

Chapter 16

Place Mapping to Protect Cultural Landscapes on Tribal Lands

Alan Watson, Stephen Carver, Roian Matt, Tim Waters,
Kari Gunderson, and Brett Davis

Abstract Relational marketing provides a framework for examining and preserving human relationships with landscapes, including place meanings. On the Flathead Indian Reservation in Montana, a Web-based mapping exercise allowed residents to locate and describe places that hold meaning for them, indicate the scale and intensity of those meanings, and characterize their perceptions of threats to these places. Here results are presented from a mapping exercise designed to facilitate group discussions with forest managers and the public regarding fuel treatments on tribally managed lands. The method built trust among tribal and non-tribal residents

A. Watson (✉) B. Davis
Aldo Leopold Wilderness Research Institute, USDA Forest Service,
Rocky Mountain Research Station, 790 E. Beckwith Avenue,
Missoula, MT 59801, USA
e-mail: awatson@fs.fed.us; divemasterbrett@gmail.com

S. Carver • T. Waters
School of Geography, University of Leeds, Leeds, LS2 9JT, UK
e-mail: S.J.Carver@leeds.ac.uk; achippy2005@gmail.coms

R. Matt
Educational Outreach Coordinator, Department of Confederated Salish
and Kootenai Tribes Forestry, 104 Main Street Ronan, MT 59864, USA
e-mail: roianm@cskt.org

K. Gunderson
College of Forestry and Conservation, College of Education and Human Services,
University of Montana, Missoula, MT 59804, USA
e-mail: kari.gunderson@umontana.edu

and improved fire planners' understanding of relationships between proposed actions and place meanings.

Keywords Relational marketing • Trust building • Land conflicts • Wilderness buffer zones • Place meanings

In their writings on human relationships with public lands, Watson and Borrie (2003, 2006) describe a form of relational marketing focused on building and maintaining relationships, in which the public represents the primary stakeholders (both customers and partners) of public lands services. This contrasts markedly with private-sector marketing, which centers on generating revenue through repeated transactions with customers (Garbarino & Johnson, 1999; Morgan & Hunt, 1994). Borrie, Christensen, Watson, Miller, and McCollum (2002) used relational marketing to demonstrate how public attitudes toward recreation fees in the U.S. depend on the ways that people relate to public lands and managers. They noted the value of segmenting the public based on these relationships to better understand response to public lands policies, instead of using more transactive or demographic attributes. These authors have also built upon this framework to justify and propose a system to guide monitoring of changing relationships between the public and public protected areas (Watson & Borrie, 2006).

Most private sector marketing approaches focus on transactions between individuals (or organizations) and customers, have distinct beginnings, short durations, and clear endings. On the other hand, relational exchanges acknowledge effects of previous contacts and knowledge, persist longer, and reflect an ongoing process (Dwyer, Schurr, & Oh, 1987). Watson and Borrie (2006) suggest that when services are provided on public lands (or other collectively held lands) the most appropriate view of "customer service" is the fostering of a relationship between individuals and public lands. Protection of this relationship often focuses on protection from publicly perceived threats. Fulfilling the public purposes of such lands falls under the stewardship responsibilities of managing agencies, wherein commitment and trust are primary ingredients for successful relational marketing (Morgan & Hunt, 1994; Watson & Borrie, 2003).

Of course not all customers desire the same relationship with a producer of goods or services. Thus it may be prudent for organizations to pursue both transactional and relational marketing, as customers may exist on a continuum of transactional to collaborative exchanges. In the public sector, however, members of the public are by definition involved in a collaborative relationship with the responsible stewardship agency. While a collaborative relationship exists for all people the level of commitment (measured by intensity of relational meanings) for the services provided by an agency and the level of trust instilled among members of the public may vary substantially. As argued in this chapter relational marketing suggests that understanding the variability in trust, commitment, and meanings attached to protected areas is paramount in developing and implementing public policy that meets the mandates of public lands (Watson & Borrie, 2006).

16.1 A Cultural Landscape with Contrasting Meanings

On Montana’s Flathead Indian Reservation the tribal council designated the 92,000-acre Mission Mountains Tribal Wilderness (Fig. 16.1) in 1982 at the urging of many tribal members. The wilderness is a symbol of the overarching

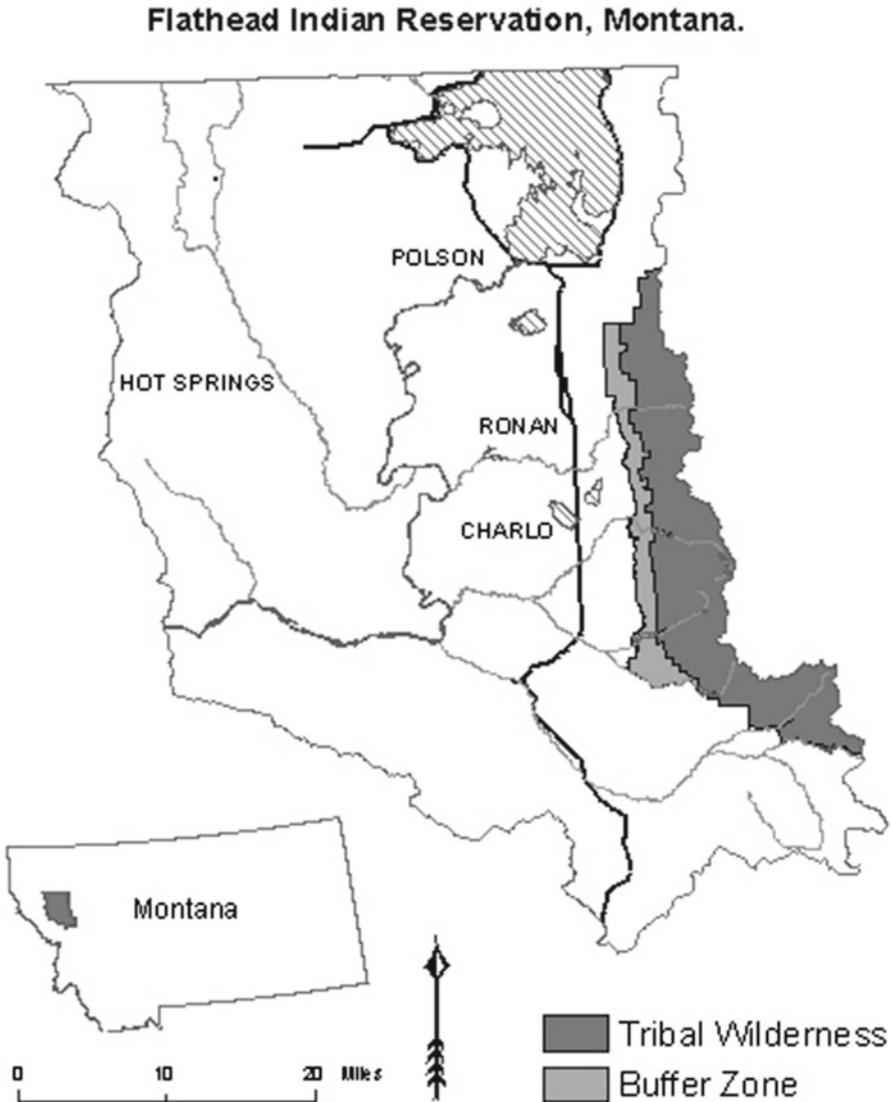


Fig. 16.1 The Mission Mountain Tribal Wilderness is bordered to the west by the Tribal Buffer Zone (Figure courtesy the Confederated Salish & Kootenai Tribes)

relationship the Confederated Salish and Kootenai tribes once had with the northern Rocky Mountains. The tribes also established protection in 1987 for an additional 22,000 acres west of the wilderness to serve as a buffer zone against unwanted human activities. The wilderness buffer zone essentially established a checks-and-balances system that assured deliberation and conscious decision-making to ensure that trust is protected and wilderness values do not deteriorate. This parcel of land—half of which is owned by the tribe, half by tribal and non-tribal individuals—contains a few homes and roads and remains a working landscape within the community. Both the wilderness and the buffer zone are considered protected cultural as well as natural landscapes; thus major decisions about the management of these areas are subject to review by the Tribal Cultural Committee, the Tribal Council and other tribal members.

To successfully improve forest health within that wilderness buffer zone and increase opportunities to restore fire in the wilderness the Tribal Forestry Department and the public are working together to find solutions to increasingly threatening fuel buildups. Decades of fire suppression within the wilderness buffer zone have resulted in heavy accumulations of dead wood on the forest floor, a dense understory of brush and young trees, and closed forest canopy—all of which renders the forest highly susceptible to destructive wildfires, disease, and infestations of pine bark beetle and other harmful insects. At the same time improving forest health demands the use of fire to restore a structure that makes it more fire-resilient over the long term. Although the tribal people and their governing agencies are ostensibly committed to seeing fire restored in the wilderness the situation of fuels abundance in the buffer zone has been a serious obstacle.

Also some tribal members have expressed a lack of trust in the tribal forestry agency to manage resources for non-monetary as well as monetary values, which has stymied the implementation of the agency's proposal to manipulate vegetation in the buffer zone. The purposes of the project reported on in this chapter were to employ a new method of engaging the public, together with land managers, to articulate the meanings attached to the landscape; identify ways to preserve these meanings; build trust between the community and land managers; and improve forest health.

16.2 A Participatory Approach to Understanding Values at Risk

Developing a better understanding of public responses to management actions at the landscape level (such as fuel treatments) calls for a means to accurately map landscapes in the context of the meanings people attribute to them. Such an approach would ideally allow for linking meanings to specific locations and create understanding of the things threatening those meanings in those places. To identify significant places or areas past studies have compiled information such as the number of people indicating a place is important, the type of meaning attributed to it,

and its scale (Carver et al., 2009). However as Carver et al. note, the methods for mapping meaning could become more effective by increasing the number of people engaging in this type of activity, sharpening accuracy of scale representation, capturing the intensity of meanings, and identifying perceived threats to them.

The traditionally used process of meeting with individuals or focus groups and leading them through written exercises to elicit information about these important areas while simultaneously documenting the discussion has proven cumbersome and difficult for researchers (Gunderson & Watson, 2007). Attempts to substitute survey mailings for this complex task have typically produced unacceptably low response rates particularly in rural areas with indigenous sub-populations. Also problematic was that individual relationships with local landscapes are essentially “fuzzy” and not easily captured using traditional map-based features, such as points, lines and polygons. Thus estimates of scale in previous studies have lacked accuracy, and the intensity of meanings attached to places has not been captured at all.

To address these issues the project described here adopts “fuzzy” methods (ways to describe mental landscapes) of capturing the landscape areas for which people hold a particular meaning. Computer-based GIS (Geographic Information System) techniques are used to capture information about fuzzy spatial concepts such as vagueness and approximation in defining spatial pattern and extent and (un)certainly and importance in the relative values and meanings attached to these. This type of data collection and storage system can be used both online over the Internet and offline on a stand-alone laptop facilitated by a member of the research team.

16.3 Mapping Relationships on the Flathead Indian Reservation

A combination of qualitative, culturally sensitive research and a Web-based mapping exercise employing fuzzy mapping methods was used to develop understanding of the meanings tribal members attach to the buffer zone, articulate trust issues, and describe perceived threats to these meanings. An important step in this process was distinguishing between meanings associated with the wilderness and the buffer zone by tribal and non-tribal residents. To do this the authors conducted interviews with 22 tribal members and non-tribal residents of the Flathead Reservation to solicit information on the meanings associated with these landscapes. The interview results are described in Watson, Knotek, Matt, and Yung (2007) and Watson, Matt, Knotek, Williams, and Yung (2011). Following the protocol of Lewis and Sheppard (2005) key informants were selected.

This chapter focuses on tribal member meanings for the buffer zone, categorized by Watson et al. (2008) as: (1) the role of the buffer zone in protecting the wilderness area and serving as a transitional area in connecting people to it; (2) access and functional attachments; (3) personal and cultural attachments; (4) wildlife and water quality; and (5) recreation, privacy, and scenic values. Each of these categories is discussed below.

16.3.1 The Buffer Zone's Role in Protecting the Wilderness Area and Connecting People to It

Tribal members viewed the wilderness and the buffer zone similarly in some ways, as evident from their frequent comments on the interconnection between the two. Many informants think that decisions about the buffer zone should be made primarily in the context of wilderness protection, given that the buffer zone provides not only physical protection but also a transition to the wilderness even for those who never enter it. As one interviewee put it:

The buffer zone was created to help, again, buffer from development, buffer from, you know, manage the buffer zone in a way to help preserve the wilderness. I think it should be managed in a way to where it protects, where the main focus is on the wilderness. That is how you manage the buffer zone, how you protect the buffer zone, how you keep the buffer zone intact and do things in there, always focusing on how it's going to benefit the wilderness, not necessarily the people that are in the area but the wilderness. (Interview 1)

16.3.2 Access and Functional Attachments

Because the buffer zone lies at a lower elevation than the wilderness area and regulations allow for greater accessibility to it tribal members use it for a wider range of activities. In the words of an interviewee:

But in the buffer zone that was a much more gentle transition and much more accessible area for us. Right out the back door. It's an area where I go to more frequently when I don't have longer periods of time to walk or to gather plant materials or to participate in other activities that are important in my spare time. (Interview 16)

Tribal members often described the buffer zone as a working landscape—a place representing functional value, such as community opportunities for subsistence hunting, logging, and plant-collecting. As another tribal member describes it:

I know growing up the importance of the buffer zone was—and it still is—important because there's a lot of small-scale logging that happened. People's families were raised on that money... [And] I know families that still subsist off of that deer or that elk that they got that was brought down because of places like the buffer zone, because the animals come down further for grazing when they get heavy, high snow and those areas down low are able to support them. And I think if that goes away there's going to be a lot of problems for people, not just their way of life, their way of living. It's just that still all trickles down. (Interview 15)

16.3.3 Personal and Cultural Attachments

Tribal members also frequently described personal attachments to the wilderness buffer zone, referring to it as a place they grew up in and used for access to

the wilderness and in some cases as a final resting place for relatives. Regardless of the land's official designation it holds unique meanings for tribal members, as indicated by this response to the question on the buffer zone's significance:

It's like I say, it was probably culture. Because, see, before you get up, really up into the wilderness area there, I know probably 10 or 15 families from the old people that died, they'd take them up there and hide them and bury them. And only four or five people would know where they'd be. Well, it's getting now to where they are even dying so you're losing it. (Interview 20)

Tribal members' relationships with the wilderness buffer zone often extend beyond individual attachments to culturally symbolic ones imbued with their cultural activities and spiritual meanings. Often there is little differentiation between the wilderness area and the buffer zone, as expressed by this interviewee:

To me they [the wilderness and the buffer zone] still have that peace of spirituality of the mountains, of connection... to the past, to the families that are still there.... I just hope that whatever the outcome is that somehow people will understand how important that is. It's a way of life to a lot of people. It's part of their lives and its survival. To me it's survival. (Interview 1)

16.3.4 Wildlife and Water Quality

Tribal members often see the wilderness and the buffer zone as equally important in protecting wildlife and water quality, as evident in these comments:

Right up above there, there's some grass about this long and the bear likes to eat that, the grizzly bear. And there's another area down the canal from me. And they got a big area there where the grizzly bear, and the bear likes that grass... I really like the animals in there....if people move in there the grizzly bear will move away. The deer will too and all those things. So we got to keep those places closed.... (Interview 13)

And the water that comes down from the mountain is coming down the buffer zone and everything. It helps to keep all our trees and keep the moisture, which some just comes down... for the people to use. Yeah, water is the most important thing in our lives. (Interview 12)

16.3.5 Recreation, Privacy, and Scenic Values

Tribal members are only somewhat likely to assign recreation values to the buffer zone, as they tend to consider it more of a working landscape with wilderness protection value. However a lot of recreation goes on there and people appreciate the scenic qualities and remoteness from dense residential areas. In response to the

question of what is important about the buffer zone interviewees made comments such as:

Well, I think that the biggest importance is it is a place where people can go recreate. And I think by extension of your own soul that you need to do that and you need to get into the woods if you have that opportunity. (Interview 22)

And then another big reason [the buffer zone is important] is the solitude. You know what hunting season is like off the reservation. You know, there's orange everywhere. And up there, even though we can hunt year round up there, I think that spreads the hunters out.... So you can actually enjoy hunting more than off the reservation a lot of it is just being able to get away from people. (Interview 23)

16.4 Trust and Conflict

A sub-goal in the interviews was to facilitate informants to talk about trust issues and conflicts that threaten the sustainability of the buffer zone, and many tribal members did so. Their comments offer valuable insights for future engagement with the public and management of this area, as summarized below.

The tribe's mistrust of forestry interests was a key underlying reason for designation of the Mission Mountains Tribal Wilderness. The community feared that without designation intensive logging might occur and they would lose their connection with the Mission Mountains. The establishment of the wilderness buffer zone underscored the tribe's lack of confidence in common forestry practices that would now be limited from extending directly to the wilderness border. As the following comments demonstrate, some of the current conflict and mistrust comes from the history of forestry in the Missions and from the perception that new residents bring different values into the community. For example:

People that don't understand the process of nature, the people that don't know, that don't look beyond what the visual, they don't look beyond what it really provides. So they come here and end up staying here. And instead of learning the values of a place like this they try to put in their own values. (Interview 1)

When I saw the boundary lines of where the wilderness boundary was being proposed... I was pretty taken back by that because I thought, wow, there's a little bit of, to me, at the time I was thinking of trickery or, you know, because when I would think that it should be down here, and most of the Tribal members thought it should be down here ... (Interview 10)

I don't know how other people feel, but it looks just unnatural and used, like there wasn't the respectful hand that went across that area, that landscape. And I think that's what people fear, because I've seen examples of forestry logging practices and they don't want to see that in the Missions. And I know that's an issue for the buffer zone. And I don't know, I do hold a little bit of distrust for forestry practices just because of my own personal experience.... (Interview 15)

You know Forestry has great software that they've used in the past to sort of be able to allow people to visualize that through computer graphic generation, but that's still, even though it's nice, it's different than actually seeing a place that's had that done to it. So I think that's something that the tribe needs to look at and for people to sort of gain trust back into Forestry because of things that have happened in the past. (Interview 15)

I think that there is a lot of controversy now in the management of the buffer zone. And I think that Tribal Forestry Department is interested in entry. And it's unfortunate that there's such a high level of distrust or mistrust... But the proposal to change the buffer zone management plan and engage in commercial timber harvest is not a way to instill confidence in the tribal membership that they're really interested in hazard fuel reduction. (Interview 16)

16.5 Mapping Meanings for the Buffer Zone

Phase I of this research focused on learning about the place meanings associated with the buffer zone and the sources of conflict and threats to them. In this second phase interviewees were asked to contribute to maps that connected this information to the landscape (Watson et al., 2008) employing a computer interface based on the "Tagger" software developed by Evans and Waters (2007). This software, set up to operate within a standard Web browser (Carver et al., 2009) uses a "spray can" tool that allows users to delineate fuzzy areas of varying intensity (denoting importance) on a map. Attribute information can be attached to the fuzzy area through the use of free-format text input boxes. The Tagger software converts each sprayed area into standard image formats (gif and GeoTIFF). The image and associated attribute information are stored and can be viewed either as an individual entity or combined into an aggregate average map based on all the users' responses.

To broaden participation, over a 3-month period community residents also were invited to contribute to the maps either by direct input to the Web-based version or with the help of a visiting research assistant who brought a laptop computer to them.

16.6 Results of the Mapping Activities

In the analysis stage of the project maps illustrating relationships with the buffer zone were developed in a two-step process that provided: (1) maps for individual layers of meanings; and (2) an overall picture of the locations of meanings on the landscape and the average of their intensity of importance.

Some 40 tribal members contributed 180 maps that encompassed all five layers of meanings. These provided the basis for developing the overall map that depicts "hot spots" representing averaged responses. Thus areas shown at the highest color

intensity represent places that are deemed of greatest importance based on the strongest consensus among tribal members regardless of the meaning attached (Carver et al., 2009).

The maps suggest that participants generally agree that wilderness protection is attached broadly to the buffer zone. The scale was extensive and likely indicates that many people simply chose the option of applying this meaning at a specific, consistent level of intensity to the entire map. It is a strongly held belief across many tribal members. The map depicting meanings for wildlife and water also indicated relatively broad beliefs and high consensus on importance among tribal members. However in this case meanings were not as widely distributed as on the wilderness protection map but are very intense at many places. These meanings are attached to most places by at least some people.

The other three layers of meanings were much less likely to be broadly indicated as important across the landscape though they were intensely attached to some places. When averaged with the previous two maps it is clear to see how the overall map is developed and what it represents in relation to each of the five layer maps (Carver et al., 2009).

16.7 Phase III Application

The maps described above provide managers and the public with a good understanding of the locations and relative significance of the various types of meanings attached to the landscape, and they offer a means for building trust between stakeholders and managers committed to including this information in local decision-making. The results have been used to guide discussions about proposed fuel treatments in the buffer zone and resolve differences in beliefs about proper treatments.

To assist fire planners in understanding how proposed management actions intersect with local community values at risk additional maps were generated to illustrate the locations of wildfire-associated threats. These maps were used to stimulate public discussions and help clarify fire management priorities. Analysis of the maps and public input revealed that place meanings important to tribal members were at risk. The perceived threats to these meanings included fire, logging, vegetative change, private land ownership within the buffer zone, impacts of all-terrain vehicles, livestock grazing, crowding, recreation use, evidence of past drug manufacturing operations, and lack of respect for the land by users. For the purposes of this analysis related to forest health issues in the buffer zone the threats of fire, logging, and vegetative change merited additional study. Another set of maps were created that showed across all five layers of meanings those places where any of these three threats were indicated.

Regarding the threat from fire tribal members described risks to cultural areas, the potential for catastrophic fire events, the presence of hazardous fuels, and fire-fighting activities as threatening to local place meanings. Plotted collectively the

perceived fire-related threats are extensive and widely distributed. Even more intense and broadly distributed were the risks associated with the logging threat. Tribal members described this threat in terms that included loggers, large-scale logging, commercial logging, clear-cutting, irresponsible logging, incompatible timber harvest, and so forth.

16.8 Implications for Decision-Making

Analysis linked these mapped meanings to the threats respondents perceive associated with each layer of meaning. These are the priority inputs (location, meaning, intensity of meanings, and threat) that managers must integrate with resource management objectives to maintain public trust. Focus groups composed of tribal members and facilitated by the Tribal Forestry Community Outreach Education Specialist met with Forestry Department staff who are proposing general fuel treatments in the buffer zone. These groups focused on three needs: (1) to further clarify the threat (or benefit) of logging on the various layers of meanings ascribed to specific places; (2) to further clarify the threat (or benefit) of fire (i.e., wildfire, prescribed fire or exclusion of fire) on layers of meanings; and (3) to assist department staff in understanding of how tribal members evaluate tradeoffs between these two threats to their place meanings and how various decisions will affect mutual trust.

This final stage of the project concentrated on applying the newly gained knowledge about place meanings to decision-making and evaluating whether stakeholders believe their participation will contribute to better solutions. Generally the outcomes of this third phase received a positive evaluation by participating tribal members. Although much was learned about how fire and logging threatened important tribal places the most important gain, as evidenced during the focus groups, was the recognition of the need for a method of managing tradeoffs. Most participating tribal members oppose forestry activities in the buffer zone that are aimed at revenue generation and some extremely anti-logging attitudes were apparent. Similarly many are fearful of the catastrophic potential for any type of fire from any source.

The authors hope that future attempts to further resolve conflict over actions in the buffer zone will address the tradeoffs between fire and vegetation removal. If managers can work with tribal members to describe these tradeoffs in terms of the impacts to local place meanings and establish acceptable limits, this can help remove the longstanding and heretofore tenacious obstacles to logging and fire introduction and allow these activities to proceed within agreed-upon constraints and be held accountable through long-term monitoring. Through these processes healthier forests, renewed public trust, and protected natural and cultural resources for the Salish and Kootenai tribes of the Flathead Indian Reservation may evolve.

References

- Borrie, W. T., Christensen, N., Watson, A. E., Miller, T. A., & McCollum, D. W. (2002). Public purpose recreation marketing: A focus on the relationships between the public and public lands. *Journal of Park and Recreation Administration*, 20(2), 49–68.
- Carver, S., Watson, A., Waters, T., Matt, R., Gunderson, K., & Davis, B. (2009). Developing computer-based participatory approaches to mapping landscape values for landscape and resource management. In S. Geertman & J. C. H. Stillwell (Eds.), *Planning support systems best practice and new methods* (pp. 431–448). Dordrecht, The Netherlands: Springer.
- Dwyer, R. R., Schurr, P. H., & Oh, S. (1987). Developing buyer-seller relationships. *Journal of Marketing*, 55, 11–27.
- Evans, A. J., & Waters, T. (2007). Mapping vernacular geography: web-based GIS tools for capturing “fuzzy” or “vague” entities. *International Journal of Technology, Policy and Management*, 7(2), 134–150.
- Garbarino, E., & Johnson, M. S. (1999). The different roles of satisfaction, trust and commitment in customer relationships. *Journal of Marketing*, 63, 70–87.
- Gunderson, K., & Watson, A. (2007). Understanding Place Meanings on the Bitterroot National Forest, Montana. *Society & Natural Resources*, 20(8), 705–721.
- Lewis, J. L., & Sheppard, S. R. J. (2005). Ancient values, new challenges: Indigenous spiritual perceptions of landscapes and forest management. *Society and Natural Resources*, 18, 907–920.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58, 20–38.
- Watson, A., & Borrie, W. (2006). Monitoring the relationship between the public and public lands: Application to wilderness stewardship in the U.S. In C. Aguirre-Bravo, P. J. Pellicane, D. P. Burn, & S. Draggan (Eds.), *Monitoring science and technology symposium: Unifying knowledge for sustainability in the western hemisphere proceedings* (pp. 287–293; RMRS-P-42CD). Fort Collins, CO: United States Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Watson, A., Knotek, K., Matt, R., & Yung, L. (2007). *Understanding landscape meanings, attributes, and threats for the planning and application of fuel treatment and fire management on the Flathead Indian Reservation, Montana*. Report to the Confederated Salish & Kootenai Tribes. Missoula, MT: Aldo Leopold Wilderness Research Institute.
- Watson, A., Matt, R., Knotek, K., Williams, D., & Yung, L. (2011). Traditional wisdom: Protecting relationships with wilderness as a cultural landscape. *Ecology and Society*, 16(1), 36. Retrieved from <http://www.ecologyandsociety.org/>.
- Watson, A., Matt, R., Waters, T., Gunderson, K., Carver, S., & Davis, B. (2008). Mapping tradeoffs in values at risk at the interface between wilderness and non-wilderness lands. In A. Gonzalez-Caban (Ed.), *Proceedings of the third international symposium on fire economics, planning, and policy: Common problems and approaches* (pp. 375–387, PSW-GTR-22) Albany, CA: United States Department of Agriculture, Forest Service, Pacific Southwest Research Station.
- Watson, A. E., & Borrie, W. T. (2003). Applying public purpose marketing in the USA to protect relationships with public land. In R. Buckley, C. Pickering, & D. B. Weaver (Eds.), *Nature-based tourism, environment and land management* (pp. 25–33). Wallingford, UK: CABI Publishing.