

Comparing Citizens' and Managers' Concerns about Sagebrush Management and Restoration in the Great Basin

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Abstract

The Great Basin sagebrush steppe ecosystem is among the most imperiled in the U.S. Cheatgrass invasion, conifer encroachment, and catastrophic wildfires are considered to be primary catalysts of decline. Efforts are underway to restore and increase the resiliency of this damaged ecosystem through broad-scale applications of fuel reduction and restoration treatments involving mechanical removal, prescribed fire, and herbicide application. While research points to the potential benefits of these treatments, controversy and challenge often surface when treatments are proposed on public lands. Therefore it is critical for land managers to understand the views held by key stakeholder groups concerning management and restoration of public lands. We interviewed ranchers, environmental activists, Extension educators, multiple-use recreationists, and livestock industry representatives from throughout the Great Basin, as well as public land managers themselves, to gain a better understanding of the concerns citizens have about sagebrush-steppe management and restoration. While we found strong support for the concept of restoration in principle, citizen interviewees expressed concerns about agencies' capacity to make it happen. Among the issues raised by interviewees were concerns about: levels of available funding, ability to keep pace with increasing wildfire and invasion processes, emphasis on post-disturbance restoration rather than on prevention, interference from political forces both in constituency groups and in Washington, D.C., and agency willingness to incorporate local knowledge into restoration planning. Managers shared many concerns with citizens, but identified different local-level barriers to implementation.

Introduction

The Great Basin is a geographically diverse region that is home to many indigenous plant and animal species, but it is best characterized by its vast expanses of sagebrush steppe. In recent decades, however, the Great Basin sagebrush ecosystem has experienced unprecedented change, characterized by the rapid conversion of native perennial shrubs and grasses to exotic annual species such as cheatgrass (*Bromus tectorum*), medusahead (*Taeniatherum caput-medusae*), and other invaders (Booth et al. 2003). The region is now considered one of the most imperiled in the nation (Knick and van Riper 2002). It is estimated that greater than 25 million acres of the Great Basin are now dominated by exotic annual species (BLM 2000) that have been shown to alter ecosystem integrity and function (Vitousek 1986; D'Antonio & Vitousek 1992). Other threats to the region include an increase in both the distribution and density of juniper (*Juniperus* spp.) and pinyon pine (*Pinus* spp.) (Miller and Tausch 2002), and the heightened risk of large, catastrophic wildfires that have resulted from an increase in fuel loads (Chambers et al. 2005). These changes have reduced viable habitat for a number of wildlife species, altered soil conditions, reduced livestock forage, and increased the health and safety risks for surrounding communities.

Coupled with the changing ecological and biophysical condition is the fact that the region is experiencing extreme growth and urbanization, which further amplifies the pressures placed on natural resources and greatly increases the complexities involved in management and restoration decisions. Greater than 60% of the Great Basin is publicly owned and managed by the Bureau of Land Management (BLM 2000) as well as other federal agencies, making it crucial for land managers to understand the views held by key stakeholder groups concerning management and restoration of sagebrush-steppe communities in the region.

During summer 2006 we conducted in-depth qualitative interviews with members of stakeholder groups (i.e., ranchers, multiple-use recreationists, environmental interest groups, Extension educators, livestock industry representatives), as well as public land managers themselves, to expand the current understanding of citizen concerns regarding sagebrush-steppe management and restoration in the Great Basin. Our research objectives were to: (1) identify issues and concerns raised by key stakeholder groups and public land managers related to the management and restoration of the Great Basin, (2) identify potential “gaps” in the perceptions and

understanding of issues and concerns between key stakeholder groups and public land managers, and (3) integrate our findings into the development of a sagebrush restoration program for the region.

While prior studies have measured citizens' attitudes toward management of federal rangelands in the U.S. generally (Brunson and Steel 1994, 1996) and toward specific range management practices (Brunson and Shindler 2004), this work has employed surveys rather than in-depth interviews and has not focused on practices of specific interest groups. Prior research has shown important differences in perspectives between interest group members, agency employees and the public (Vining and Ebreo 1991) but this work focused on national forest planning. The only comparative study in a range management context (Fernandez-Gimenez et al. 2005) employed both qualitative and quantitative methods but was narrowly focused on the issue of monitoring.

Methods

Research Approach

To explore citizen concerns about sagebrush management and restoration, we chose a qualitative approach that would yield in-depth, textual data that could expand our understanding beyond that produced from surveys. Our qualitative methodology was guided by grounded theory (Glaser and Strauss 1967), an inductive research approach that encourages the discovery of ideas and theories that are "grounded" in the data, rather than relies on the development of pre-defined, formal hypotheses (Morse 2001; Didier and Brunson 2004; Mills et al. 2006). This sort of research approach retains openness and flexibility (Strauss and Corbin 1990) and allows "greater latitude for discovering the unexpected" (Babbie 1999).

Participants and Sampling

Interview participants were selected and grouped into one of two categories based on whether they were: (1) members of agricultural, environmental, or citizen groups in Nevada, western Utah, eastern Oregon, and southern Idaho; or (2) employees of federal, state, and local government agencies engaged in rangeland management activities in the same region. Contact information for potential key informants was found using the Internet and investigators' prior

knowledge. Key informants were purposively selected based on the potential salience of fuel reduction and restoration treatments to their respective organizations (or to themselves) and their overall knowledge of the region and proposed treatments. Purposive sampling was utilized “to enhance understandings of selected individuals and groups’ experiences and for developing theories and concepts” (Devers and Frankel 2000). In addition to purposive sampling, snowball sampling (Morrison 1988) was utilized to further assist in identifying and locating key individuals and groups for which sampling frames and contact lists were not readily available or accessible (Faugier and Sargeant 1997). Data saturation (Glaser and Strauss 1967) guided the overall study sample size; i.e., selection of participants and subsequent interviews were carried out until the discovery of new information ceased.

Data Collection and Analysis

Between the months of May and July, 2006, 24 individual key informant interviews were conducted as well as one group interview consisting of 8 participants. All of the individual interviews were conducted over the telephone. Lengths for the telephone interviews ranged from approximately 15 minutes to 45 minutes. In most cases, interviewees were contacted via email or phone prior to the actual interview so that an appropriate date and time could be arranged. Detailed notes were kept during each telephone interview and these notes were transcribed to computer text immediately following completion of the interview.

The group interview was carried out in conjunction with the Society for Range Management (SRM) Nevada Section summer tour and meeting in Ely, Nevada. A neutral location was selected for the interview, which lasted approximately 2 ½ hours. The group interview was audio taped and the tapes were later transcribed into computer text. In addition, detailed notes were kept to help serve as a backup and as clarification for the audio recordings.

Two semi-structured interview guides were developed based on the groups described previously. Interviewees who belonged to agricultural, environmental, or citizen groups were asked a series of 9 open-ended questions, designed as an attempt to keep the interviews as informal and as conversational as possible (Yin 1994). These questions sought to uncover thoughts about current rangeland management in the West, perceptions of critical land management issues facing

western public rangelands, future priorities for rangeland management, perceptions of federal agencies' priorities for public rangeland management, thoughts about fuel reduction and restoration treatments, effectiveness of federal agency outreach methods, and involvement in administrative appeals and lawsuits resulting from proposed restoration treatments.

Interviewees who were current employees of federal, state, and local government agencies were asked a series of 11 open-ended questions, again designed to keep the interviews as informal and as conversational as possible. These questions sought to uncover thoughts about current rangeland management in the West, perceptions of critical land management issues facing western public rangelands, perceptions of the public's priorities for rangeland management in the West, thoughts about fuel reduction and restoration treatments, barriers encountered when proposing or implementing vegetation treatments, and the agency's relationship with the local community.

Transcripts from each of the interviews were analyzed via constant comparative analysis techniques (Glaser 1965) that were used "to group answers ... to common questions [and] analyze different perspectives on central issues" (Patton, 1990). As suggested by Merriam (1998) and Creswell (1994), data collection and analysis occurred simultaneously to help generate ideas, integrate new properties, and build comparisons.

Results

Perceptions of Management

When asked their thoughts about how federal public rangelands are currently being managed across the West, members of key stakeholder groups (i.e., recreationists, citizen groups, environmental interest groups, livestock industry representatives) tended to be critical of the land management agencies, and generally had a much more negative perspective on past, present, and future management efforts than agency interviewees. Most responded that federal public rangelands are currently being managed poorly, primarily due to a lack of funding, political interference (especially at higher levels of government), and an inability to keep pace with increasing wildfire and invasion processes. These respondents also perceived a system where funding for rangeland management and restoration follows political whims rather than the

resource needs, and where any available funding is spent on post-disturbance (i.e., after fire) restoration rather than on preventive measures that could eliminate the need for restoration altogether.

“Agencies are grossly underfunded and understaffed. They are not doing their basic jobs that they are responsible for doing let alone doing restoration activities simply because they lack the funding and the resources to make headway on restoring sage ecosystems.”

Ranchers and multiple-use recreationists, especially, perceived management to be driven primarily by orders received from higher levels of government, rather than being driven by local, expert knowledge. Ranchers and environmental interest group members also commented on a perceived lack of incentive within agencies to do anything on the ground, simply because the system doesn't reward excellence in land management, but instead rewarded “how good of a player you are in the bureaucratic system.” Specifically, members of environmental interest groups held a perception that agency cultures and histories are solely rooted in traditional extractive interests (i.e., livestock grazing, mining, etc.) that act as barriers to restoring native ecosystems. In addition, stakeholder respondents belonging to ranching, environmental interest, and recreation groups, perceived a general lack of clarity in management purposes and objectives within the agencies themselves which works to block any changes in management that might be beneficial. It was also suggested by these groups that varying ideas exist from district to district and from state to state with regards to the agency's role in management, implementation, and restoration on western public rangelands.

“Even people within the agencies themselves have different priorities depending on their backgrounds.”

Lastly, some interviewees, especially livestock producers and Extension/university representatives, criticized current rangeland management efforts because they perceived a decrease in the level of training and mentorship provided to new range specialists hired straight out of college who are sent out to manage public rangelands despite having little or no hands-on experience.

“The other end of it that we’ve seen in the past 20 years particularly, is a sliding scale where’s there’s a tremendous lack of training and mentorship in the agencies. Where there used to be a young range con or wildlife biologist or somebody came in, they were very carefully mentored and taken under somebody’s arm with a lot of years of experience and taught how to work with people. You don’t inherit people skills. Somebody has to nurture you along so you can find your way.”

Conversely, public land managers tended to have a more positive outlook on current management efforts, arguing that they were doing the best they could with what they had. Managers recognized that public land management, in general, has become much more complex over the last several decades as a result of the growing number of stakeholder groups utilizing and relying on the resources derived from public rangelands. Like the stakeholder interviewees, land managers, too, recognized a lack of funding to enhance current management and to implement restoration and monitoring efforts.

“Lack of adequate funding to do everything that needs to be done really limits the management on the ground, but things are still getting done. We try everyday to make things better...current management is doing a pretty good job.”

Along the same lines, public land managers also perceived that the increases in litigation, administrative appeals, and protests over the past several years have hampered their ability to implement broad-scale management and restoration treatments. With regards to the efficiency and effectiveness of current rangeland management practices, public land managers commented on their desires to streamline the public participation and administrative processes required by the National Environmental Policy Act (NEPA), which they feel would result in more efficient and effective federal land management.

“If the process were simplified, the federal lands would be managed much better. The administrative process needs to be streamlined. Public participation processes and litigation are taking away much of the management time and monitoring is really suffering. They want to communicate with the public and get their input, but every step of the way it’s a barrier – it’s like taking your car to a mechanic to get it fixed and then

standing over the mechanic's shoulder and every step of the way asking, 'What's this tool for, what's this tool going to do, what are you doing, what's going to happen, why are you doing that?'"

Overall, while public land managers revealed some frustrations with current management efforts, their responses tended to focus more on how the agencies have positively adapted to the many changes that have occurred on and around public rangelands in the West that have inherently increased the complexity and challenge associated with public land management.

Perceived Critical Issues

Key stakeholders and public land managers were generally more united in their responses regarding perceptions of critical land management issues currently facing western public rangelands. All of the critical management issues identified by interviewees can be classified into one of four categories: (1) ecological, (2) social, (3) political, and (4) economic (Table 1). Despite similarities in responses for both groups, some responses were unique to key stakeholders and some were unique to public land managers (Table 1). Indeed, the most critical land management issue perceived by both groups was the overall lack of funding available to the federal land management agencies to effectively manage the land, pay for costly litigation and appeal processes, implement costly restoration treatments, and conduct monitoring and follow-up efforts. Every single one of the 32 interview participants reported lack of funding to be one of the major threats facing the management of western public rangelands.

While perceptions of critical land management issues were generally quite similar among key stakeholder groups, some variability did exist within the groups themselves (Table 1). For example, members of environmental interest groups tended to focus more on critical issues pertaining to livestock grazing, land degradation due to recreation use, surface development for extractive purposes, and lack of clarity and accountability within federal agencies. Respondents belonging to the livestock/ranching contingency tended to focus more on critical issues relating to their interactions with range conservationists/technicians employed by federal agencies, political interference from higher levels of government, increases in surface development, and lack of incorporation of local knowledge into management and planning efforts. Multiple-use

recreationists, on the other hand, were likely to perceive critical issues that focused more on the loss of recreational rights due to increases in surface development as well as a general lack of clarity in management objectives between different states and districts. Lastly, interviewees representing Extension and University contingencies tended to perceive critical issues that focused more on the decline in mentorship/training provided to new federal employees (i.e., specifically range conservationists/technicians), lack of incentive and accountability within federal agencies, and the loss of rangeland ecology departments within University systems.

Sagebrush Steppe Restoration

When asked about sagebrush steppe restoration in general, and more specifically about the use of prescribed fire, mechanical removal, and herbicides to facilitate restoration, all participants indicated strong support for the concept of restoration, especially if the practice is done to improve the overall health of the ecosystem. Nearly every participant agreed that western sagebrush ecosystems are in trouble and need to be restored. The issue doesn't appear to be whether restoration is appropriate or not in principle, but is more a matter of what method of restoration is to be utilized, at what scale the particular method will be applied, and how much a treatment will cost. All interviewees clearly supported the concept of restoration, but most expressed concerns about the capacity of the land management agencies to make it happen, primarily due to the lack of overall funding available for treatment implementation.

In general, interview participants tended to support the use of prescribed fire, mechanical removal methods, and herbicides, with recognition that each method would be more effectively applied in specific situations and in specific locations (e.g., some interviewees suggested that the use of prescribed fire would not be a good idea near urban areas). Responses from stakeholders suggested a hierarchy in the general acceptance of restoration methods, with prescribed fire generally being ranked highest, mechanical removal methods next, and the use of herbicides last. It should be mentioned that while this was the general theme among members of environmental interest groups, most rejected the use of each one of these treatments, especially if they were going to result in increased livestock forage. On the other hand, their responses followed this general acceptance pattern if the treatments were going to be applied in such a way as to benefit the ecosystem as a whole.

Stakeholder responses also revealed concerns over the scale at which each treatment would be applied at. In general, interviewees were much more concerned with broad-scale applications of restoration treatments as compared to smaller-scale applications, but indicated extreme apprehension towards broad-scale applications of herbicides intended to eliminate populations of invasive species and noxious weeds. Members of environmental interest groups were especially strong in their feelings against the use of broad-scale herbicide applications. These feelings of apprehension seemed to stem from stakeholders' perceptions that federal agencies are not capable of applying this particular treatment in a safe manner, from previous direct and/or indirect negative experiences with herbicide use, and from the general negative connotation that the word "herbicide" seemed to conjure up among interview participants (e.g., some interviewees mentioned the use Agent Orange in Vietnam and the book *Silent Spring* as reasons for this negative connotation).

"...people have bad memories of events such as Agent Orange in Vietnam that still is right at the forefront for a lot of people. And so they say herbicides, let's forget about herbicides. Massive application of herbicides. That's what we did in Vietnam. Look what happened there. And so, they are very leery of that, of using that at all as a tool."

Land managers recognized further that very few public rangelands currently existing in the West have the potential to be restored with the application of only one method of restoration. They discussed at length how an integrated approach combining various treatments and applying them at different scales would likely be most effective. Interestingly, public land managers contended that broad-scale applications of specific restoration treatments, particularly prescribed fire (or broad-scale applications of a combination of different treatments) would likely be the most effective at restoring degraded lands as compared to small-scale treatments applied at the plot or allotment levels.

Future Priorities

Perhaps the most telling responses from the interviewees came when participants were asked to convey their thoughts about future priorities for the management of western public rangelands. In addition to this question, interviewees belonging to key stakeholder groups were asked what they

perceived to be the management priorities of public land managers, while public land managers were asked what they perceived to be the management priorities of stakeholder groups.

Stakeholders perceived management priorities within federal land management agencies to be driven by a variety of different factors, none of which included a desire to manage for ecological processes and to protect ecosystems. The majority of interviewees suggested that the main priorities among public land managers were the desire to “protect their own butts” and to carry out the management priorities set by Congress, most of which were perceived by interviewees to focus on commodity extraction and production activities. Additionally, members of environmental interest groups perceived federal management priorities to be highly skewed towards livestock grazing and the production of livestock forage.

“Lands are being managed to allow as much livestock grazing as possible without allowing for other values and uses...their priority is and has been commodity extraction and production activities like grazing, oil and gas, livestock forage, timber, recreation. All of the agencies are very political.”

Among members of the ranching community and some citizen groups, federal management priorities were perceived to be guided by an agency’s objective to satisfy the “greenies,” simply to prevent costly litigation, appeals, and protests.

“Unfortunately, a lot of them are just trying to stay out of court, especially on issues that deal with grazing. The staff is tied up all the time in legal battles and litigations instead of monitoring and managing the land.”

Public land managers, on the other hand, found it generally difficult to cite specific management priorities they thought “the public” has, suggesting that different publics want different things. In general, however, most of the responses from managers revealed a perception that citizens’ priorities for management are mostly driven by recreation and multiple use interests (e.g., hunting, hiking, off-road vehicles, biking).

“It depends on the public...It’s turning towards recreation...recreation on rangelands and forests has sky rocketed. Water quality and water quantity are always big issues as well as grazing, but the tide is turning.”

Along these same lines, managers perceived a public that wants open space, as well as good quality habitat for hunting, fishing, and other recreation activities. Managers also perceived the public to be quite interested in maintaining the historic culture of the “Wild West,” only without the presence of cattle grazing the land. As one interviewee put it: “Everybody loves the cowboy, but hates the cow.”

Regarding future management priorities, the bulk of stakeholders replied that management of western public rangelands needs to shift from a focus on post-disturbance, “Band-aid” management and restoration to a system that addresses the causes of degradation in the first place, ultimately eliminating the need for restoration altogether (e.g., identifying the cause of an increase in cheatgrass in a specific place, watershed, etc., and addressing that cause in that location).

“Agencies need to address the actual problems and not always implement band-aid treatments...they need to address the causes of the problems and not the outcomes. These projects should be done with good understanding of the problem instead of just throwing money at the problem. Quantity in terms of time and money spent on a project shouldn’t be the focus... monitoring and making sure what you’re doing on the land is really working or going to work should be the focus.”

On a similar note, key stakeholders felt that land management agencies need to focus more on fuel and fire management as an attempt to arrest the processes of exotic species invasion and catastrophic wildfire. Furthermore, stakeholders wanted public land management and planning to be guided more by the desire to manage for ecological processes and healthy, functioning ecosystems that yield an abundance of non-market goods and services (i.e., water quality, water quantity, wildlife habitat), rather than being guided by commodity extraction and production activities (i.e., oil, gas, mining). As another important future priority for public land management, stakeholders saw the need for agencies to develop increased clarity and

consistency in overall management objectives and goals. Moreover, some stakeholders, especially those in ranching and recreation, saw the need for their own local expert knowledge to be integrated into future management planning. Lastly, an ultimate priority for key stakeholders would be for land management agencies to acquire the appropriate funding needed for additional restoration and monitoring efforts.

“[E]ven if the land was in healthy condition, even if we had water being protected, and even if we had an administration that cared, we still don’t have the resources, funding, or technical know-how to be able to manage for healthy ecosystems.”

As a response to future management priorities, public land managers commented on a need to increase public education efforts concerning invasive species, prescribed fire, wildfire, the use of specific restoration treatments, and land development efforts. The majority of land managers also indicated a need for agencies to be able to identify the best quality landscapes within their jurisdictions and try and protect them before they cross an ecological threshold and become too difficult or costly to restore. Similarly, managers expressed a strong desire to prioritize areas within their districts based on resiliency and the potential for restoration, and to focus on those first to get the “most bang for their buck.”

“But restoration must be spiced with a large dose of reality including economics. It’s a huge investment to restore a piece of land when the land has already been invaded by cheatgrass... We need to prioritize restoration projects to you get the biggest bang for your buck and ultimately, you’d like to not cross the threshold in the first place. The priority should be to avoid restoration.”

They stressed the importance of research, i.e., applied science and mixtures of on-the-ground treatments that increased the resiliency and functionality of systems and that yielded good quality, repeatable data. Just as stakeholders indicated, land managers ultimately wanted to acquire the funding necessary for important restoration and monitoring efforts.

Agency-Citizen Interactions

In addition to the questions discussed above, members of key stakeholder groups were specifically asked their thoughts concerning the effectiveness of federal agency outreach methods, their general involvement with land management agencies at the local level, and factors that might have influenced their decisions to engage in administrative appeals and/or lawsuits in opposition to proposed management/restoration treatments. Most stakeholders responded that agency outreach methods have improved over the past several years, but still perceived agencies to be better “at giving information out than receiving it.” Respondents belonging to environmental interest groups were especially vocal in their perceptions that agencies tended to suppress and hide information from the public rather than making information easily accessible to all.

An interesting pattern emerging from these particular questions concerned their own involvement with the agencies. In general, they stated that involvement with the public agencies was much better at the lower levels of the federal hierarchy (e.g., in field offices) than it was at the top levels of the hierarchy (the Washington office) because management goals were perceived to be too driven by political agendas, making it difficult to get anything accomplished. There was also a sense that the level of involvement with the public land management agencies varies by geographic location (i.e., some management offices have more experience in dealing with and involving the public, and were generally viewed to be more “progressive”) and largely depended on the level of coordination and the personality of the local land manager. Ranchers, especially, expressed this concern about involvement with agencies at various levels of the political hierarchy and commented that communication with agency employees needs to be improved.

“There needs to be more communication. The agency is just too tied in with the regulations and the system doesn’t allow them to work outside of the regulatory box. There is communication, but the agencies are just intimidated by lawsuits now which effects how things get done. They need to overhaul the regulations on how they manage the lands.”

With regard to factors influencing decisions to engage in legal action, only members of environmental interest groups could answer to this particular question given that they were the ones most heavily involved with legal issues. The majority of interviewees in this category indicated that their decisions to engage in legal action were primarily driven by their overall desires to protect the environment, their perceptions that the federal agency had “cut corners” in the administrative and public participation processes, were applying the treatment at too large of a scale, were being dishonest, were suppressing information, and/or hadn’t considered all of the appropriate alternatives for the specific treatment.

“Agencies suppress information, don’t share information, don’t follow FOIA, and the information is not clear. They are lying and breaking the law. They violate NEPA by failing to conduct reasonable EIS’s. They are dishonest and try to sneak everything by.”

Likewise, public land managers were specifically asked their thoughts concerning their involvement with the local community and particular obstacles/barriers they face when trying to implement proposed management and restoration treatments. Most managers commented that their involvement with the local community was “pretty good,” despite their perceptions that the local public were disconnected from the land and didn’t have appropriate knowledge of current land management issues.

“The majority of the US population is disconnected from the land at this point in time. And so they simply don’t understand how systems work. They don’t understand where their water comes from. They don’t understand where their food comes from. They don’t understand where forest products come from. They buy it in the store, that’s where it comes from. And they don’t understand where the production actually takes place. And there are some parts of it that are fairly messy.”

Barriers to Sagebrush Steppe Restoration

With regards to barriers that exist when trying to implement specific restoration treatments, the majority of land managers commented that both internal (i.e., those originating within the agency structure) and external factors (i.e., those originating from elsewhere in the agency) exist that

work to hamper restoration efforts. As previously discussed, financial limitations were ranked as the greatest internal barrier to restoration implementation.

“A lot of the barriers are money and budgets and lack of funding. There’s a ton to do out there, but with no money to do it, it’s just not going to get done.”

In addition, conflicting land use objectives within the same region (e.g., management restrictions in wilderness study areas that conflict with other objectives), the time it takes to receive the appropriate cultural resource clearances, and the time required to engage in public participation and administrative processes were all offered as major barriers to implementation of restoration treatments. With regard to external barriers, the impediment most frequently mentioned by managers was a general desire to avoid litigation originating from “lawsuit happy” environmental interest groups that they believe comprise only a small portion of the general population. It appeared that this apprehension, while prevalent in managers’ responses, truly affects only offices in “hotspots” of legal battles and environmental lawsuits (e.g., parts of Idaho). Among other external factors mentioned by public land managers were simple ecological realities, or the notion that some lands had been degraded so much that they simply couldn’t be restored in an economically feasible way.

“Budgets, ecological realities, time spent for public participation processes, litigation, appeals, and protests are all obstacles. Time spent proving what we’re going to do and what the potential benefits might be takes up all the time – this is time wasted. Dealing with the public takes a lot of time and you want them to know that you can’t squeeze blood out of a turnip and can only do so much.”

Discussion and Implications

While this study was an initial exploratory attempt at unraveling some of the issues and concerns of citizens living in the Great Basin region with regard to the management and restoration of sage-steppe ecosystems, some revealing issues came to light. Clearly, some definitive “gaps” do exist between public land managers and members of key stakeholder groups, especially regarding each group’s thoughts about the current management of federal public rangelands and perceptions of the other’s land management priorities. While the majority of public land

managers were quite positive about current management efforts, especially considering all of the challenges they perceive to be faced with, the bulk of the stakeholder respondents were very critical of current management efforts and definitely more uncertain about the future of public land management in the West.

The general public tended to perceive land management priorities within federal agencies to be strongly rooted in extractive purposes intended to increase commodity production of raw materials such as oil, gas, and timber. There was also an overall feeling among key stakeholders that agencies were stuck in a system where political management was forced to take precedence over actual land management.

Conversely, public land managers believed that they must respond to a complex public whose members all seem to have different priorities for land management, but who all want the land maintained for multiple use interests and the maintenance of the western cultural heritage. Furthermore, there was a perception among public land managers that the general public is becoming increasingly disconnected from the lands around them and that the majority lacks sufficient knowledge concerning important management issues and restoration practices to effectively participate in management planning.

Both groups were, however, much more united in their support for the use of restoration treatments as management tools and in their agreement about the critical threats currently facing western public rangelands. In addition, the issue of available funding within the agencies to carry out costly restoration activities was a concept mentioned repeatedly during each and every interview. While we found strong support for the concept of sagebrush-steppe restoration, genuine doubts existed among interviewees concerning the capacity of the land management agencies to carry out their intended management goals and objectives to restore degraded landscapes in the Great Basin.

Clearly a multitude of issues characterize the socio-political environment of public land management today. These issues are becoming much more complex and increasingly more challenging to deal with as more and more people come to rely on public rangelands for their resources, even as this reliance likely contributes to the continued degradation of these valuable

landscapes. One thing all interviewees strongly agreed upon was that Great Basin ecosystems are in trouble and that action must be taken to protect the healthy landscapes that still exist within this region. Despite this shared viewpoint, clear divisions definitely appear to exist between the many stakeholder groups and the public land managers delegated to manage western public rangelands.

Being able to correctly predict and ascertain the needs and priorities among stakeholder groups will be critical for federal land management agencies in the future as they face ever-growing challenges and citizen concerns. Having an increased understanding of local knowledge, viewpoints, concerns, and issues – and the means to integrate them more effectively into planning for local restoration efforts – will help managers better predict and avoid potential conflicts in the future. But, this also requires give and take. The public also must be willing to step up and get involved, by learning about complex ecosystem processes and by lending their voices and input to future management and restoration planning.

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Table 1. List of critical land management issues currently facing western public rangelands as reported by key stakeholder groups and public land managers in the Great Basin.

	Ecological	Social	Political	Economic
Responses Common to All Interviewees	<ul style="list-style-type: none"> - Altered fire regimes - Aroga moth - Catastrophic wildfire - Climate change - Damage due to recreation (i.e., OHV) - Decadent stands of sagebrush - Degraded water quantity and quality - Encroachment of pinyon pine and juniper - Feral horse management - Increased fire and fuel loads - Invasive species - Lack of monitoring - Lack of species diversity - Loss of wildlife habitat - Mormon crickets - Road construction - Unhealthy riparian/upland areas 	<ul style="list-style-type: none"> - Lack of public education and awareness towards issues - Increased multiple-use recreation - Rangeland ecology departments are disappearing nationwide - Threat of litigation/appeals 	<ul style="list-style-type: none"> - Policies interfere far too much in the process of managing lands. - Conflicting land use objectives 	<ul style="list-style-type: none"> - Lack of funding
Responses Unique to Key Stakeholders	<ul style="list-style-type: none"> - Fragmentation due to surface development (ENV, LR) 	<ul style="list-style-type: none"> - High turnover rate of range cons/range techs (EU, LR) - Lack of agency accountability (ENV, LR) - Lack of incentive to work for a federal agency (EU, LR) - Lack of mentoring/training in public agencies (EU, LR) - No incorporation of local knowledge into mgmt./planning (LR, REC) 	<ul style="list-style-type: none"> - Lack of understanding of the people funding management of rangelands in Washington DC (ENV, EU) - Policies that are focused on livestock production and other extractive purposes (ENV) - Lack of clarity in agency objectives (ENV, LR, REC) 	<ul style="list-style-type: none"> - Oil, gas, water extraction (ENV, LR) - Surface development (ENV, REC, LR)
Responses Unique to Public Land Managers	<ul style="list-style-type: none"> - Grazing permit renewals 	<ul style="list-style-type: none"> - Citizens who don't value native ecosystems - Lack of involvement at the local level 	<ul style="list-style-type: none"> - Lack of flexibility and allowance of exceptions in policies and laws 	

LR = Livestock/Ranching **ENV** = Environmental Interest **REC** = Multiple-Use Recreationists **EU** = Extension Educators/University Representatives