

Public Perceptions of Land Management in the Great Basin

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The Great Basin is undergoing significant landscape change due to an array of natural and anthropogenic factors. Land management strategies intended to address these problems will require landscape-scale solutions that can reduce, reverse, or mitigate ecosystem degradation while remaining economically feasible and socially acceptable. The latter criterion may be problematic, especially given ongoing rapid growth of the region's human population.

Social acceptability is a characteristic of management actions and landscape conditions that results from citizens' judgments about current or proposed situations as compared to possible alternatives (Brunson 1996). It becomes important to land management when citizens judge that existing practices or conditions are unacceptable and take steps they believe can shift conditions toward a more favorable alternative. These steps can take a variety of behaviors that affect land management decisions and activities, including changes in personal habits such as adopting minimum-impact recreation practices; support for advocacy groups; participation in public involvement processes or legal actions; or protest activities directed against agency property or personnel.

The above description highlights both the difficulties and benefits of accounting for social acceptability in land management. Acceptability can be hard to measure and to generalize, as there are many contextual factors that affect individual judgments (Shindler and others 2002). Knowledge about public views on natural resource management, however, can improve managers' understanding of, and potential influence over, public support or resistance to land management activities.

Key Issues

In general, residents express strong support for ecosystem management across the United States and within the Intermountain West. In a study by Lybecker and others (2005) of public objectives for Intermountain forests and rangelands, residents ranked the protection of forest and grassland watersheds as one of the highest priorities

of the Forest Service. Analysis by Bengston and others (2001) suggests that ecosystem management as a land management paradigm has become a non-controversial issue with widespread public acceptance nationwide.

A recent survey of residents in six Great Basin locations (Shindler and others 2007) found that citizens believe the most serious threats to healthy rangelands are development, invasive species, motorized recreation, overgrazing, and wildfire. Public acceptance is high for management actions intended to improve rangeland conditions, particularly the use of prescribed fire, grazing, and mechanical vegetation management treatments. However, survey respondents expressed considerable skepticism about the agencies' ability to implement restoration practices in light of political pressures, budget constraints, and other factors that make management more difficult.

The critical issues associated with the social acceptability of management practices lie in the distinction between the goals of ecosystem management and actual actions. Not only is there concern about the ability of land managers to implement ecosystem management, but there is greater acceptance of ecosystem management in general than of specific restoration activities (Connelly and others 2002). A summary is provided below of studies assessing the social acceptability of specific management practices, including fire, livestock grazing, forestry, rare species, invasive species, wildlife disease, and riparian/stream restoration.

Fuels management—Common fuels management activities, such as prescribed fire, mechanical vegetation removal, and defensible space creation, are generally supported by citizens (Weible and others 2005; Delost 2001). Abrams and Lowe (2005) synthesized existing research on the social acceptability of fire management in the Southwest and found that residents understood the role of fire, supported the use of prescribed fire as a management tool, and believed smoke is an acceptable outcome of fire management, even while they still expressed concerns about smoke and allowing wildfires to burn. Brunson and Shindler (2004) also found general

support for prescribed fire, grazing, and mechanical treatment, although residents' attitudes varied by location. Considering the state's history of ranching, residents of Utah were more likely to support grazing, while Oregon residents who have more experience observing logging activities were more likely to support mechanical treatment. Vogt and others (2005) and Kneeshaw and others (2004) documented individual and situational factors that can influence residents' views of wildfire management and practice acceptability. Support for fuels management was positively associated with a lack of concern over loss of scenery, belief in the controllability of forest fires, perceived property damage risk, and trust in agency ability to carry out specific actions.

Conversely, if a prescribed burn gets out of control or a similar incident occurs, the resulting loss of trust can make it more difficult for managers to implement fuels treatments near the affected location, even if citizens still support the use of such practices in general (Brunson and Evans 2005). Similarly, van Kooten and others (2006) found that one of the greatest factors contributing to deterioration in the relationships between Nevada ranchers and federal land managers was the character of experiences in the aftermath of a wildfire. The authors suggested that ranchers be offered incentives for taking steps to manage fuels in ways that can minimize catastrophic fires. A related issue may be whether agency policies can be adjusted to ease ranchers' post-fire concerns.

Grazing management—Livestock grazing has long been a controversial issue for public land managers. Lybecker and others (2005) found that survey respondents from the Intermountain west (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming) were somewhat more likely to support multiple uses of national forests and grasslands than respondents from the rest of the United States. Brunson and Steel (1996) found geographic differences in social acceptability of federal range management practices as well. In particular, support for livestock grazing on public rangelands varied based on rural/urban background and core values. Respondents from eastern Oregon were more likely to support grazing than those from western Oregon or other more urbanized regions where livestock are not so frequently seen on public lands. Brunson and others (1996) also found rural/urban differences in attitudes among Utah residents about federal rangeland management practices. Huntsinger (2007) reported that a 1995 survey of Nevada residents found no large differences in attitudes toward ranching between rural and urban residents, nor between longtime residents (>10 years) and more recent arrivals to the state; however, even then

recent and urban residents were slightly less favorable toward traditional range management practices. Given the differences found in Oregon and Utah, and similar differences reported by Mitchell and others (1996) in Colorado, a continued influx of residents to the Great Basin from other regions may lead to a shift in public support away from traditional practices.

Forestry practices—While timber production in the Great Basin is minimal, managers employ silvicultural practices to achieve other goals such as forest health protection. Abrams and others (2005) found that active management of forested land was an acceptable practice for the majority of Oregon residents, especially if forests were unhealthy. Approval outweighed disapproval regardless of environmental or economic orientation, but economically oriented respondents were more willing to approve management interventions than environmentally oriented respondents. Scenic impacts can shape the acceptability of specific forest management practices (Shindler and others 2002, Ribe 2002). Brunson and Reiter (1996) found that two samples of Utah residents rated as acceptable the scenic impacts of recently thinned and group selection harvests, although they preferred the view of an unharvested old growth stand.

Rare and vulnerable species management—Management for recovery of threatened and endangered species involves cooperation between the U.S. Fish and Wildlife Service that is responsible for the plants and animals and the public land agencies that manage their habitats. Concerns about the acceptability of management can be directed at either side of the management equation. Although there is general support for species protection (Dunlap 2000), public support has not always translated into effective recovery (Czech and others 1998, Hadlock and Beckwith 2002). Barriers to acceptability include differing public values about species protection and the need for biological diversity, economic livelihood concerns, and fear of additional regulation (Hunter and Rinner 2004). Stankey and Shindler (2006) argued that the public is generally unaware of rare and little known species, leading to public resistance of management programs and poor social acceptability. However, a recent study of attitudes toward protection of the Utah prairie dog (*Cynomys parvidens*), a federally listed "threatened" species whose range extends into the southern Great Basin, found higher levels of knowledge about the species but *lower* levels of support for protection among rural respondents when compared to urban residents (Elmore 2006). Most agricultural producers and southern Utah residents believed the species has a right to exist only on public land.

Invasive species—While studies of attitudes toward invasive species control have yielded inconsistent results, public support for control practices is linked to individual beliefs about the ecological and economic impact of invasive species as well as the potential dangers of control options. Anderson and Wotring (2001) found strong public support for aggressive weed control to restore ecosystems, while Colton and Alpert (1998) found that most residents had a limited awareness of the concept of biological invasion and few thought weeds caused serious impacts or should be controlled. Czech and Krausman (1997) argued that non-native species were the biggest threat to native species survival, but that only two percent of the public agreed. In a survey of Southwest residents that compared the acceptability of chemical, mechanical, biological, and cultural controls for invasive rangeland plants, Tidwell (2005) found differences associated with both the method of control (cultural methods were generally most acceptable and herbicide use least acceptable) and with the location where control occurs. When occurring in protected areas as opposed to on multiple-use public lands, nearly twice as many respondents viewed chemical control as unacceptable, but there were no location-related differences in the acceptability of the other control approaches.

Riparian and stream management—As with invasive and rare species management, riparian and stream management often requires private landowner support and adoption of agency-proposed management practices. Riparian zones are important to residents (Novak 1997), but Skelton (2004) found that individual acceptance and implementation of riparian forest buffers is tied to positive attitudes toward government programs, poor water quality, and perceived outcome effectiveness of adopted practices.

Wildlife management—As with rare species protection, management of the wildlife species that inhabit public lands requires cooperation between state and federal wildlife agencies and the public land managers. Citizens' concerns about wildlife management may be directed at both types of agencies, especially when dealing with controversial issues such as lethal control of animals. Americans generally support the use of lethal practices to manage the spread of wildlife diseases (Koval and Mertig 2004), protect public health (Reiter and others 1999), maintain healthy wildlife populations (Fulton and others 2004), and reduce predation on rare species (Messmer and others 1999). However, there is less public support for use of lethal methods to protect livestock against predation or crops and timber against

herbivory by vertebrates (Reiter and others 1999). Hunter support for lethal measures to combat Chronic Wasting Disease increases as prevalence and human health risks increases (Needham and others 2004). Little is known about citizens' attitudes toward potential responses to other wildlife health threats.

Management Challenges

Landscape-level management within the Great Basin will have a greater chance of success if land managers and decision makers understand the links between landscape change and ongoing social processes, as well as the factors that influence acceptance of proposed management activities by citizens and land managers. To achieve these goals, two key management challenges must be addressed. First, managers must recognize that social acceptability is a process rather than a final goal. Every proposed activity will have its own context that can shape citizens' acceptance of specific management practices and plans. Repeated opportunities to examine resident values and attitudes about natural resource management need to be built into an adaptive management framework. Shindler and others (2002) provide more detailed information about addressing the challenges of social acceptability in landscape-level management. Second, education and outreach represent crucial steps toward improving the social acceptability of management practices. Shindler (2000) points out that for most people, landscape-level management is not a clear concept. Managers must go beyond attempts to "educate the public" and instead find appropriate outreach activities that directly address questions about risk and uncertainty. There are numerous ways to promote citizen understanding, but while unidirectional approaches such as public service advertisements, websites, and brochures may be more cost-efficient, citizens rate interactive outreach methods as more helpful (Toman and others 2006). Similarly, Shindler and others (2007) found that the most highly rated forms of agency-to-public communication were more interactive approaches (in other words, field tours, demonstration sites, and small workshops) that provide opportunities for discussing local conditions. Public involvement can improve trust-building among agencies and the public (Winter and others 2004; Simon and Dobra 2003), improve the effectiveness and efficiency of management strategies, and bring alternative natural resource perspectives to the table for discussion. However, public participation is only effective if citizens can see how their interactions with managers have influenced decisions (Shindler and others 2002).

Research and Management Questions

In 2004, the USDA Forest Service (USDA Forest Service 2004; pp.7 through 11) developed a social science agenda containing five main objectives: 1) expand understanding of the human uses and values of natural resources and their implications for management; 2) develop and deliver information on the relationships among social, economic, and ecological sustainability; 3) develop knowledge about the role of community-based collaboration in public land management; 4) expand understanding of the human role in, and response to, environmental change; and 5) expand understanding of the links between human diversity and natural resource use and management. Little of this has been accomplished in the context of Great Basin land management. Toman and others (2006) assessed the relative effectiveness of public education methods for influencing acceptance of fuels management proposals, but there is a need for similar studies for other management activities and for evaluations of specific programs. Many community-based collaborations have been studied over the past decade, but such activities have been conducted for only a fraction of agency land management proposals. Few studies have focused on land uses and values specific to the Great Basin (for example, pinyon nut harvesting), human responses to environmental change, or topics related to diversity in a region with a rapidly growing immigrant population, especially from Spanish-speaking nations.

Although numerous social science studies have explored topics that can illuminate the issues identified in this paper, few have focused on the Great Basin or on the ecosystem processes and practices that predominate in arid and semi-arid rangelands. Given that researchers frequently find geographic differences in public perceptions or attitudes (for example, Lybecker and others 2005, Brunson and Shindler 2004) regionally relevant studies are needed that can augment existing research, especially on restoration and other topics that have received little research attention. It is important to explore how individual, social, and contextual factors specific to Great Basin issues can influence acceptability.

Perhaps most critically, research must take into account the rapid population growth in the region and the influx of new residents who may be less familiar with management practices and environmental conditions found in the Great Basin. Particular attention should be paid to issues where controversy is most likely to occur, especially around the major urban centers of Salt Lake City, Boise, and Reno as well as in “New West” amenity

communities such as Bend, OR, or Sun Valley, ID, where the costs of a loss in amenity value may be greatest and the willingness to oppose agency activities is high. Shindler and others (2007) reported differences between urban and rural respondents with respect to the perceived threats to rangelands, opinions about environmental and economic priorities, acceptance of specific management practices, support for local priorities, the role of science in decision-making, and levels of understanding about issues and landscape conditions.

Finally, management activities should be analyzed in their full ecosystem management contexts by simultaneously evaluating influences on social acceptability, economic cost, and ecological outcomes in order to help prioritize, and increase the success of, future landscape management and restoration activities.

Existing Programs and Resources

Sagebrush Steppe Treatment Evaluation Project (Sage-STEP), funded by the Joint Fire Sciences Program, is a multidisciplinary research effort that includes two social acceptability and stakeholder evaluation studies <http://www.sagestep.org> [2007, July 17]:

Assessing trade-offs and decision process by agency professionals and key stakeholder groups in the Great Basin, Mark Brunson and Jennifer Peterson, Utah State University. http://www.sagestep.org/pdfs/progress/citizen_survey_summary.pdf [2007, July 26]

Public Priorities for Rangeland Management: A Regional Survey of Citizens in the Great Basin, Bruce Shindler, Ryan Gordon and Mark Brunson. http://www.sagestep.org/pdfs/progress/citizen_survey_summary.pdf [2007, July 26]

Oregon State University, Graduate Certificate Program in Sustainable Natural Resources. Includes coursework in human dimensions of natural resource management. <http://www.cof.orst.edu/SNRCertificate/> [2007, July 17]

USDA Forest Service, Rocky Mountain Research Station, Natural Resource Assessment and Analysis. <http://www.fs.fed.us/rm/analytics/> [2007, July 17]

USDA Forest Service, Rocky Mountain Research Station, Social and Economic Values in Natural Resource Planning. <http://www.fs.fed.us/rm/value/> [2007, July 17]

U.S. Global Change Research Program offers decision-support resources for understanding human responses and contributions to global change. <http://www.usgcrp.gov/usgcrp/ProgramElements/human.htm> [2007, July 17]

Center of the American West, University of Colorado-Boulder. <http://www.centerwest.org/> [2007, July 17]

University scientists in the Great Basin region with research expertise and experience in this topic region can be contacted at:

Oregon State University, Dept. of Forest Resources <http://www.forestry.oregonstate.edu/cof/fr/socialscience.php> [2007, July 17]

University of Idaho, Dept. of Agricultural Economics and Rural Sociology <http://www.ag.uidaho.edu/aers/> [2007, July 17]

University of Nevada-Reno, Dept. of Resource Economics <http://www.cabnr.unr.edu/re/Research.asp> [2007, July 17]

Utah State University, Dept. of Environment and Society <http://www.cnr.usu.edu/departments/departments/envs> [2007, July 17]

Utah State University, Dept. of Sociology, Social Work and Anthropology <http://www.usu.edu/sswa/> [2007, July 17]

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