thus, the absence of such species can change the character of these marine wilderness areas. The meaning individuals associate with them may change because the characteristics that they attribute to them have disappeared. Other examples of temperature sensitive species influenced by climate change are the mountain-dwelling pikas and pine bark beetles of the Pacific Northwest. In the case of the pine bark beetles, changing seasons and the lack of extended periods of bitter cold allow bark beetles to complete multiple reproductive cycles in a single season. This is leading to larger infestations and epidemic loss of pine stands. With forests overwhelmed by brown, dead, and dying trees, so too may be the many species that utilize and value these forests. The meanings and values of a forest are altered with such a dramatic change and the images in the visitor's mind might be difficult to reconcile with the changed landscape before them.

Another example of the effect of global climate change on wilderness relationships is its influence on wildland fire regimes. Research has documented the correlation between climatic changes and the frequency and intensity of wildland fires (McKenzie and others 2004; Westerling and others 2006). With spring coming earlier, summers lasting longer on average, and dry seasons perpetuating, the risk of catastrophic wildfire remains very real. In the instances where fires have occurred, the alterations to the landscape are severe. Individuals who have used these forests for subsistence or as a refuge of solitude may look upon their special places and see how different they have become. These places imbued with so much meaning and experiences now have to be reconstructed and negotiated within the individual. While one can argue that wildfires and fire regimes are natural processes that do change, it is difficult to assume that each stakeholder can accept these changes without accepting some loss in the meanings that previously existed. Their relationships have arguably been altered and may continue to change over the long term.

**Biodiversity and Species Loss**—While climate change acts as a driver for coral reef bleaching, fire regimes, and cyclic changes of temperature sensitive species, other examples of threats to wilderness relationships can also be considered. As previously considered for ecosystem integrity, habitat fragmentation and species invasion are both serious threats to wilderness resources. They also influence relationships as the landscape is altered by loss of habitat, destruction of contiguous land tracts, and invaders outcompeting indigenous species. Nowhere is this more present than in the protected areas of Australia. Mackey and others (2008) have described the challenges of biodiversity conservation in Australia. They explain how habitat fragmentation and degradation has occurred due to commercial logging, agriculture, and pastoral practices. They further describe how invasive species threaten endemic populations and species richness in one of the most biologically diverse countries in the world. For example, feral cats, foxes, and amphibians have contributed to major extinctions across the continent and continue to have dramatic effects.

As these changes occur, the meanings and images across the landscape also change. Degraded forests represent degraded relationships where individuals must come to terms with the loss of what they once knew and understood. The purpose of a place changes as it might no longer represent a source of subsistence, spirituality, or solitude. As the endemic and iconic species disappear, so does the uniqueness of the place. Individuals have to come to terms with wilderness overrun by feral fox, deer, and plants. Thus, the situation described by Mackey and others (2008) exemplifies how the dramatic changes that result from these threats can have great effects on numerous wilderness stakeholders.

## Management Implications

Such changes might not all be under management control, but they represent external factors with great potential to alter the connections and meanings people have for a wilderness context. They may also directly affect the expression of relationships over time as they vary from onsite visitors to stakeholders to socially responsible advocates. Therefore,

acknowledging and understanding the potential impacts of these threats will be important for wilderness managers striving to foster and protect wilderness relationships. In essence, it is not just considering the threat to wilderness, but what the outcome to wilderness relationships will be if changes continue to occur.

As wilderness managers continue to explore and understand wilderness relationships, it may be useful to consider approaches that have been suggested to address threats to wilderness and protected areas. Locke and Mackey (2009) have suggested that to address climate change two approaches are necessary: mitigation and adaptation. Mitigation refers to efforts to prevent and reduce changes influenced by climate change, while adaptation is the way individuals would adjust to changes that have or will inevitably happen despite our best efforts. While both these approaches are very logical and relevant to both ecological and social values, how would they function from a relationship perspective? How would they apply to managers who are attempting to facilitate ongoing relationships with wilderness? In terms of mitigation, making efforts to prevent or reduce changes that would negatively affect human relationships with wilderness seems reasonable for wilderness stewards. In many ways we already do this by addressing threats that influence wilderness character. To protect an ongoing relationship, the outcome for these mitigation efforts is not that fundamentally different.

Adaptation, however, is much more difficult to contemplate. How as wilderness managers do we ask individuals to adapt their relationship? How do we ask them to negotiate the personal histories and experiences that have accrued in a given wilderness? Asking someone to adapt their meanings and connection to a place does seem very extreme and significant, but it might be idealist and naive to not consider such an approach. In fact, the threat of climate change has shown us that some change is inevitable and that managers may be required to accept some threats and their impacts upon relationships. Acknowledging this inevitability, however, means that to protect relationships, the goal should be to maintain the overall strength or existence of those relationships. While some threats can only be monitored and documented, efforts must focus on those that may be managed directly with actions aimed at what we can control and influence. This is what must be considered by wilderness managers as strategies continue to be developed to address external threats. Thus, a comprehensive approach is one that considers both the direct and indirect changes to relationships in the face of some inevitable change.

As society changes, so does the responsibility of wilderness managers within the limitations of legislative intent. Keeping the importance of these responsibilities in mind, we now charge them to also be stewards of the human relationships that are formed with wilderness. These relationships represent the diverse connections we as humans make with wilderness. Therefore, the consequence of accepting responsibility for these relationships is the long-term monitoring of quality experiences, and meanings instead of short-term outcomes and visitor satisfaction. It requires efforts to understand the symbolic attachments and spiritual connections humans have with wilderness landscapes and developing means to address them. This is a new challenge for managers, but being able to address these concepts also provides managers with a different constituency. By showing

that wilderness stewards value all meanings of wilderness and try to represent them as best we can, we cultivate trust and commitment from individuals who value wilderness. We may go beyond “managing users” to developing wilderness partners, stakeholders, and advocates. It shifts the outcome of management actions to the creation of a shared, vested interest among the public.

Conversely, it is important to reflect on the consequences of not considering wilderness relationships. Strategies would continue to address the management of social, biological, and managerial conditions, but without emphasizing the quality of relationships. This perhaps may lead to changes in the experiences and meanings attributed to wilderness by individuals. Off-site benefits such as symbolism and connectedness may decline or become absent. Thus, it raises the question, “What will be lost?” Arguably, it would be the “intangibles” of wilderness that exist but are all too often difficult to articulate and comprehend. It is the essence of wilderness character that managers are trying to maintain and protect.

We are only beginning to understand and monitor these wilderness relationships. Baselines are just now being established and much still needs to be learned about how, more so than why, relationships are changing. To accomplish this, meanings and experiences need to be examined longitudinally. Personal histories, stories, and experiences need to be explored to see what has changed, whether it is individuals’ definitions of wilderness or their connections with it. Monitoring relationships in such a way may present unique challenges, but would assist us in learning and understanding how these relationships exist and function. In the meantime, we as wilderness managers can agree that part of our responsibility is in protecting wilderness meanings and character. Even if it is unclear how threats and changes are affecting meanings, we can take efforts to proactively define and protect these meanings. With this kind of action, we may be better able to prioritize management actions and adapt to threats like climate change and invasive species as they continue to alter wilderness landscapes.

There are many different threats to wilderness ecosystems and the meanings ascribed to them. Many iconic examples can be described, but none more emblematic than the polar bear in a melting Arctic Sea. In the case of the polar bear,

the image shows the threat of global climate change to this species and the arctic ecosystem. However, it also represents the threat to a relationship that indigenous people, wilderness visitors, and advocates have formed with this place. This is just one of many things that can be lost if we as wilderness stewards do not place importance upon protecting the meanings and character of this and every individual wilderness.

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