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Enhancing visitor use management in parks and protected areas through qualitative research

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ABSTRACT

Applied research aims to generate knowledge that can be used to improve policy and practice. In the field of visitor use management (VUM), researchers and park managers seek to generate knowledge regarding specific dimensions of visitor experiences within and across parks and other kinds of protected areas. A wide variety of management-centric questions are addressed through VUM research. In this article, we argue that to answer such questions, VUM researchers and managers can use qualitative methods (independent of or coupled with quantitative methods) to deepen our knowledge about visitor experiences while improving visitor use management policies and practices. We present current qualitative research designed to aid in the management of parks, and future directions for qualitative inquiry. Existing qualitative research and future possibilities call to expand our collective understanding of what kind of knowledge "counts" in VUM research.

> "Not everything that can be counted counts, and not everything that counts can be counted."
> — *William Bruce Cameron,* 1963

Applied research aims to generate knowledge that can be used to improve policy and practice. In the field of visitor use management (VUM), researchers and park managers seek to generate knowledge regarding specific dimensions of visitor experiences within and across parks and other kinds of protected areas. A wide variety of management-centric questions are addressed through VUM research. Example questions might include: how does seasonal wildfire smoke influence visitor behavior in national forests (Zajchowski et al. 2019)? How many visitors can congregate in one location without degrading the nature-based experience (Nettles et al. 2021)? What is the level of public concern for biodiversity conservation (Hunter and Brehm 2003)? In this article, we argue that to answer such questions, VUM researchers and managers can use qualitative methods (independent of or coupled with quantitative methods) to deepen our knowledge about visitor experiences while improving visitor use management policies and practices.

Qualitative research is regularly associated with the analysis of words and text collected through interviews, focus groups, and documents, whereas quantitative research focuses on statistical analyses of numbers gleaned from such sources as laboratory studies, self-report questionnaires, and observational counts. Quantitative

research has dominated VUM studies and subsequent technical reports and peer-reviewed journal articles for good reasons. For example, quantitative research has addressed important management needs, such as creating a visitor capacity, documenting spatial and temporal distributions of visitor use, determining visitor expenditures during a trip, or optimizing fee schedules. However, many people have come to understand that quantitative analyses alone do not represent the whole story, and not every question that managers and researchers have about visitor experiences can be effectively represented in discrete, operationalized variables and metrics. Furthermore, many VUM questions concern values, perspectives, meanings, and/or experiences that are contextual, contingent, and rife with intersecting concerns about who is doing the talking, the politics underlying the study, and how data are being understood by researchers.

In this article, we demonstrate that qualitative methods have both the analytical sophistication and the empirical persuasiveness to inform VUM practices and understandings of social and environmental phenomena. Qualitative VUM research is important because some aspects of VUM, such as historical narratives of visitor use (e.g., Hanna and Hodder 2015), sensory experiences (e.g., Zajchowski and Rose 2020), and perceptions held by minority populations (e.g., Erickson, Johnson, and Kivel 2009), are difficult to objectively quantify and represent. Qualitative approaches are particularly apt when there is a need to focus on the depth of a research question as opposed to the breadth of its occurrence, or when understanding specific situations, individuals, groups, or moments may provide particularly revealing insights. Furthermore, recent scholarship highlights that common VUM research approaches, including indicators and thresholds, can be analyzed both quantitatively and qualitatively (IVUMC 2018).

In this article, we first describe VUM in the context of parks and other protected areas, and then examine ways in which qualitative methods are unfolding and adapting to new directions and hybrid approaches. We conclude with a discussion of the realities of engaging with qualitative approaches in VUM research.

VISITOR USE MANAGEMENT IN PARKS AND PROTECTED AREAS
VUM is the "proactive and adaptive process for managing the characteristics of visitor use and the natural and managerial setting using a variety of strategies and tools to achieve and maintain desired resource conditions and visitor experiences" (IVUMC 2018: 1). VUM involves the creation and implementation of policies and management actions to balance visitor use with the preservation of a park's ecological integrity and cultural significance.

Ultimately, VUM aims to develop effective management approaches that optimize visitor experiences while maintaining the long-term sustainability of the park.

Relatedly, VUM research is the systematic investigation and interpretation of new or existing data aimed to inform VUM processes and decisions, while advancing theory, concepts, and methods. Given its importance to park management, VUM research has increased in sophistication and application since it first emerged in the 1950s (for a review, see Manning et al. 2021). Today, almost all federal and state land and water management agencies in the United States increasingly use empirical research to design and implement VUM plans (IVUMC 2018).

QUALITATIVE RESEARCH IN VISITOR USE MANAGEMENT
While quantitative approaches have dominated VUM literature, qualitative methods are seeing increased use, particularly in addressing targeted research questions, research with diverse populations, and questions requiring greater depth than breadth. A variety of qualitative approaches, including interviews, focus groups, photography, and mixed methods, are well equipped for exploring the deeper meanings of experiences from the perspective of visitors, local communities, park managers, and other populations.

Populations
Researchers often use qualitative methods to interrogate perspectives, values, meanings, and experiences to inform VUM understandings and practices. While researchers can use qualitative approaches to investigate a wide variety of social science research question and can address nearly every population imaginable, here we focus on two common groups of participants in qualitative research: visitors to parks and other stakeholders.

Visitors
In studying visitors and their use of parks and other protected areas, VUM research has often relied on questionnaires where a sample provides input on their attitudes towards management preferences and alternatives regarding resource and experiential conditions. Alternatively, for research questions that require description or narrative, are not yet well understood, or are contextually unique, qualitative methods may be most appropriate.

Qualitative inquiry focusing on visitor perceptions of nature-related recreation experiences includes off-road vehicle use (Hallo et al. 2009), heritage site visitation (Daengbuppha et al. 2006), hiking and camping experiences (Hassel et al. 2015), wilderness and near-wilderness experiences (Hallo and Manning 2010), and

proximity to wildlife (Verbos et al. 2018), among others. Depending on the goals of the research effort or the context, researchers and managers may choose among various qualitative methods to carry out this exploration of the visitor experience.

Stakeholders

While the term "visitor use management" seems to indicate that the focus is solely on visitors, in fact VUM research can be used to analyze other populations who influence what, when, and how the management of parks occurs. Any changes to the management of parks require thoughtful and deliberate planning and consideration of the affected parties. For instance, both local stakeholder groups (e.g., surrounding communities, business owners) and land managers affect who visits a protected area, what activities are offered, and, in certain instances, what experiential characteristics are available. Qualitative methods have been utilized, albeit infrequently, to explore stakeholder attitudes and management perceptions of parks.

Given that qualitative inquiry is uniquely positioned to explore context-specific phenomena, these methods are often well poised to understand community perceptions of parks and other protected areas, especially in areas where populations are marginalized and under-represented in planning efforts. This trend can be seen in studies of parks in developing countries (Mutanga et al. 2015), rural areas (Schmidt and Rose 2017), and areas where Indigenous populations are explicitly included in decision-making processes (Reo et al. 2017). Researchers working with these populations may use qualitative research approaches to understand their experiences more clearly.

Other qualitative studies have focused on the perceptions of managers about resource, social, and managerial conditions in parks (e.g., Rose et al. 2016). For instance, Fefer and colleagues (2018) used qualitative inquiry (e.g., interviews and Delphi methods) to understand perceptions by experts in VUM of management strategies domestically and abroad. That said, qualitative approaches in VUM largely remain focused on understanding the perceptions and experiences of visitors. Given that qualitative methods are still emerging as a tool in VUM research, we next present an overview of those methods that have been used most frequently to explore visitor, stakeholder, and management perceptions of visitor use and experiences in parks.

DATA COLLECTION METHODS

Interviews

Interviewing is the most popular qualitative method in VUM research. Interviews gain in-depth perspectives about a variety of user experiences and unique settings and contexts. Interviews are most often either semi-structured or in-depth. Semi-structured interviews are characterized by topic guides with broad themes and associated questions. The semi-structured nature of the interview affords the ability to change question order based on the flow of the conversation, and to strategically use probing follow-up questions (Veal 2017). Questions in a semi-structured interview are open-ended, allowing space for participants to share ideas in their own words based on their individual experiences.

VUM researchers use semi-structured interviews for a variety of research questions. Several studies have leveraged the approach to examine salient indicators of the visitor experience, such as degree of naturalness (Bullock and Lawson 2007), travel freedom (Hallo and Manning 2009), and interactions with wildlife (Glaspell et al 2003). Semi-structured interviews are also used to understand the deeper meanings and motivations behind a variety of activities, such as camping in national parks (Hassell et al. 2015). Karst (2016) used semi-structured interviews in her study of Indigenous perspectives of ecotourism and visitor use in Bhutan, Rokenes et al. (2015) explored the benefits of guided outdoor experiences, and Dear and Myers (2005) considered visitors' conflicts surrounding subsistence use in a US national park.

Compared to semi-structured interviews, in-depth interviews provide more space for participants to share profound details about their experiences, behaviors, feelings, and attitudes (Veal 2017). The purpose of in-depth interviews is to probe more deeply for underlying concepts that might inform our understanding and theory generation. While semi-structured interviews also support flexibility in the researcher's questions, in-depth interviews provide additional space to pursue issues of importance, imparting even more conversational feel to them (Longhurst 2009). Often, a research hypothesis is not directly stated when using in-depth interviews, as there is little known about the specific topic or context under investigation. For example, a study derived from a grounded theory approach used in-depth interviews to understand visitor experiences at three World Heritage Sites in Thailand (Daengbuppha et al. 2006). Saethorsdottir (2010) conducted in-depth interviews to understand tourists' perspectives on energy development in protected areas in Iceland. Depending on the reason for using interviews as a research method, researchers can choose from among various approaches to capture rich insights into the visitor (or stakeholder) experience.

Focus Groups

Focus groups are a form of group interview aimed at evoking

participants' attitudes, feelings, beliefs, experiences, and reactions that might not be apparent through other methods, such as observation or one-on-one interviewing (Veal 2017). Focus groups capture interactions between the participants based on topics that the researcher proposes. In VUM research, focus groups are most often utilized to question surrounding communities and stakeholders, rather than visitors themselves. Focus groups are used in public scoping processes, stakeholder engagement, and environmental impact statement (EIS) and environmental assessment (EA) procedures. Focus groups are one way to give voice to those who might not always be able to share their opinions and are considered a useful tool for integrating local and Indigenous knowledge into conservation efforts, including biodiversity conservation (Danielsen et al. 2014) and ecotourism development (Mendoza-Ramos and Prideaux 2018).

Visitor-Employed Photography

Visitor-employed photography (VEP)—which has also been referred to as "resident-employed photography" (Beckley et al. 2007), and "volunteer-employed photography" (Balomenou and Garrod 2014)—is a methods that combines visitor-produced photographs and in-depth interviews. While researchers in various fields have adapted the method to their own particular needs, the typical approach is to first ask participants to take photographs that will inform a specific research question. Participants are then asked to take part in an in-depth interview, where they share the reasons and meanings for the photographs they took.

In VUM research, the purpose of using VEP is to study visitor perceptions about nature-based recreation experiences while simultaneously minimizing the power dynamic between the researcher and the participant (Wynveen et al. 2012; Hansen 2016). Hansen (2016) employed VEP in VUM research, demonstrating the utility of photographs to capture visitor perceptions of experience qualities. This case study outlined how VEP can be used as a management and monitoring strategy for a Swedish marine protected area. Fefer and colleagues (2020) adopted VEP to develop indicators of wildlife viewing for a boat-based polar bear viewing program in the Arctic National Wildlife Refuge. The researchers compared semi-structured interviews to VEP methods and found that VEP methods provided richer information that could be directly utilized for informing decision-making.

Mixed Methods

Mixed methods, as the name indicates, is a form of research that capitalizes on the strengths of both quali-tative *and* quantitative approaches. Both kinds of data are interwoven in a distinct research design, affording a depth of understanding *and* the measurement of relationships among variables.

In VUM research, the most common mixed-methods format couples questionnaires with semi-structured interviews. Several studies have used mixed methods to understand visitor perspectives. For instance, interviews have been used to uncover potential indicators of the visitor experience, followed by questionnaires to develop and understand thresholds for those indicators (Glaspell et al. 2003; Hallo and Manning 2009; Zajchowski et al. 2019). Mixed methods are also utilized to understand stakeholder (Puhakka et al. 2014) and community (Bennett and Dearden 2014) attitudes toward park management strategies. For instance, using both semi-structured interviews and questionnaires Puhakka and colleagues (2014) positioned mixed methods as a complement to traditional approaches to understand the sociocultural sustainability of visitation to Oulanka National Park, Finland, as perceived by local stakeholders.

QUALITATIVE DATA ANALYSIS

Given that qualitative methods are used to study phenomena that are contingent and emergent, data analysis is often more iteratively developed than quantitative analysis and often occurs throughout repeated data collection. This ongoing process allows researchers to follow up on any surprises and more accurately target research questions (Veal 2017). In other words, qualitative analysis leads to the refinement of a hypothesis and/or research questions, followed by ongoing data collection. Data collection is usually complete once saturation (no more unique information) has been reached.

Because qualitative data often results in hundreds of pages of interview transcripts, quotes, and/or relevant documents, the most common form of analysis occurs through coding. The coding process involves systematically labeling segments of text to identify themes, patterns, and categories that help researchers interpret and understand the data. Researchers follow documented and validated steps to code data, such as using coding frameworks, participating in the peer-review process, and involving multiple coders to analyze the same data.

Coding decisions and framing deployed by the researcher have large implications for the analyses of the data, and often result in the development of a hierarchy of themes, subthemes, and emerging concepts, and is often supported by quotes or other direct material (e.g., Rose et al. 2016). Multiple rounds of coding are usually required, where each round facilitates greater specificity and clarity of themes and associated relationships. Researchers should be careful that codes do not become too abstract and

generic, inadvertently mimicking the nature of operational measures used in quantitative surveys, but without the desirable statistical and generalizable nature of that research. The key to meaningful qualitative coding is to retain the depth, richness, and interconnections in the original qualitative data so that it represents the richness of thew experience being studied.

Traditionally, researchers analyze qualitative data manually, largely in the form of reading and re-reading notes, transcripts, and documents, and identifying codes that seem to be repeating in the data (Veal 2017). However, computer-aided qualitative data analysis software (CAQDAS) can facilitate data storage and management, especially when a researcher is faced with a substantial number of lengthy documents. Several different CAQDAS packages exist, such as NVivo and Atlas.ti (Veal 2017). While CAQDAS options assist researchers in data organization, the actual interpretation still falls on the researcher, and remains subjective. In other words, in contrast to popular quantitative analysis software (e.g., R, SPSS, Excel) the software does not "do" the analysis in the sense that statistical software does. Rather, it can tag the data in ways chosen by the researcher that allow the retrieval, examination, and creation of linkages. Additionally, for studies with a large number of participants, CAQDAS programs create the possibility of storing meanings made by researchers over time and allow them to be retrieved by new researchers to assess or replicate findings.

FUTURE DIRECTIONS FOR QUALITATIVE RESEARCH IN VISITOR USE MANAGEMENT

In this final section, we provide an overview of two less-common qualitative methods, three emerging data sources for qualitative research, and one under-represented population that may benefit from further qualitative inquiry. These future directions might answer lingering questions about what kinds of data or populations are being left out of current qualitative VUM research, where and when the research effort takes place, as well as how we might more deeply access and understand different dimensions of the visitor experience. These methods, sources, and populations provide a starting point for continuing innovation using qualitative approaches in VUM research.

Additional Methods
Daily diary. Diary methods are widely used in the social and behavioral sciences but are less common in VUM research. Daily diaries retrospectively prompt participants to either respond daily to a survey-based assessment (e.g., Gross-Camp et al. 2015), document their daily experiences in narrative form in a physical journal (e.g., Spowart and Nairn 2014), or share daily experiences through an online

medium, such as email, blog, app, or private forum (e.g., Jones and Woolly 2015). Diaries are useful performative tools (Spowart and Nairn 2014) that lead to novel insights and increased depth of participant responses. Human dimensions of natural resources scholars have used cross-sectional journaling (Ordóñez and Duinker 2014) and trip logs that accompany elicited photographs (e.g., Dorwart et al. 2009), noting the narrative depth of the daily diaries better elucidate participant understandings and meaning-making. These processes often result in online products, providing meaningful and easily consumed analyses on websites, social media, apps, blogs, and other media. Additional utility stems from diaries or logs completed over multiple days or weeks, providing, for example, another promising avenue to complement quantitative research investigating multi-phasic visitor experiences (McKay et al. 2012). Finally, the proliferation of readily available technologies accessible through personal digital assistants for creating diaries through email (Jones and Woolly 2015), photography (e.g., Staiano et al. 2012), or voice recordings (Voelkl and Baldwin 2000) may make daily diary studies increasingly efficient and effective for VUM research.

Transect walk. Recent qualitative scholarship has indicated that the location and timing of an interview may partially determine its content (e.g., Jones et al. 2014). Researchers often query managers or participants off-site, away from the parks. Conversely, the transect walk is one method that allows VUM researchers to highlight the context in qualitative research, by suggesting the researcher choose an embedded context (i.e., streambed, trail system, scenic overlook) to elicit participant perspectives on the relationships between various factors affecting the resource or our engagements with it. For example, Abel and colleagues (1998) employed a walking transect in rangelands for stakeholders (i.e., pastoralists, extension officers, research scientists) to elicit their divergent mental models towards management of resources in southeastern Australia. Interview transcripts were then analyzed through content and subsequent statistical analyses to assess reported differences in perspectives and causal factors for rangeland health. Similarly, Dixon (2005) utilized transect walks to understand Indigenous knowledge and wetland management in western Ethiopia, while Chaturvedi and colleagues (2015) used transect walks as an initial step in a multi-staged research effort designed to understand the future management of common property resources in Maharashtra, India. In sum, transect walks may help to further situate qualitative VUM approaches in the actual contexts in question, providing additional grounded insight to researchers and managers.

Data sources

Videography. Videography is increasingly used to monitor visitor behavior (e.g., Arnberger et al. 2005) and its impacts, such as on endemic species (Buxton et al. 2017). While visitor-employed photography capture still images, directed either by researchers or the participants themselves (Goin 2001), visitor-employed videography, using GoPro, SenseCam, Narrative Clip, or other technologies, creates the potential to capture seamless footage documenting specific activities or experiences. Mackenzie and Kerr (2012) utilized replay of point-of-view video footage created during a whitewater experience to encourage stimulated-recall for participants during a follow-up interview procedure. The videos, all shot by participants, provided novel insights into issues of directed attention, stress during activities, and social and emotional recollections. Additionally, internet-based webcams that capture footage within park contexts provide opportunities for qualitative insights from unique populations. Skibins and Sharp (2018) illustrate the interest in Katmai National Park and Preserve brown bears by a community of engaged online viewers using webcams placed near the site where bears congregate during the seasonal salmon run. There is a high potential for qualitative inquiry with online visitor populations such as these that further explore components of their experiences.

Social media. A burgeoning social media landscape provides VUM researchers with new sources of data at their disposal (e.g., Di Minin et al. 2015). Visitors using social media platforms (i.e., Flickr, Facebook, X [formerly Twitter], Instagram) can provide researchers with a wealth of crowd-sourced data illuminating issues such as the phenology of plant species (Silva et al. 2018), spatial and temporal distributions of visitation (Sessions et al. 2016), and visitor engagement with an agency's online presence (Miller and Freimund 2017). While the "big data" made available through crowd-sourced social media may be readily primed for quantitative analyses (Pickering et al. 2018), mixed-methods studies offer the opportunity to provide additional explanatory potential through qualitative analyses of visitors' responses. Lahiru Prakash and colleagues (2018) conducted a content analysis of TripAdvisor reviews focused on wildlife tourism in Sri Lankan national parks, while Cong and colleagues (2014) used a similar source and method at a giant panda breeding site in China. Opportunities also exist to use online forums as data in VUM research. Greer and colleagues (2017) utilized activity-specific forums to analyze public sentiment resulting from trail camera monitoring and active management related to trail policy in San Diego, California. Finally, it should be noted that despite the preponderance of mixed-methods social media research using qualitative analyses, qualitative studies of the visitor experiences reported throughout social media also have the potential to be stand-alone inquiries. As always, there are potential trade-offs associated with all methodological choices, including issues of privacy and the distribution of content; such techniques and practices should be developed with caution and with participants' rights and confidentiality supported.

Artificial Intelligence (*AI*). AI can be used to analyze qualitative data by automating the coding process, enabling more efficient and scalable analysis, which is particularly helpful within large datasets. Techniques such as natural language processing (NLP) and machine learning models can be employed to categorize and interpret textual data, offering insights that might be missed through manual analysis while also allowing for quicker processing of large volumes of data. However, several drawbacks exist when using AI to analyze qualitative data, such as the loss of nuance or context, limited ability to leverage the background and insight from the research team, and inherent bias in the algorithms employed by AI. Regardless of these drawbacks, using AI to analyze qualitative data will continue to increase in efficiency and perhaps efficacy, leading to more opportunities for researchers to meld traditional qualitative approaches with the growing field of artificial intelligence.

UNDER-REPRESENTED POPULATIONS

As we have discussed in the preceding sections, qualitative methodologies have the unique ability to allow under-represented participants to speak in their voices regarding a variety of issues related to visitor use and natural resource management. Qualitative inquiry is uniquely poised to assist managers in understanding the concerns, opinions, and perspectives of under-represented populations. For instance, qualitative work can share perspectives of racial and ethnic minorities regarding recreation resources (Roberts and Chitewere 2011), analyze complex relationships between national parks and Indigenous Peoples (Craig et al. 2012), or highlight gendered views of conservation (Costa et al. 2017). Perspectives of park managers themselves on the equity of access for these groups have proven equally useful (Santucci et al. 2014).

In addition to these populations, we argue that an additional focus on people experiencing homelessness is warranted. Of the approximately 550,000 people experiencing homelessness in the United States, many seek refuge in urban and urban-proximate parks. Qualitative research can illuminate how the presence of unsheltered homeless individuals in these parks provides a variety of implications for other visitors, managers, and community members, as well as the people experiencing homelessness themselves (Neild

and Rose 2018). In sum, many under-represented visitor populations, like those experiencing homelessness, are worthy of additional qualitative inquiry, particularly using critical paradigms, which explore the role of power in the negotiation of ideas such as "use" and "visitation."

Transect walks, diary methods, videography, social media, and under-represented visitors are a few future methods, instruments, and populations where qualitative VUM inquiry can excel. Exploration using these qualitative approaches will assist managers and researchers to paint a more holistic picture of visitor experiences, more fully incorporating varied stakeholders into future planning and management.

CONCLUSION

Qualitative approaches provide VUM managers and researchers opportunities to uncover and present new knowledge regarding visitor experiences within parks and other types of protected areas. This article presented current qualitative research designed to aid in the management of parks, and future directions for qualitative inquiry. Managers and researchers should adopt and further explore qualitative approaches to improve our collective knowledge of the multiple dimensions of visitor experiences and heighten the protections afforded to ecological, cultural, and historic resources. As seen here, existing qualitative research and future possibilities call to expand our collective understanding of what kind of knowledge "counts" in VUM research.

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