

Research Article - social sciences

Outdoor Programs for Veterans: Public Land Policies and Practices to Support Therapeutic Opportunities

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Abstract

Many veterans returning from military deployment experience stress- or trauma-related symptoms that make reintegration with civilian society difficult. Nature exposure and outdoor recreation can be important parts of alternative and complementary approaches to reduce symptoms and build on veterans' pre-existing strengths. Multiple outdoor programs now exist for veterans; many of these occur on federal public lands and present a variety of needs, opportunities, and challenges. This paper relies on interviews ($n = 36$) with public land managers, program providers and participants, health professionals, and veterans to enhance understanding about outdoor programs for veterans (OPVs). We develop a typology of OPVs to help land managers understand current and potential programs, and then describe programs' varying dimensions. We examine opportunities and challenges for land managers in their interactions with OPVs. Results inform policymakers and public officials interested in developing more effective institutional partnerships and programs that engage and serve veterans and their communities.

Study Implications: With growing scientific evidence of the benefits of nature-based therapy, nature exposure, and outdoor recreation for veterans, programming for veterans on public lands has proliferated. Public land-management agencies vary in the extent to which they have systematically organized to provide opportunities for veterans, developed partnerships to support veterans' health, and explicitly acknowledged agency roles in serving veterans. We describe seven types of outdoor programs for veterans (OPVs) that currently serve this population: supported outdoor activity; guided outdoor activity; retreat; outdoor job training; stewardship or service; horticulture, farming or gardening; and animal-assisted therapy. Each OPV type has different needs for infrastructure, outdoor spaces, and administrative or programmatic engagement. OPVs occurring on public lands typically involve one or more partner organizations, such as commercial outfitters and guides, health providers, veterans' associations, foundations, corporations, and research institutions. There is potential for public land-management agencies to expand their role as institutional leaders in support of veterans' health by facilitating the use of public lands as therapeutic landscapes. By enhancing new and existing relations with OPV providers, health providers, and other government agencies, public land agencies could expand benefits to veterans and spur broader societal benefits.

Keywords: veterans, outdoor recreation, partnerships, human health, public lands

physical activity (Haskell et al. 2009), with some evidence that physical activities in outdoor environments result in greater beneficial health outcomes than those in indoor environments (Thompson Coon et al. 2011). More passive (but nevertheless deliberate) practices such as forest bathing have also gained popularity for their restorative effects (Li 2018).

Military and Therapeutic Connections to the Outdoors

Forest groves, gardens, and waters have long served as important therapeutic settings for soldiers and others exposed to traumatic experiences. In the late 18th century, gardens were used to treat mental illness in the US, and during World War I, horticultural therapy for veterans was institutionalized (Davis 1997). In World War II, the Red Cross further professionalized recreation therapy and its expansion into the VA (Austin 2004). Outdoor leadership schools and wilderness therapy programs, including some for returning service members, gained popularity in the postwar era and built on models of teambuilding and personal challenge (Davis-Berman et al. 1994, Russell 2001). Veterans also contributed to broader recreation trends, especially post-World War II, as they returned to civilian life equipped with outdoor expertise gained during military training, new types of outdoor gear, and leisure time afforded to some by postwar prosperity (Shelton 2003). The camping culture developed in these years promoted ideals of moral and physical strength built through outdoor experiences (Young 2017).

A growing literature explores how outdoor activities and exposure to natural environments can foster positive physiological, affective, and cognitive responses to reduce many of the symptoms related to post-traumatic stress and nurture pre-existing strengths (Mowatt and Bennett 2011, Duvall and Kaplan 2014, Poulsen et al. 2015, Dustin et al. 2016, Hawkins et al. 2016, Walter et al. 2019). Although OPVs range from day outings to extended trips lasting several months, even a few days' exposure to outdoor activities has been shown to benefit veterans in their recovery from traumatic experiences (Hyer et al. 1996, Dustin et al. 2011, Mowatt and Bennett 2011, Vella et al. 2013, Duvall and Kaplan 2014). Studies of extended outings are less common, but research on the effects of thru-hiking the Appalachian Trail has found a renewed sense of motivation, enhanced social connection, and improved psychological well-being among participants (Dietrich et al. 2015). More broadly, research has found improved resilience and psychological restoration in participants of OPVs (Dustin et al. 2016).

Many studies focusing on the effectiveness of OPVs also highlight persistent gaps in the research. The character and context of most OPVs necessarily limit the number of participants, so small sample sizes routinely mark empirical studies and limit findings of statistical significance (Westlund 2015, Greer and Vin-Raviv 2019). The diversity of activity types, duration, location, participants, and therapeutic emphases (see Table 2 and Figure 1) also limits the efficacy of cross-program comparisons. Few studies include followups to assess the duration of beneficial effects (Vella et al. 2013, Duvall and Kaplan 2014), and the mechanisms or causes of positive outcomes from OPVs remain difficult to isolate or evaluate. In short, quantifying and measuring the results of OPVs come with a number of structural challenges; we do not attempt to remedy these here. Furthermore, whereas prior work in this field has focused primarily on participants' or program providers' experiences or outcomes, very little attention has been paid to land-management contexts, where OPVs are often hosted, and land managers' roles in supporting different types of programs.

Partnerships

The provision of OPVs often requires partnerships among government agencies, health providers, nonprofit organizations, and outdoor recreation professionals. Despite growing appreciation that these partnerships can offer important opportunities for veterans, there remains little systematic guidance or governance for how most land-management agencies could work with partners to accommodate or promote therapeutic uses of public lands. Generally, federal agency partnerships involve cooperation with organizations and individuals, and take many forms to achieve mutual goals (National Forest Foundation 2005, Absher 2009). Agencies engage in formal and informal partnerships to augment their work, overcome fiscal constraints, facilitate cross-boundary management, and promote civic engagement (Seekamp et al. 2011, 2013). Partnerships are important for expanding program capacity and improving management outcomes, fostering transparency through opportunities for public involvement, sharing information, and colearning (Absher 2009, USDA Forest Service 2018, Derrien et al. 2019). Partnerships can also help agencies engage populations, such as veterans, that they might not reach via traditional networks.

Policy Context

Although many local land-management units host veteran-oriented programs such as trail and fire crews,

few of these agencies have national or regional policies concerning OPVs. One exception is the NPS, which recently laid groundwork for new coordination with their Military and Veteran Engagement Strategy. The strategy outlines a commitment to partnerships with the Department of Defense (DoD) and VA in support of the health of active-duty service members and veterans. It includes objectives related to recreational, therapeutic, job training, community service, and educational opportunities for service members, veterans, and their families (National Park Service 2019). This is an example of an agency that is demonstrating administrative leadership for serving veterans on public lands, a coordinated focus that we are not aware of in the USFS, BLM, or other agencies.

Two bills introduced in Congress in 2019 seek to increase opportunities for veterans on public lands. The Recreation Not Red Tape Act (H.R. 3458, S. 1967) proposes to streamline administrative processes and reduce fees and timelines for outfitters and guides operating on public lands. The bill includes a provision for all military branches to provide information about outdoor recreation opportunities to active-duty service members and veterans, and to allow service members to participate in guided outdoor recreation or environmental stewardship activities using official time following a deployment. The legislation explicitly recognizes the value of outdoor experiences for people who work or have worked in stressful circumstances, and the role of employers, such as the DoD, to help provide therapeutic outlets.

The Accelerating Veterans Recovery Outdoors Act (H.R. 2435, S. 1263) would establish a “Task Force on Outdoor Recreation for Veterans” cochaired by the Secretaries of the VA and Interior, and including the secretaries of Health and Human Services, Agriculture, Defense, Homeland Security, and the Chief of the Army Corps of Engineers. The task force would formalize relations among the departments in order to identify barriers and opportunities for the use of public lands for therapeutic purposes for veterans. These legislative proposals, as well as other policy initiatives, guidelines, and agreements, could facilitate agency partnerships with veteran-serving organizations and promote new and accessible outdoor opportunities for veterans.

For these and other proposed initiatives to be successful, policymakers, agency decisionmakers, program providers, and health professionals need a better understanding of the organizational and management environment that enables access for providers and

participants on public lands. Our interview-based research lays the foundation for this understanding.

Methods

For this study of OPVs on public lands, we used a two-pronged approach. To better understand the dynamics among public land-management agencies, veterans’ outdoor organizations, and the policy landscape in which they operate, we (1) conducted semistructured interviews with land managers, OPV providers, program participants, researchers, and health professionals; and (2) used online sources and programs mentioned by interviewees to create a database of OPVs. Although there are also many programs for active military service members, and outdoor therapeutic programs serving other populations, we limited our focus to veterans and programs in which federal public lands are most clearly implicated.

Data Collection

We used a chain referral or snowball sampling approach to identify potential interviewees (Biernacki and Waldorf 1981, Bernard 1995). We asked key informants from the first round of interviews (who were mostly leaders at the national level of organizations) to suggest other sources from the public, private, nonprofit, and research sectors who worked in the nexus of veterans’ programs and public lands, including national scenic trails. We also identified interviewees from online searches of prominent organizations providing OPVs. Through this process, our target list grew to more than 30 interviewees. Interviewees worked at many levels of organizations, although our sample had a stronger representation of organizational leaders than field-oriented staff. They included directors of trail conservancies; program managers from federal land-management agencies specializing in permitting, trail administration, recreation, partnerships, and other management areas; veterans’ program organizers and guides; and clinicians and researchers who serve veteran populations. Some interviewees were also veterans themselves and former OPV participants. We ceased seeking additional interviewees when multiple interviewees referred us to the same sources, and when we determined that the amount of new information began to wane, and the sample had been saturated (Bernard 1995, Morgan 2008).

We conducted the semistructured interviews by phone and in person, guided by a series of approximately 10 questions that were modified for different

categories of interviewees. We asked scripted and unscripted followup questions to encourage elaboration or explication. Questions focused on individuals' knowledge and interactions with OPVs, experiences with administrative, institutional, and programmatic processes, benefits of OPVs, and perspectives on partnership opportunities (see Supplemental Materials). Interviews lasted from 10 to 120 minutes, with most lasting about 30 minutes. We audio-recorded all but six interviews, which were not recorded because of interviewee preference or for practical reasons. For these, detailed notes were taken during the interview instead of a recording. We transcribed all recordings manually.

Sample

We conducted a total of 36 interviews between May 2018 and February 2019. [Table 1](#) displays the primary positions held by interviewees, although several had additional relevant roles, such as a researcher who also worked as a program provider. About a third of interviewees shared that they were veterans themselves. Seventeen of the interviewees were female, and 19 were male; we did not query participants about their race, ethnicity, or age.

Database Development

To gain a broader understanding of the programs operating in the United States, we compiled a database of outdoor-oriented organizations serving veterans. We developed the database with a list generated from programs mentioned in our interviews as well as those garnered from media reports, academic literature, and web searches. We then conducted an online search to identify additional organizations using key words such as: “veterans” plus “outdoors,” “public lands,” “nature,” “national parks,” adventure,” and “job

training.” In addition to the names of organizations, we documented program attributes, such as where they operated, the activities offered, populations served, and program duration. The resulting database includes 82 unique organizations. Although this database is extensive, it is not comprehensive or exhaustive. Additional organizations and programs likely exist without an Internet presence, and some extend their reach with multiple chapters or locations that we likely did not capture. The database does, however, reveal a greater variety of OPVs than was described by interviewees. Many of these additional categories include programs that operate outdoors, but not necessarily on public lands, such as on private resorts, lodges, or ranches.

Data Analysis

We applied a qualitative thematic analysis, following practices summarized by [Braun and Clarke \(2012\)](#). We designed our analytic methods to identify recurring and salient topics of broad relevance to the study's research questions. We organized our analysis in four stages. In the first stage, all three authors read the entire body of interview transcripts, taking notes and creating a list of codes related to types of programs, the interactions between programs and land-management agencies, and challenges and opportunities in program implementation. In the second stage, we applied the initial set of codes to systematically analyze the interview transcripts, allowing for the addition of emergent codes. In the third stage, we re-read the interviews, applying emergent themes and ensuring consistency in coding styles across the research team. Finally, we compiled and read the coded segments, categorized subthemes within the codes, and produced summary documents that described the content of coded segments and offered illustrative quotes. We then circulated, discussed, and refined these summary documents within the research team.

In an additional analytic step, we used the program type code from the interviews, along with the organizations and programs identified and described in the database, to create a program typology. The purpose of the typology was to identify patterns across program attributes to describe OPVs. This helped guide our analysis of how land managers interact with various types of programs. We considered organizational, temporal, and geographic attributes of the programs identified in this process, including mission statements, activities offered, the duration of programs, and where programs took place.

Table 1. Breakdown of interviewees by professional role.

Interviewee professional role (primary)	No. of interviews
Federal land-management agency staff (trails specific)	7
Federal land-management agency staff (nontrails specific)	6
Trail/conservation nonprofit staff	5
Outdoor program provider	10
Researcher/health practitioner	7
Industry/foundation staff	1
Total	36

Results and Discussion

We provide an overview of the diversity of OPVs that occur on public lands and discuss the potential opportunities and challenges that may emerge for public land managers working with OPVs, including partnership potential to expand health benefits of nature and outdoor recreation to veterans.

Program Types

Using our literature review, interviews, and database, we sought to make sense of the full range of OPVs by developing a program typology (Table 2). Our typology includes seven categories: supported outdoor activity; guided outdoor activity; retreat; outdoor job training; stewardship or service; horticulture, farming or gardening; and animal-assisted therapy. Although we found that many programs fit neatly within these types, some straddle or build on elements of multiple types. Some outdoor provider organizations are narrowly focused on one of these types of programs, but many offer an array of program types that cater to veterans and their families, as well as active-duty service members. This typology does not account for the experiences of countless veterans who turn to nature and the outdoors independently, without the structure of a formal program.

Program Dimensions

Although the typology in Table 2 offers a useful framework for considering the main programmatic

foci of OPVs, there is considerable variation within the program types delineated. To help describe the main areas of variation within programs, Figure 1 depicts these dimensions, which include: group size; the social environment fostered by the program; the subpopulations targeted; outdoor activity types; program duration; program frequency; degree of therapist engagement; and geographic range. Other dimensions include whether programs have capacity for adaptive sports, are part of a research study, and cater to particular religious denominations. For example, some providers cater exclusively to veterans in their programming, whereas others serve a broader population. Some providers cater to veteran subgroups, such as female veterans, veterans with families, LGBTQ veterans, or veterans with specific conditions, such as PTSD or physical disabilities. Some providers recruit participants from across the country, whereas others primarily serve local populations. Some programs are well established and run on a regular basis, whereas others operate sporadically. Finally, programs also vary based on the degree to which they include an explicit therapeutic component, with some integrating group or individual therapy sessions staffed by trained social workers, psychologists, and other therapy providers. In some cases, structured or informal group or individual processing is encouraged without a trained therapist. For other programs, the potential restorative and stress-reducing outcomes are derived from being outdoors, connecting with nature, having time

Table 2. Typology of outdoor programs for veterans.

Program types	Description
Supported outdoor activity	Programs that support activities through outfitting or trip planning, with activities undertaken individually or by small groups of participants, such as a long-distance “thru-hike” on a national scenic trail.
Guided outdoor activity	Programs that guide or instruct participants in outdoor activities, such as fly-fishing, rock climbing, mountaineering, hunting, rafting, adaptive skiing, or forest bathing.
Retreat	Programs that offer a camp or retreat setting for veterans (and sometimes their families) to relax, connect, and participate in outdoor activities. These often take place in private ranches or camps, or on public lands using cabins or campgrounds.
Outdoor job training	Programs that teach job-related skills and develop workforce competencies, such as trail building, coral reef restoration, wildland firefighting, and guiding outdoor trips.
Stewardship or service	Programs that promote civic engagement and environmental stewardship through outdoor public works projects. Examples include disaster relief, riparian restoration, or other volunteer community service projects.
Horticulture, farming, or gardening	Programs that involve plant-oriented caretaking and productive activities such as cultivating, planting, and pruning plants.
Animal-assisted therapy	Programs that forge connections between people and other animals, such as equine or canine therapy.

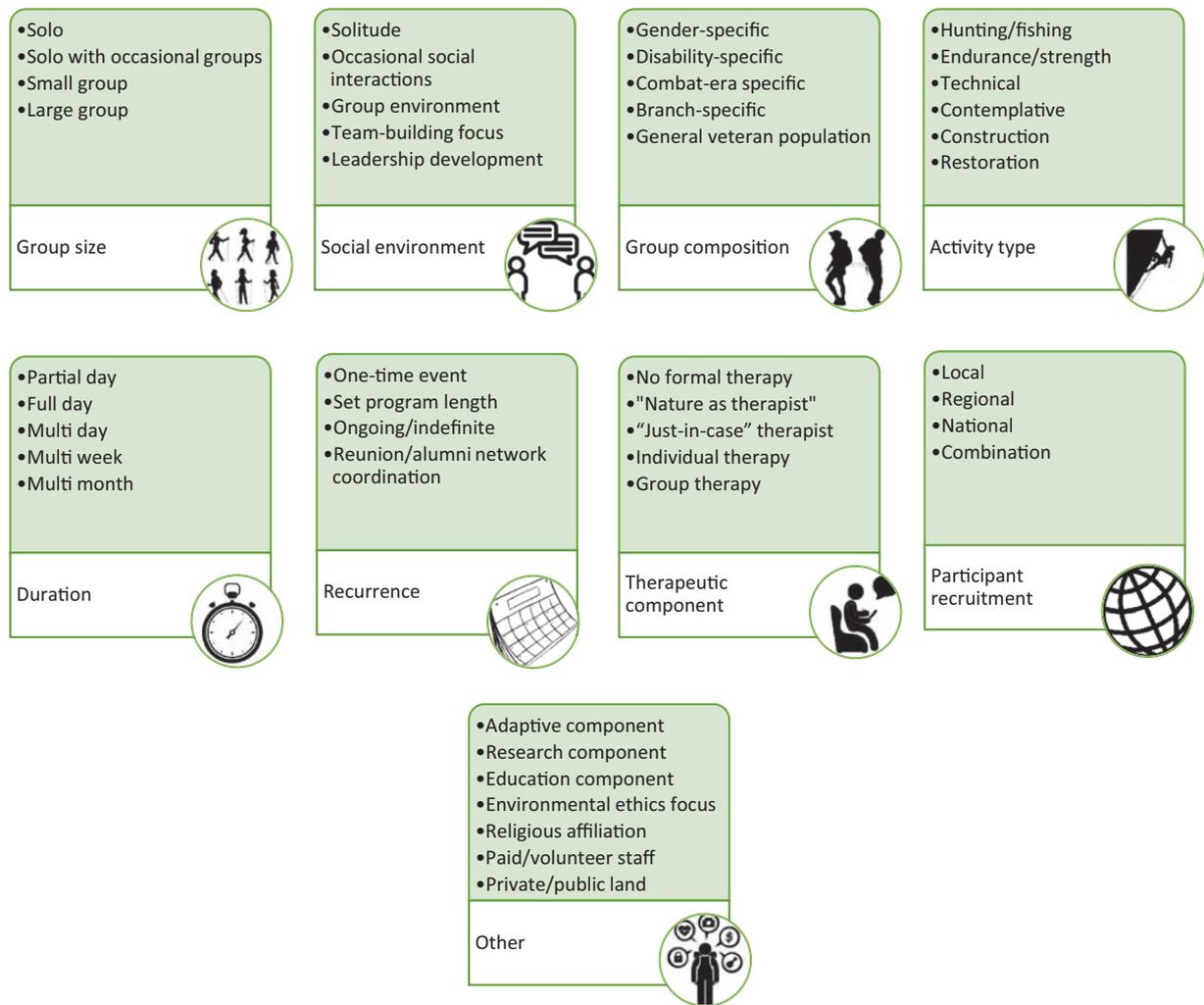


Figure 1. Dimensions of outdoor programs for veterans.

to decompress, developing competencies, journaling, or bonding with others involved in the activity.

Public Lands Interface

The Recreation Not Red Tape (H.R. 3458, S. 1967) and Accelerating Veterans Recovery Outdoors (H.R. 2435, S. 1263) Acts both seek to expand veterans' engagement with public lands, raising questions about whether agencies have the culture and capacity to engage. We sought to understand the sorts of issues public land managers might encounter when interacting with the various types and dimensions of programs. Although our interview sample included a subset of national-scale organizations that provide veterans' programs on public lands, it did not include the full array of program types described in Table 2. As a result, the following results relate to the four program types that occur predominantly on public land: supported outdoor activities, guided outdoor activities, outdoor job training,

and stewardship/service programs. Because we did not interview leaders of organizations that operate private camps, ranches, or retreats, or those which lead horticultural or animal-assisted therapy, the following results do not focus on those programs. Based on our interview data, we describe the main ways that public land managers interact with OPVs, and identify opportunities and challenges in these interactions.

Institutional Partnerships

The land managers interviewed generally recognized the potential therapeutic benefits provided by outdoor activities on public lands, and voiced support for agency partnerships with organizations that connect veterans with those benefits. One land manager shared that, "Everybody from the Forest Service recognizes that it's a great opportunity ... I think we all know the benefits of outdoor recreation or nature immersion can provide to people. So, I think it's just getting over

our administrative hurdles and allowing it to happen.” Managers acknowledged the value of existing partnerships, and some voiced the need for more active partnership approaches, whereby public agencies initiate relations to provide access to more veterans. Another USFS manager mentioned that, “It’s a huge opportunity to really strategically partner with the medical community and the health services community and Veterans Affairs. We haven’t done that. We’ve had some sporadic conversations but nothing’s been formalized at all.”

Administrative hurdles included forging effective partnerships. Several interviewees, both land managers and OPV providers, talked about the potential for new policies and formal agreements that could promote interagency coordination and new institutional partnerships with organizations serving veterans. One land manager described how agencies need to, “put in place agreements with organizations that can provide those services, and work that out at a national level so that it’s easier for us at the regional or forest level and district level to tap into those agreements.” These partnerships could facilitate veterans’ access to outdoor therapeutic programs and spaces, using new authorities, agreements, or memorandums of understanding that streamline bureaucratic processes.

Interviewees identified opportunities for new and expanded partnerships among veterans’ organizations; active military organizations; outdoor industry and nonprofit organizations; other federal government agencies; tribal, state and local government organizations; private health care organizations; universities; credentialed therapy providers; national nonprofit service organizations; and community-based organizations. For example, several interviewees suggested that a formal liaison between the DoD or the VA and the USFS could foster partnerships with veterans’ organizations that promote opportunities. However, small nonprofit organizations struggle to serve veterans through formal partnerships with federal agencies because of the administrative burden, as one OPV provider shared: “[The VA] has on some level partnered with nonprofits, but again those are multi-million dollar nonprofits that can handle that infrastructure ... It still doesn’t incorporate a small nonprofit like us.” Collaborative networks of these organizations could help reduce the administrative burden by providing umbrella agreements with a coordinating entity that oversees multiple veterans’ organizations. These organizations might already work together or, as a result of this coordination, discover they have mutual goals

or complementary approaches. Such networks could also assist with outreach to veteran-serving retreat programs on private lands, to facilitate off-site public land activities, or on-site programs offered by visiting local land managers.

Regulatory

Land managers and OPV providers described opportunities and challenges with agency culture, processes, and capacity, often related to regulatory elements. Some providers had no trouble securing permissions for their program to use a public site, such as a fishing access or a beach, and found it easy to coordinate with the appropriate land managers. For other programs, such as hiking on a national scenic trail across multiple land jurisdictions, permits and passes needed to be coordinated across multiple agencies, which required considerable advanced planning, familiarity with agency regulations, and, in some cases, luck. Program organizers and land managers described challenges they faced navigating regulations and policies for multiple agencies as they dealt with rules about group size, levels of insurance and liability coverage required, and the fees, passes, and permits for individual and group uses.

OPV providers shared accounts of the practical challenges of identifying and interacting with the appropriate people within agency bureaucracies to meet their program needs. One described the “pretty universal struggle to make the right kind of connections with land managers.” Furthermore, some OPV providers described agency biases against group uses, which challenged the opportunities they saw for organized groups to increase access and promote responsible behaviors among new and experienced public land visitors. One interviewee explained:

... when a lot of the federal laws and regulations, and practices were established, through permitting in the [19]60s and ’70s and ’80s, groups were seen as hostile to the outdoors ... If you’re a group, you have hoops you have to jump through ... That can be an impediment to getting groups outdoors. The sheer amount of paperwork.

Some interviewees pointed to an agency culture that views group activities as a threat to values of solitude and “primitive qualities” on public lands. One land manager contrasted the idea of hosting large groups with land-protection practices favoring individual users: “Our people were hired to protect the land, so there is a reluctance to entertain people ... The system

is set up to ... achieve solitude.” A common practice among land-management agencies is that if there is a program-participation fee, then a special use or event permit (and associated fees) is required of the program organizer. This process was seen as cumbersome, slow, and impractical by some providers. Groups over a certain size also often require different permissions. As one land manager described his experience in the USFS:

I was a permit administrator earlier in my career, and if the Girl Scouts wanted to go and do something, but there were already too many of them ... it's going to cost them a couple thousand dollars to have a picnic ... It's kind of absurd, but it's true. That's our policy, and sometimes you have a manager that says, “This is ridiculous. I'm going to go let them do it.” And then you have another who says, “I'm not going to let them do it.”

The interaction with these bureaucratic processes can be stressful for OPV providers. As one provider shared:

[The district ranger] appreciates what we do, but she staffs a bureaucracy, and we fall into any other permittee sort of pool ... Every time I get an email from her, or heaven forbid a phone call, I start to sweat. It's like, “My God, I think ultimately she wants to pull our permit, she doesn't see the value of what we're doing, she wants only to fulfill the obligatory bureaucratic hurdles that she's burdened with” ... I applied for [another permit], and you know, you'd think I was going to open a strip mine.

According to agency personnel and OPV providers alike, one outcome of these bureaucratic hurdles is that some providers avoid interacting with land managers altogether, and some operate on public lands without going through required permit processes. The lack of agency knowledge or engagement for some OPVs generates a variety of concerns. As one program provider cautioned: “There is a lot of veterans' groups, and a lot of groups in general that go out to these places and they don't have a risk management plan. They don't have an insurance plan ... 60–80 percent of these organizations are guiding illegally.” Whether or not this estimate is accurate, interviewees pointed to the need to encourage and enhance relations in the interest of improved program delivery and safety.

Questions about legitimate operations went beyond the avoidance of bureaucratic processes and paperwork. Some interviewees talked about the need for industry-wide standards for credentials, training, and treatment protocols, and the professional experience providers

need to constructively engage with participants who struggle with stress, brain injuries, or other complicating conditions (discussed further in the following section). These standards not only would protect participants and providers but also could serve to prevent resource damage, reduce search and rescue needs, and avoid negative effects on other public land visitors.

Program Planning and Safety

Interviewees described the potential for land managers to engage directly with OPV providers to help shape programs. This could involve jointly identifying the settings and facilities that best support program activities, or designing restoration projects best suited to participant and agency needs. Land managers also described capacity challenges that hampered their ability to work with providers, and bureaucratic processes that often kept public land-management agencies from being little more than gatekeepers or regulators of activities. Veteran-serving outdoor job training and stewardship programs described higher levels of interactions with land managers than other outdoor programs. These work programs fill an important niche, as one interviewee described, “because some guys just don't want to go hike six months, but they wouldn't mind carrying a chainsaw through the woods and going back to the cabin at night.” Transitional programs serve critical agency needs by providing training and experience for veterans in wildland firefighting, trail, and restoration work, and help veterans earn certifications for high-demand jobs.

Safety was an important component of program planning described by interviewees. Risk-management strategies, including how potential participants are screened and evaluated for their readiness to participate, were considered important by land managers and OPV providers. OPV providers described their screening processes to ensure that veteran participants were physically and psychologically prepared, and that they had the appropriate gear and knowledge for their activities. Providers also discussed internal considerations of whether to include mental health professionals at various stages of program planning, implementation, and evaluation. Several described trying to minimize “rule-outs” that would disallow veterans with certain mental and physical conditions to participate. One provider shared,

[Our program] can be therapeutic, but it's not therapy. Our instructors aren't therapists, they aren't doctors. Depending on medical history,

Table 3. Summary of public land-manager considerations for OPVs.

Public land interface	Land-manager opportunities	Land-manager challenges
Institutional partnerships	<p>Formalize national- and regional-level partnerships through agreements, memoranda of understanding, etc.</p> <p>Network with other agencies and units to connect veterans to public lands close to home and connect one-time events with ongoing programs.</p> <p>Partner with private camps to host off-site activities, or to bring agency personnel on site.</p>	<p>Inadequate/absent partnerships or agreements with program providers.</p> <p>Lack of awareness/knowledge of program providers operating on public lands.</p> <p>Lack of coordination among federal entities.</p>
Regulatory	<p>Create agency guidelines for working with veteran-serving outfitters and guides.</p> <p>Improve interagency and interjurisdictional coordination.</p>	<p>Low staff capacity and slow internal processes to administer special use permits.</p> <p>Lack of consistency and coordination across management jurisdictions.</p>
Program planning and safety	<p>Plan mutually beneficial stewardship/restoration projects.</p> <p>Design projects that develop high-demand local workforce skills.</p> <p>Engage with providers to mitigate safety concerns.</p> <p>Use job training and stewardship programs to accomplish work and train future workforce.</p>	<p>Lack of connections to local or regional OPV providers.</p> <p>Low capacity to plan/coordinate work projects.</p> <p>Risk management for participants with underlying conditions.</p> <p>Search and rescue coordination.</p> <p>Mismatches between skills training offered and employment needs.</p>
Symbolic	<p>Partner to produce veteran-oriented education and interpretation.</p> <p>Prioritize access to providers serving veterans.</p> <p>Foster new “mission” of stewardship for public lands.</p> <p>Create special therapeutic designations for veterans’ healing spaces and landscapes.</p>	<p>Lack of specialized partnerships with OPVs providers.</p> <p>Low awareness of the variety and extent of OPVs in operation.</p> <p>Lack of capacity, knowledge, and networks for outreach and coordination.</p>

Note: OPV, outdoor program for veterans.

Discussion

Future Research

The practitioners, managers, and clinicians we interviewed affirmed and offered anecdotal insight into many of the research needs described in the literature, especially the need for studies to characterize dose–response relations for experiences of nature (Frumkin et al. 2017); the need for longer-term research and evaluation partnerships that examine many cohorts and iterations of programs, controlling for different social, environmental, and medical factors to compare outcomes (Greer and Vin-Raviv 2019); and the need to measure strengths-based outcomes in addition to the reduction of symptoms (Hawkins, Townsend, and Garst 2016). Because there is still a lack of scientific understanding of the health outcomes of these programs and the program designs that are most effective, program

providers often do not have standard sets of certifications, credentials, and curricula on which to base their program designs. Nevertheless, existing research could inform how to manage for risk among subpopulations of veterans that are especially vulnerable, the efficacy of specific programs components, and desirable staffing qualifications for outdoor programs serving different subpopulations. In addition, future research is needed to examine the nation-wide spatial distribution of these programs, to understand accessibility issues for veterans seeking to engage in close-to-home programs, and to consider the implications for various land jurisdictions, each with their particular management practices.

To successfully implement the scale of partnerships and coordination proposed in various interdepartmental and interagency initiatives, we need case studies that help

us understand the best practices and elements required for safe, successful OPVs. From a land-management perspective, agency officials would benefit from understanding how these programs require different modes and levels of engagement compared to general recreation special uses, events, or programs. The development and adoption of standard certifications that build on evidence-based practices would offer consistency and guidance to public land managers. This standardization would help to assure them that adequate provisions are in place for the risks associated with organizations' or providers' credentials, competencies, and program designs. Better understanding of what environments and supports programs need to promote beneficial outcomes and reduce risk could reduce the administrative burden on public land managers, and help them be active promoters of successful program models. Our research is a first step in this direction.

Limitations

Our research was designed to be exploratory and expansive. Our methods promoted breadth, which required some sacrifices for depth: whereas we conducted 36 interviews overall, our interview referral method resulted in a relatively small number of subjects from each of our interviewee types (Table 1). Program providers may have been discouraged from sharing accounts of negative or risky experiences, and land managers might have been reticent to talk about bending the rules or appearing unsupportive of veterans' health. We collected no direct measures or data to compare the observations of our interviewees with actual practices. Future research would benefit from mixed methods and more types of data sources so that we could triangulate observations and create and test hypotheses.

Conclusion

Public land-management agencies are already instrumental in serving veterans directly and through permittees and partner organizations. The ability of these agencies to facilitate OPVs effectively is shaped and sometimes constrained by organizational culture, agency norms and practices, and policies and regulations. In our study, OPV organizers described their interactions with the public agencies responsible for the areas where programs operate. Public land-management agencies can influence the frequency and duration of programs, where OPVs can take place, group size, requirements for insurance and liability coverage, and what fees, passes, or permits must be

obtained. Many of these aspects are burdensome to program providers, but if expectations and requirements are thoughtfully developed, well communicated, and consistently applied, land-management agencies could position themselves to serve essential, positive roles in supporting and expanding access to transformative experiences for veterans on public lands.

Our research attends to a gap in the literature by describing the range of OPVs and considering these programs from a public land-management perspective. With a growing number and diversity of OPVs operating on public lands, federal agencies may find it increasingly difficult to meet the needs of these programs. The relatively ad-hoc and decentralized approaches currently in place could be better coordinated to ensure safety, access, and bureaucratic efficiency. This could be (and often is) accomplished at the local or field level, but with hundreds of OPVs now in operation, broader regional or national efforts could be justified to support these important programs. As many veterans continue to grapple with post-traumatic stress, and federal land-management agencies struggle to serve the needs of an increasingly diverse US population, creating the institutional structures to support OPVs may be mutually beneficial to land-management agencies, program providers, and veteran populations who participate in these important, and sometimes life-saving, opportunities.

Supplementary Materials

Supplementary data are available at *Journal of Forestry* online. Supplemental Photo 1: Photo courtesy of Huts for Vets. Used with permission.

Supplemental Photo 2: Veterans learn to rock climb on national forest lands in North Carolina. Photo credit: Image courtesy of North Carolina Outward Bound School © 2020. Used with permission.

Supplemental Photo 3: Photo courtesy of Sarah Martin. Used with permission.

Acknowledgments

The authors thank all of the interviewees who contributed to this study. This research was funded by the USDA Forest Service, Pacific Northwest Research Station, under Joint Venture Agreement: 15-JV-11261985-055.

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