

The urbanization of wildlife management: Social science, conflict, and decision making

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Abstract: Increasing urbanization of rural landscapes has created new challenges for wildlife management. In addition to changes in the physical landscape, urbanization has also produced changes in the socio-cultural landscape. The greater distancing from direct interaction with wildlife in urbanized societies has led to the emergence of a culture whose meanings for wildlife are less grounded in the utilitarian/instrumental orientation of rural agrarian systems. Urban perspectives on wildlife are comprised of more highly individualized emotional/symbolic values. This shift creates two problems with respect to managing wildlife in an urbanizing landscape. First the increased diversity in values and meanings increases the likelihood for social conflicts regarding wildlife management while at the same time making socially acceptable resolutions more intractable. This in turn requires fundamental changes in decision-making paradigms and the research approaches used to inform decision making. Second, as remaining rural communities feel the pressures of urbanization, wildlife conflicts become conflicts not just over wildlife but conflict over larger socio-political concepts such as equity, tradition, private property rights, government control, power, and acceptable forms of knowledge. This paper examines the wildlife management implications of changes associated with increasing urbanization and employs two case studies to illustrate these issues. First a study of a controversy over urban deer management provides insights into how to map conflicting values and search for common ground in an urban culture with increasingly individualistic values for wildlife. Specifically, the analysis illustrates that common ground may, at times, be found even among people with conflicting value systems. The second case study examined a ranching community faced with predator reintroduction. This case study illustrates tensions that occur when the community of interest (i.e. a national public) is broader than the community of place in which the problem occurs. In this latter situation, the debate centers around more than just different views about the rights of animals. It also entailed the rights of individuals and communities to decide their future. The conclusion discusses the need for wildlife institutions to adapt their underlying decision making philosophy including the way science is integrated into decision making processes in light of the changes in social context caused by urbanization.

Key words: wildlife management, urbanization, predator control, conflict, decision making

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Introduction

Institutions and policies are created in a particular social context to address the meanings, values, goals, and conflicts of a specific culture at a given point in time. As time progresses, the social context evolves as cultural meanings, values, and goals change and give rise to new conflicts and problems not foreseen earlier. As a consequence, institutions and policies must also evolve and adapt. Within wildlife management, urbanization has had a dramatic effect on the nature of the social context and has produced changes in the cultural and physical landscape that pose significant challenges for wildlife agencies and policies in the future, especially with respect to the nature of decision making processes.

This paper examines the implications for wildlife management of changes in the social context associated with increasing urbanization. After discussing these changes and their implications for policy and decision making, two case studies are examined in light of these issues. First a study of a controversy over urban deer management provides insights into how to map conflicting values and search for common ground in a social context with increasingly individualistic values for wildlife. Second, a case study examining a ranching community faced with predator conservation and a growing urban influence is used to examine broader institutional issues such as property rights, equity, and economic considerations.

Urbanization and the social context

Historically wildlife management emerged as an institution and profession in a social context defined by the needs and cultures of rural agrarian communities. In the United States, for example, two primary themes were emphasized: (1) preservation and regulation of game for hunting and (2) predator control to address conflicts such as livestock depredation (Catton & Mighetto 1998). However, over time, increasing urbanization of rural landscapes has created new challenges for wildlife management.

The physical changes in landscapes resulting from urbanization are tangible and readily observable. For example, more intensive development and conversion of large open spaces to small properties and subdivisions has led to increased habitat loss and encroachment. Many urban areas now confront overpopulation of species such as deer and geese resulting in problems including property damage by wildlife, traffic hazards, and health concerns such as the transmission of Lyme disease. In addition, as urban development expands into nearby habitat, urban dwellers increasingly are

having direct and dangerous encounters with large predators such as bears and mountain lions.

The meaning of an animal in any society is less a matter of biology than a question of culture and human consciousness (Arluke & Sanders 1996). Though less tangible, urbanization also has produced changes in the socio-cultural landscape that both defines the meanings and values of wildlife to society and ultimately serves as the basis for constructing institutions and policies. Compared to rural agrarian societies, urbanized societies provide less stable ways for understanding the relationship between humans and wildlife (Sutherland & Nash 1994). Traditional subsistence and rural agricultural communities existed in a social context that produced cultures whose members held relatively consistent and stable ways of understanding the relationship between humans and animals (Tapper 1988). However, changes that accompany urbanization, including the development of increasingly differentiated production systems; specialization in work; and the separation of an ever larger proportion of society from food production, have changed the cultural context in which meanings of animals are constructed. In urban settings, people are increasingly removed from interactions both with wildlife and domesticated animals used in food production. On the other hand, contact with animals in the form of pets, often viewed as companions or family members, increases. As a consequence, the current urban social context is such that meanings of wildlife have become less understandable in terms of culturally shared utilitarian/instrumental meanings and instead are more individualized with an emphasis on emotional/symbolic meanings and personal relationships and interpretations (Sutherland & Nash 1994).

This shift in social context creates two problems with respect to the nature of institutions and policies for managing wildlife in an urbanizing landscape. First, as meanings and values become more individualized, the overall diversity in values and meanings increases. Since policies and institutions are a reflection of the values, meanings, and goals of a culture, this increases the likelihood for, and escalates the intensity of, social conflicts regarding wildlife management while at the same time making socially acceptable resolutions more intractable. Second, as remaining rural communities feel the pressures of urbanization, wildlife conflicts can become conflicts not just over specific animals, but conflicts over larger socio-political concepts such as equity, tradition, private property rights, government control, power, and acceptable forms of knowledge. These two problems in turn require both fundamental changes in decision-making philosophies and changes in the research approaches used to inform institutional and policy decision making.

Decision making in the evolving social context

In the United States, most state and federal wildlife agencies were formed between 1900 and 1950 as a means of serving the public interest (Patterson et al. 2000). The institutional decision making philosophy that shaped wildlife agencies during this era reflected a Progressivist political philosophy. Progressivism constructed wildlife management issues as technical problems to be resolved in the public interest by unbiased scientific experts (Van Riper & Patterson 2000). Under this decision making philosophy, the public is viewed as the beneficiary/user of wildlife, but is accorded little role in decision-making. Science and technical expertise are emphasized over democratic participation as a means of making decisions due to concerns that the complexity of issues and the advantages held by special interests may subvert the ability of participatory processes to serve the public interest. Interactions with the public focus on education and opportunities for public review to increase public faith in science and serve as a means to the end of letting experts make the decisions (Hays 1997; Williams & Matheny 1995).

Wildlife agencies in the United States grew and matured during the initial decades of the twentieth century under this decision making philosophy. During this time the profession built a body of scientific knowledge and techniques; large game mammals were successfully restored; predator populations were reduced; and government institutions enjoyed widespread public support, trust, and an era where values were sufficiently shared that professional judgment was accepted as sufficient justification for management decisions (Patterson et al. 2000). However, significant changes in the social context emerging in the 1960's as a result of urbanization (which contributed to the diversification of values and emergence of new wildlife problems at the urban/wildland interface) and other factors (such as a growing distrust of government agencies) ultimately posed a major challenge to this institutional decision making model. Increasingly the public demanded a greater role in natural resource decision-making and expressed a desire to see a broader range of societal values addressed in natural resource planning and policy (Shannon 1981). In response to these challenges, legislatively mandated changes in agency planning policies were introduced through passage of statutes such as the National Environmental Policy Act of 1969. Additionally, statutes such as the Endangered Species Act of 1973 and the Wild Free-roaming Horses and Burros Act of 1971 that addressed a broader range of societal values than those traditionally addressed by wildlife and other natural resource agencies were passed (Van Riper & Patterson 2000).

The ultimate goals of these changes were to reduce public controversy and conflict over natural resource planning and management (Shannon 1981). However, early critics (Bardach & Publiaresi 1977; Shannon 1981) and subsequent agency sponsored analyses (Larsen et al. 1990; Shands et al. 1990) questioned the adequacy of these policy revisions relative to the challenges faced. Essentially critics noted that these revisions were geared toward providing opportunities for public review, but did not build sufficient understanding of underlying values or meanings or create adequate opportunities for true participation in the actual process of negotiation and compromise required to reach a decision (Van Riper & Patterson 2000).

The trend in conflict over natural resource management issues in general has supported the critics' point of view. Since the 1970's, conflict over natural resource policy and decision making has increased rather than decreased (Manring 1993; O'Loughlin 1990). In wildlife management, this continued rise in public controversy is strongly reflected in the increased use of ballot initiatives rather than expert judgment to establish wildlife policies. For example recent wildlife ballot initiatives include efforts to ban leg hold traps (e.g., Colorado, 1996), to ban certain methods of hunting (e.g., hunting bear with bait or dogs in Oregon, 1994), and to ban the sport hunting of certain species entirely (e.g., mountain lions in California, 1996) (Pacelle 1998). In fact, Whittaker & Torres (1998) suggested that ballot initiatives are the single greatest threat currently faced by wildlife managers.

The effect of urbanization on the social context including the trend toward increasing public conflict and controversy and its manifestation in the form of ballot initiatives in wildlife management have led to some members of the wildlife profession to call for reevaluating and changing the institutional philosophy that guides wildlife policy and decision making (Clark 1993; Hays 1997; Patterson et al. 2000; Primm 1996). These calls for institutional change have focused on models of decision making. Critics question whether the Progressive Era science and expert driven decision making philosophy is an adequate institutional framework for the current urbanizing social context. These critiques call instead for a more collaborative, community-based model in which groups comprised of individuals representing the relevant stakeholders within communities of place and/or communities of interest are formed to make decisions through consensus based processes (Cestero 1999; Duane 1997; Hays 1990; KenCairn 2000; Manring 1993; Primm 1996).

While diverse in some respects, discussions of a collaborative decision making model tend to reflect several common themes including: (1) a view of the public interest as a phenomenon that is continually evolving

and repeatedly understood and re-created through public dialog rather than something that can be objectively discovered and defined with finality through scientific expertise and processes, (2) an emphasis on partnerships and empowerment of the public and non-governmental entities, and (3) a shift away from an emphasis on regulation and science to building trust, fostering relationships, and facilitating communication (Hays 1997; Peterson & Horton 1995; Primm 1996; Williams & Matheny 1995; Wondollock et al. 1994).

However, the implications of this shift in decision making philosophies for the role of science remains a problematic issue. One perspective views collaboration as some improved version of public involvement, but suggests that science should remain the dominant discourse for resolving conflicts in decision making as it was intended in NEPA/NFMA based models (Thomas & Burchfield 1999). Others clearly fear that collaborative processes will completely usurp the role of science, though they do not necessarily agree on just what science is most relevant (Ebel 2000; McCloskey 1999). Finally, others believe there is a paradox or contradiction between collaboration and science, but also see collaboration as a stronger and superior democratic process for resolving conflicts (Daniels & Walker 2001).

The perspective underlying this paper is that changes in the social context emerging in part as a consequence of urbanization (especially the increasing diversity in meanings and values associated with urban as compared to rural social systems) does require a fundamental change in decision making philosophies to emphasize a more collaborative and political process. Further we believe that this shift requires a fundamental reconsideration of the role and nature of science in decision-making processes (in contrast to the view that collaboration merely represents a new mechanism for involving the public). However, we contend there is not an unbridgeable contradiction between science and collaborative decision making philosophies for several reasons.

First, with respect to reconsidering the role of science, it is important to emphasize that adopting a collaborative decision making model does not require a rejection of science. Rather it suggests the need to integrate science into decision making in a different way. The Progressive Era decision making model views science and scientific expertise as the direct means of generating the answer. Such a view may be appropriate for technical problems, but not for social problems. In contrast, the collaborative model views science as one of many forms of input. Further, rather than seeing science simply as a process of producing facts and answers, some collaborative models understand science as a social process and see it as an ideal model for

structuring debates about policies and decision making (Williams & Matheny 1995). For example, Williams & Matheny argue that the deeply held skepticism toward science and experts apparent in many environmental disputes is partly a consequence of the inability of the public to evaluate scientific claims. Yet one of the key features of science as a social process is that results are presented in a way that makes it possible for others to verify the conclusions. Thus, extending this feature of scientific debates to collaborative models of decision making means that all parties must be afforded the opportunity to independently evaluate the scientific claims of other parties.

Second, with respect to social science specifically, merely bringing together relevant stakeholders in collaborative discussions is not, in itself, a sufficient mechanism for generating an adequate understanding of meanings and values that drive conflicts. The context in which human behavior must be understood is comprised of much more than just the individual's structuring of the world or personal understanding (Terwee 1990). Meaning and action are based in a context of situational influences, shared cultural practices, and social ideologies that might not be immediately apparent to the individual (Addison 1989). As a result, at times it is possible for a researcher to understand the meaning of actions more fully than the participants in collaborative processes (Hekman 1984; Terwee 1990). Further, identifying and developing an understanding of the pattern and nature of relationships between social and natural systems may at times require a systematic and rigorous empirical process which is markedly different than that possible simply through collaborative discourse. Also, social research may be useful in speeding up collaborative processes by providing an analysis of differences and commonalities that provide a more productive starting point. Indeed, the time commitments required of collaborators often represents a significant and possibly prohibitive barrier to its successful implementation. Research capable of analyzing social discourse about public values and interests and communicating that knowledge in a way accessible by planners as well as stakeholder groups offers the potential to greatly facilitate collaborative processes. Thus in a collaborative model, rather than defining the goal of science as one of providing the answer to social conflicts or problems, one of the chief goals of science is to map the problem (identify its nature, define its dimensions, understand the meanings through which people frame the issues, and identify the processes through which those meanings are constructed).

Finally, the integration of science and decision making as conceived under a collaborative philosophy recognizes the political nature of knowledge and decision making. Relative to traditional expert models where

science is seen as the source of facts and answers, the sharp distinction and separation between advocacy and science is blurred. Therefore, in addition to the mapping function, additional, more explicitly political, goals are viewed as being of equal importance. These goals include:

- (1) enhancing the ability of stakeholders to communicate with each other and improving opportunities for meaningful public dialog;
- (2) giving voice to stakeholders whose meanings and values have not been adequately incorporated into decision making under the Progressive Era model,
- (3) producing knowledge that is accessible to (interpretable by) a wide array of stakeholders, and
- (4) enhancing perceptions of the legitimacy of planning processes by creating a process through which stakeholders feel that their interests have been listened to, understood, and weighed in the decision-making process.

Methods and results

Case study 1: urban deer management in South Carolina

The remainder of this paper uses two case studies to illustrate the type of knowledge generation and “social problem mapping” envisioned with respect to a collaborative model of decision making and science. The first case study explores a wildlife management controversy in a contemporary suburban social context. The underlying issue is a question of deer abundance – whether the deer are overpopulated or not. Biological analyses indicated that the deer herd was healthy and that the habitat was not over-browsed, making the question about acceptability of the current deer population entirely a social question. The community in question is a subdivision in an urban community in South Carolina, USA. The community consisted of about 6000 residents. Initial surveys indicated that the residents were divided into thirds with respect to this issue. About one third felt the area was overpopulated with deer, expressing concerns about human safety (including deer vehicle collisions and the transmission of Lyme disease) and about economic losses (damage to ornamental vegetation; one individual in the study suffered \$30,000 worth of damage to a newly landscaped yard). Another third of the residents felt that the deer population was still within acceptable levels, while the final third wanted more information before they made a judgment.

The question of deer abundance had been emerging as a significant issue within the community over a period of several years. Initially the state began receiving complaints about deer vehicle collisions and damage to

ornamental vegetation. This led to research projects to evaluate the situation focusing on deer and habitat health and a series of public meetings. Controversy among the different factions soon emerged reflecting a great deal of mistrust and growing contention among the various stakeholders. The data used as illustrations in the discussion of the case study below come from a study that included interviews with 20 community residents (Patterson et al. 1997; Shuey 1997). Purposive sampling was used to select a sample with as diverse an array of underlying values and perspectives on deer abundance as possible. Participants were identified through discussions with state agency personnel, research consultants and community leaders who organized or facilitated the public meetings, and area residents. As a consequence of the nonrandom sample, it is not possible to draw conclusions about how belief systems are distributed across a population (i.e., what percent of the population holds a particular type of belief system). However, the smaller sample size permits a detailed analysis and understanding of the constellation of beliefs, values, meanings, traditions, and culture that characterize an individual’s perspective on the issues. Representing the population in a way that permits greater depth in understanding of individuals follows from the assumption that this is a context where meanings are becoming increasingly individualized. It also is consistent with the research goals which are to map the way individuals frame the issue, to search for possible common ground among stakeholders with diverse values, and to facilitate communication (as opposed to the goals of classifying individuals according to attitude domains or precisely estimating “unbiased estimators” of concrete population parameters).

The interview excerpts in Table 1 from individuals interviewed in the study (including two from biologists) illustrate the degree of polarization and mistrust that was emerging within the community over this issue. As the excerpts indicate, the issue was rife with controversy. As a forum for public dialog, the public meetings were sufficient to reveal vast differences in underlying belief systems among participants. While not a fully exhaustive listing of the underlying belief systems within the community, Table 2 illustrates two of the most disparate perspectives from which community members framed the issue. One reflects an animal rights philosophy while the other constructs deer as a game animal. With such divergence in the meanings and values from which members of the community approached the issue in conjunction with the degree of polarization and mistrust illustrated in the statements in Table 1, the possibility of engaging in a meaningful public dialog leading to the negotiation of an acceptable resolution to the issue seems implausible. However the characterization of the meanings and values from

which the two residents frame the issue illustrated in Table 2 is significantly incomplete and inadequate. A more in-depth analysis reveals other dimensions of their underlying belief systems that are essential to the goal of developing an understanding that is useful in negotiating a resolution through public political dialog.

Consider for example, respondent #1 who reflects an animal rights perspective (excerpt T2-1, Table 2) and the view that deer are not over abundant. Although he appears adamantly opposed to lethal forms of control throughout the interview, it is important not to charac-

terize him as anti-management. He does express what can be viewed as a management goal – it is important to him that humans try to *co-exist* with deer (excerpt T3-1a, Table 3). In fact, his views reflect a great deal of pride in the degree to which the community has sought to retain the naturalness of its landscape (Table 3, excerpt T3-1b). The concept of co-existence implies compromise. And while he did expect humans to make concessions (excerpt T3-1a), throughout the interview he also made statements acknowledging “concessions” on the part of the deer (e.g., see excerpt T3-1 c where

Table 1. Interview excerpts reflecting the degree of polarization over the issue of deer abundance within the study community (names are pseudonyms)

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- T1-1 I don't see any evidence of wanting to open the discussion up. If you were at the meetings and you listened to the way ... the information was presented, ... they pretty much have decided what they want to do There is this a course of action they want to take and ... they're constructing all their activities around justifying what they want to do. It's maintenance of a 'Good ole boy' program ... I think wildlife management is just justification for shooting and killing animals ... because again, it's been programmed and substantiated by the [hunters] for themselves. (Norman – resident with animal rights philosophy)
- T1-2 I think that the animal rights people ... have gotten far more weight than their representation. ... they also have the vehicle of the newspaper here. The newspaper has a very leftist ... lean, ... They're good friends with the editor of the paper, so the ... animal rights group here gets in the newspaper w/ the editorial page It's a difficult management question for the Wildlife Resources Department, because they don't want controversy. All they want to do is continue to collect hunting fees and they don't want to address the problem head on. ... I think they're doing the poorest job possible by not doing something. But the legal precedent that's there fully supports hunting. And those are the only people that are paying. ... Whereas the animal rights folks are not paying anything towards it, but are getting a louder voice than I am. the animal rights crowd does not pay their way, like the hunting crowd does, for the game animals out there. (Chris resident with view of deer as game animals)
- T1-3 The animal rights people ... I don't agree with them so ... I pretty much just tune them out. It doesn't really bother me. (John – biologist)
- T1-4 You're largely dealing with emotions when you deal with the ... extremes.... They just can't handle their emotions ... they're using that to make their decisions. You essentially cannot reach these people. (Will – biologist)
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Table 2. Interview excerpts reflecting different value systems from which members of the community framed the question of deer abundance (names are pseudonyms)

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- T2-1 I am concerned that we have set a course that ...will end w/ the violent destruction of some of the deer.... [the deer] come from families and you are just tearing that unit apart. They come home and say, Well, where's Mom? She's dead. And where are all the babies? We've had to sort of create this illusion as if we are better than & different from [deer] ... we've created [a] prejudice ... the same arguments you hear about animals are the same arguments you hear about women & women's rights, ... against blacks ... If you take a historic perspective of man's relationship w/ animals ... they revered them. ... the entertainment for the afternoon, may be to watch some buffalo run, or some deer graze or some rabbits do their thing.... to sit & really honor them & respect them. (Norman)
- T2-2 Deer legally are still a game animal, so I consider them a game animal. ... I saw a funny thing in the paper the other day – a guy was saying that everything that has feelings have a right It gets to the point to where do you draw that line. And it's obvious where the animal rights people do and it's obvious where the hunters do. ... one of the animal rights folks at the ... public workshop here stated that ... their preferred method of control ... [was] to have deer-car collisions. ... My wife has been in two in that little Mazda RX-7. ... So it's been somethin' to think about, just safety-wise, especially in a smaller car like that. We're fortunate nothing's happened. (Chris)
-

he acknowledges the legitimacy of human perceptions that deer are over-concentrated) and other wildlife (e.g., see excerpt T3-1d) were also necessary.

A closer look at respondent #2 who expresses a hunter's values (excerpt T2-2) reveals some parallel themes. As reflected in excerpts T3-2a and T3-2b, he too valued the deer as part of the community, wanted to see them remain in the community, and was concerned about the health and well-being of the deer. In other words, while he was concerned about the current population level, the concept of humans and deer co-existing reflects an important management goal for this individual as well.

By combining these additional dimensions in the characterization of each respondent's views with respect to the issue of deer in the community, it is possible to map their belief systems in a way that leads to a richer understanding of the problem facing the community; an understanding that identifies the common ground as well as the differences. As reflected in Figure 1, these two respondents, who initially appeared to hold wholly disparate views, both share a common goal that could be used to refocus the way the community understands and debates the problem. By focusing on the idea of coexistence between humans and deer rather than whether or not there are too many deer, the public dialog could build on shared community values which include valuing the presence of deer and pride in the leadership the community has shown in developing the subdivision "naturally." Since co-existence implies compromise, a linkage recognized even by a respon-

dent who is one of the major animal rights spokespersons in the community, defining the problem in such a way presupposes a discussion about management. And while the presentation of this case study in this paper only focused on two individuals, this pair essentially held the most disparate belief systems within the community. Further the study included interviews with 20 people selected to capture the range of variation in underlying values (e.g., animal rights, scientific, hunting interests, emotional attachment, etc.) and an in-depth analysis of eight of the most disparate of these view points (Shuey 1997). Although the foundational value systems (e.g., the animal rights philosophy illustrated by Norman or the view of deer as game animals illustrated by Chris in Tables 1–3) varied greatly across these eight individuals, the themes of co-existence and compromise were evident across all eight. Given the complexity of the foundational value systems, a detailed characterization of each of these eight individuals is beyond the scope of this paper, see Shuey (1997) for a thorough discussion.

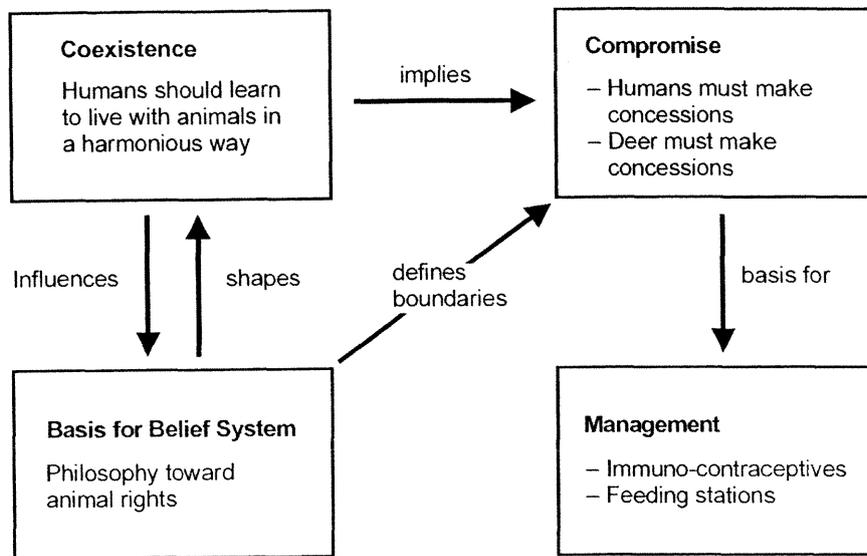
At the same time it is important to note that mapping the belief systems and identifying common ground does not guarantee that the community can successfully negotiate a resolution to the problem. Fundamental differences still remain even with respect to the "common" definition of the problem. For example, in discussing his concept of co-existence, Norman emphasizes the similarity between humans and wildlife, envisioning a harmonious relationship (excerpt T2-1, Fig. 1). In contrast, in interview responses that reflect

Table 3. Interview excerpts reflecting common ground themes within the study community with respect to deer (names are pseudonyms)

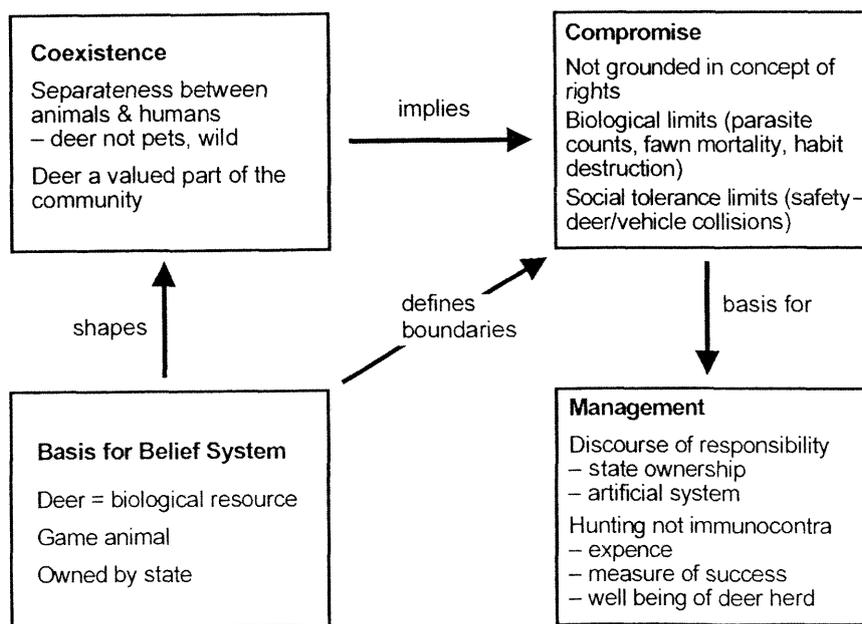
T3-1a	We are a part of the interdependent web of all existence ... We're not separate from them. ... We need to ... try new ways of living with our wildlife. To enjoy this wonderful gift of nature we will have to make concessions. (Norman)
T3-1b	We've always been a leader in terms of community development ... [We've] won all kinds of awards ... and I think we have a chance here to take again a leadership role and say we in our community have set some new standards and found some new ways to co-exist with the wildlife. (Norman)
T3-1c	I think the deer are ... part of the beauty of [the community] ... [but] some people have an over concentration of those deer in their yard, as they see it, and ... I think they are entitled to that. (Norman)
T3-1d	Interviewer: How do you feel about the capture and removal of alligators? Respondent: „Hummmm. [pause] I imagine that that's a necessity where we are together, and ... I've not really studied that problem ... I haven't thought it through but, the thinking that I've done on it – because that is an aggressive predator that ... we're not going to move, that I'm sure of, and so, I wish that we didn't have to do it. I imagine that that's probably where we are, in the same space and one of the two of us has to move and unfortunately it's the gator who has to move.“ (Norman)
T3-2a	I'm in no manner suggesting remove all the deer from Sea Pines. I don't think that's a solution, in my opinion. And I wouldn't want to see that happening. I like having the deer here: (Chris)
T3-2b	I don't want to see [the deer] suffer health-wise. ... People say to kill them is cruel. What is crueler – to be able to have a fawn and have it live or only one out of 10 live because they don't have anything to eat. ... I'd rather have a healthy fawn than 9 of my babies starve to death.... (Chris)

his concept of co-existence, Chris emphasizes the difference and separateness between humans and animals, noting that wildlife, including deer, are not tame, but wild and dangerous and should be respected as such (Shuey 1997). It is also important not to lose sight of the underlying value basis for the belief system (in the individuals illustrated here – an animal rights founda-

tion versus a concept of deer as a game animal). These belief systems shape the meaning of the respondent's concept of co-existence, define the boundaries of acceptable compromise, and provide obstacles and potentially unbridgeable differences. However, under a collaborative decision making framework, it is not the goal of social research to provide the answers or the



Norman's Belief System Mapped



Chris's Belief System

Fig. 1. A framework illustrating one way of mapping common ground and differences in the underlying belief systems of residents with disparate value systems: "animal rights based" (Norman) and "deer as game animal based" (Chris) in relation to the controversy over deer abundance in their community (adapted from Shuey 1997).

mutually acceptable resolution (outcomes that are considered impossible given the collaborative decision making model's assumptions about the nature of public interest described above), but rather to map out the dimensions of the problem in a way that creates an understanding of the way different stakeholders frame and communicate about the issue thereby creating an opportunity for more productive political dialog.

Case study 2: Predator conservation in Montana

The second case study reflects a very different social context. As will be discussed below, while facing the consequences resulting from urbanization of America as a whole, the community itself still largely reflects a rural social system. The community is located on the Rocky Mountain Front in Montana where the Northern Rocky Mountains abruptly rise up from the rolling plains of eastern Montana. The community has a population of 400, and though the area is becoming more urbanized and is beginning to see an influx of nontraditional ranchers and landowners, the economic survival and identity of the community are still heavily defined by a traditional ranching culture. The data used as illustrations in the discussion of the case study below come from an ongoing study. The full study will include interviews with livestock owners in communities in Idaho and Wyoming, USA also. This discussion is based on 21 interviews in a single community. Similar to the deer case study, a purposive sampling approach was used.

With respect to the nature of the wildlife controversy explored here, the underlying issues deal with predator conservation, particularly wolves and grizzly bears. Although, wolves at one time were eliminated from the

area by the ranching community and government predator management policies, over the last 10 years they have naturally recolonized the area from source populations in Canada and Glacier National Park. Grizzly bears have continuously occupied the area, though in reduced numbers compared to historical populations. Both wolves and grizzly bears are listed under the national Endangered Species Act that imposes strict regulations governing the removal of either species. To achieve recovery goals, wildlife managers are trying to increase the populations of both species in the area. As was seen in the first case study, whether the habitat is adequate to support growing populations of these animals is not at issue. The real crux of the dilemma lies in the social landscape. Though at a broad level the social issues underlying the wildlife problem in this community are similar to that observed in the first case study, concerns about human safety and economic loss, at a more specific level the concerns are of a different nature. Human safety concerns, especially for grizzly bears, are more direct – fear of attacks on humans (as opposed to indirect such as deer vehicle collisions or transmission of disease). Economic concerns deal with livestock losses, an issue directly related to the ability to maintain one's livelihood, rather than damage to landscaping and ornamental vegetation.

The members of this rural community share both a common way of life and a common cultural heritage defined by the dominant production system (ranching). As the literature reviewed above would predict, members of the community share similar views with respect to wolves and grizzly bears. However, the views about the two species differ significantly. For wolves, the view within the community is decidedly hostile (Table 4). Wolves were eliminated by an early genera-

Table 4. Interview excerpts reflecting the ranching community's views regarding wolves (names are pseudonyms)

- T4-1 I don't see any reason for getting along with a wolf, absolutely none. I don't like to be that biased, but I see absolutely no reason to have a wolf in Montana. They are in direct conflict with a rancher as far as I'm concerned. I'm really scared of them. ... a wolf is a killer. You know they really are; they don't eat grass, they eat strictly meat. ... your deer and elk are controlled. I don't see that they need a wolf pack to control them and I just don't see the reason for them. (Chris)
- T4-2 I don't think the wolves are going to exist with us without any troubles though. They move too much and they can go from a female and male wolf to eight grown wolves in one summer. And every time we have had a pack, seem to have a pack of wolves around here, they're major trouble. And I don't feel, I don't feel sorry for the wolf because there is plenty of areas up in the Northwest Territories where there's lots of wolves. I don't think that we necessarily have to have them forced upon us down here. I mean we got along fine for quite a few years without them. (Robert)
- T4-3 The wolves are a real concern to me. As the numbers, it's something that they had problems in my granddads time, and they took care of it. And it just seems completely ridiculous to me to bring a problem back that they worked for a generation to get rid of. (Howard)
- T4-4 Our forefathers spent endless time getting rid of the wolves, you know, and they did it for a reason. If they weren't trying to make a living ... they'd have never spent that much money and time to get rid of the wolves and then to have them reintroduced to start the whole thing over again. (Phil)

tion because it was not possible for wolves and ranchers to coexist. Within this community, this is a social fact that has not changed over time. In contrast, grizzly bears are not viewed as being wholly incompatible with the existing human community (Table 5). A population of grizzly bears has always been maintained in the area, and comments about grizzlies focused more on appropriate means of managing them to control human bear conflicts. In other words, like the urban deer controversy, with respect to grizzly bears, this ranching community seems ready and willing to engage in a discussion about how best to co-exist with grizzly bears – how best to manage the conflicts between humans and bears. With respect to wolves, in contrast to the situation with urban deer and grizzly bears, the community dialog focuses on the question of whether it is even possible for wolves to co-exist with the existing human community. And the answer, grounded in both an experiential heritage from a previous generation and “common sense” given the characteristics of wolves and the presence of a ranching way of life, clearly is no. Thus the interviews indicate that the nature of the dialog the community is prepared to engage in is very different across the two species.

Another significant difference between this case study and the previous case study entails the scale at which political negotiations necessary to resolve the issue need to occur. In the urban deer case study, both the issue and the opportunity for its resolution occur at a local scale. In other words, the community of place experiencing the problem coincided with the community of interest with respect to its resolution. Such is not the case in this western community where the arena in

which the social conflict is played out occurs at a broader scale. Here a localized problem (co-existing with wolves and grizzly bears) is not merely a localized issue. The political momentum for predator conservation comes largely from an urbanized nation which neither lives in the area nor shares a ranching tradition or way of life. So the community of interest which seeks involvement in the decision making is much broader than the community of place in which the “problem” occurs. This adds a much more complex dimension in regard to attempts to resolve the issue, particularly with respect to wolves where the local community does not perceive that co-existence is even a possibility, a sentiment that runs counter to the national desire to maintain populations of wolves in this and other areas of the west.

These issues emerge prominently in any attempt to understand and map the local ranching community’s belief systems relative to the issue. Comments from interview respondents reflect the view that outsiders with different values and a lack of realistic appreciation or understanding of the issues are allowed to drive or dominate the decision making process to the point that their own rights and their very way of life is threatened (Table 6). Further, respondents’ concern about, and focus on, unwarranted interference; influence of outsiders; and political issues in general (as opposed to a focus solely on the wildlife issue itself) also creates greater opportunity for the local community to misperceive aspects of the situation. For example, while wolves have been reintroduced through federal government programs in some portions of the state, as noted earlier, the wolves inhabiting the area surrounding this community recolonized naturally from source popula-

Table 5. Interview excerpts reflecting the ranching community’s views regarding grizzly bears (names are pseudonyms)

- T5-1 I can get along with the grizzly bears some. ... You know a grizzly bear will eat anything. They eat grass, they eat bugs and worms, and jeez they’re a real scavenger. But a wolf is a killer. ... I think they have a lot of grizzly bear, I don’t think there is any shortage of them. And the Fish and Game keep saying; well, they need to count them before they’ll deregulate them and all this. Well I think they know they’re there, I think it’s just something that is really hard to get deregulated and they’re just avoiding it. I think it’d really help to open up a hunting season on them on the Front. Not back in the wilderness, just on the Front where there’s conflicts. (Chris)
- T5-2 Well I am okay with the grizzly bear ... they’ve been here and years ago the grizzly bear season ... [but] when they killed so many bears they closed the season. Well all of the bears they were killing were the ones that were behaving themselves ... and all the ones ... they never had a season ... we had more conflicts ... and the more conflicts the rancher and the private people have up here the more apt they are going to be to shoot, shovel and shut up. And because there is nothing to let the state take care of it, they can take care of it themselves. So if they just have a season and push some of the bears back in the you know keep them pushed back away from people and nobody would have a problem, everybody would feel at least that something was being done (Robert)
- T5-3 Well yah, there’s always a need for predators without a doubt. I mean, they’re good for some things. It’s nature’s cycle for one thing. I mean you can’t eliminate everything, it’s not right. Just like the grizzly bear, absolutely I would be so against the elimination of the grizzly bear. I’m all for a low quota, and a low one [for hunting].... Wolf, of course, I feel different about them. I don’t think we have room for them. They’re too much of a killer. (Keenan)

tions in Canada. However, as excerpts T4-4 and T6-2 reflect, ranchers have come to perceive and discuss the wolves here as having been reintroduced by the government rather than as having expanded into the area naturally.

As a consequence, this second case study brings into play fundamental social concepts beyond just beliefs about the wildlife in question. The debate here is centered around not just the rights of animals, but also the rights of both individuals and communities to decide their future. It brings into question issues about the balance of power, not just within communities, but across communities. So one of the reasons this is a more intractable issue than the first case study is that, although the problems are shared within the community, there is a larger, national community of interest with respect to resolution of this conflict that neither shares the local community's values or experiences nor has to live with the problems. Therefore the issues to be negotiated to resolve the conflict include not just the balancing of economic and safety concerns between humans and particular species of wildlife, but the balancing of power, property rights, and traditions and ways of life among different human communities. Recommendations about ways to approach resolution of these latter issues are more difficult to derive than recommendations from the first case study. Additionally, the research exploring this case study is still in its early

stages of development. At the current time, the closest thing to common ground shared between the community of ranchers and the national community of interest regarding the conservation of predators are viewpoints toward grizzly bears (the community dialog among ranchers focuses on how to manage bears to allow co-existence). Since one goal of collaboration is to build relationships and trust, focusing first on grizzly bears might offer an opportunity to build relationships to address the more problematic issue of wolves. Unfortunately, given the current stage of issue development for both predators, such a strategy is, in all likelihood, no longer feasible.

Conclusion

This paper began with the suggestion that urbanization is changing the social context in which wildlife management and decision making occurs and that this has implications for the future of wildlife institutions and policies. The emerging social context is one characterized by increasingly diverse and individualized, as opposed to shared, meanings and values. Further, remaining rural communities are increasingly confronted by a larger, more urbanized population that shares neither a common relationship to these issues nor a similar heritage or cultural tradition. As a consequence, conflicts

Table 6. Interview excerpts reflecting the presence of larger socio-political concepts as concerns among residents of the ranching community (names are pseudonyms)

- T6-1 I don't want anybody bothering my stuff because they think the wolf or the grizzly is equal to the human. And maybe they are, I'm not arguing that point, but I'm saying, we'll see a little bit of problems as times goes on between people raised like we were as compared to people coming in.... (Andrew)
- T6-2 ... and to bring in animals that haven't been here for 50 years is kind of funny. You know you are kind of pushed in on your rights I guess, they just tell you you have to live with them and ... I don't even know if they are bringing in the same species of wolf that was actually here. I think they are a lot bigger, the ones I know of that were up here were in the seventy-five pound range and some of these have been weighing a hundred and twenty-five pounds. I just think it is the government creating jobs for people and I don't know if we need to be paying for that. (Robert)
- T6-3 You know when that grizzly bear was killing cattle in there, there was a lot of people, there's quite a few people that kind of live in and around [these ranches] and different areas. They don't have any cattle, don't have horses and don't have livestock at all. And boy were they wanting us ranchers to get that bear and kill him. So, the public that's involved close are in support of you because they don't want a bear killing cattle next to them. But the people in Great Falls and New York, they could care less if you're having problems with bears killing your cattle...And of course they're the ones that have the say. So we're being controlled by people who are not being impacted at all by it. (Chris)
- T6-4 ... it gets to the point that ... you can't make a living or do what needs to be done. I mean, we're here for ...we love the outdoors, you know, we love the livestock. We enjoy the majority of the wildlife.... Like to see friends enjoy it, kids, down the road, but I guess when we can't make a living with livestock and there's too much predators, you know, it's time to change, do something else. It's like I told my son years ago ... we have 20 some wolves running around here killing at will or whatever, I says, we could sell this place and go buy us a place three times this size somewhere else and don't have to put up with the wolves or the grizzly bear and let a house be built every 200 feet apart up here and let everybody enjoy the wolves then, you know. (Phil)

at the interface of rural communities and urban values bring into play social issues of power, government control, and perceived threats to ways of life that extend far beyond merely beliefs about animals and the role of animals in society. These emerging social contexts increase the likelihood for conflict over wildlife management, escalate the intensity of such conflicts, and make negotiating socially acceptable resolutions more problematic. To address these concerns, it is our contention that wildlife institutions will need to adapt and evolve, particularly with respect to the underlying model and philosophy guiding decision making as well as the nature of science and the way in which science is integrated into decision making processes.

The presentation of the case studies in this paper focused primarily on the issue of the nature and goals of social science (in terms of the type of knowledge sought and produced) that are consistent with a more collaborative model of decision making. Relative to a Progressive Era model of decision making in which science and experts were seen as the source of the answer, in a collaborative model science is understood more as a means of mapping the dimensions of the problem in a way that allows a more informed political discussion. Identification of the public interest and decision making to serve that interest, however, are viewed as political processes rather than scientific outcomes. The case studies sought to illustrate the type of knowledge and "maps" that social science would ideally seek to produce and to illustrate how the nature of the problems and maps differ as the features of the social context differ.

The issue of integration of science into the political process of decision making, however, was not explicitly addressed. From the perspective of a collaborative model of decision making, failure to adequately address this issue, in fact, represents one of the major shortcomings of the first case study. The study originated as a means of understanding the meanings of wildlife to people and how those meanings served as a basis for framing and generating conflict over a wildlife issue. In other words, it focused on developing the ability to map the dimensions of the problem and was not, at the outset, seeking to help resolve a social conflict in a specific setting. Further it was funded, not by the state or community in which the conflict was occurring, but by a federal agency with an interest in urban wildlife management. As a consequence there was not, initially, an attempt to integrate the study into the ongoing decision making processes within the community. Nor was there interest or "buy-in" from the community and/or decision makers regarding the findings. As a consequence, although the study revealed polarization within the community and factors contributing to the polarization as well as suggested an

alternative route that might be pursued to reduce polarization and promote more constructive public dialog, those findings did not influence the political decision making process. An eventual outcome in this case was a situation so polarized that a law suit by the "animal rights" constituency within the community brought to a halt the management strategy that was ultimately selected by the decision makers. While we do not go so far as to claim that the study findings would guarantee a less contentious resolution, the findings did suggest a more collaborative outcome may have been possible. The findings also suggested a means of seeking to achieve a less contentious outcome.

Based in part on this experience, the second case study sought to address the issue of integration of science and decision making explicitly. The research was designed incorporating input from a series of workshops that involved members of various constituencies including federal and state agencies with responsibility for predator management, members of environmental organization with an interest in predator conservation, and members of the livestock community including ranchers and representatives of livestock groups. Because the research project is still under way, it is too early to judge whether this more explicit attempt at integrating science into decision making will be successful. However, it represents an attempt to extend the first case study by focusing more explicitly on this dimension.

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Literature

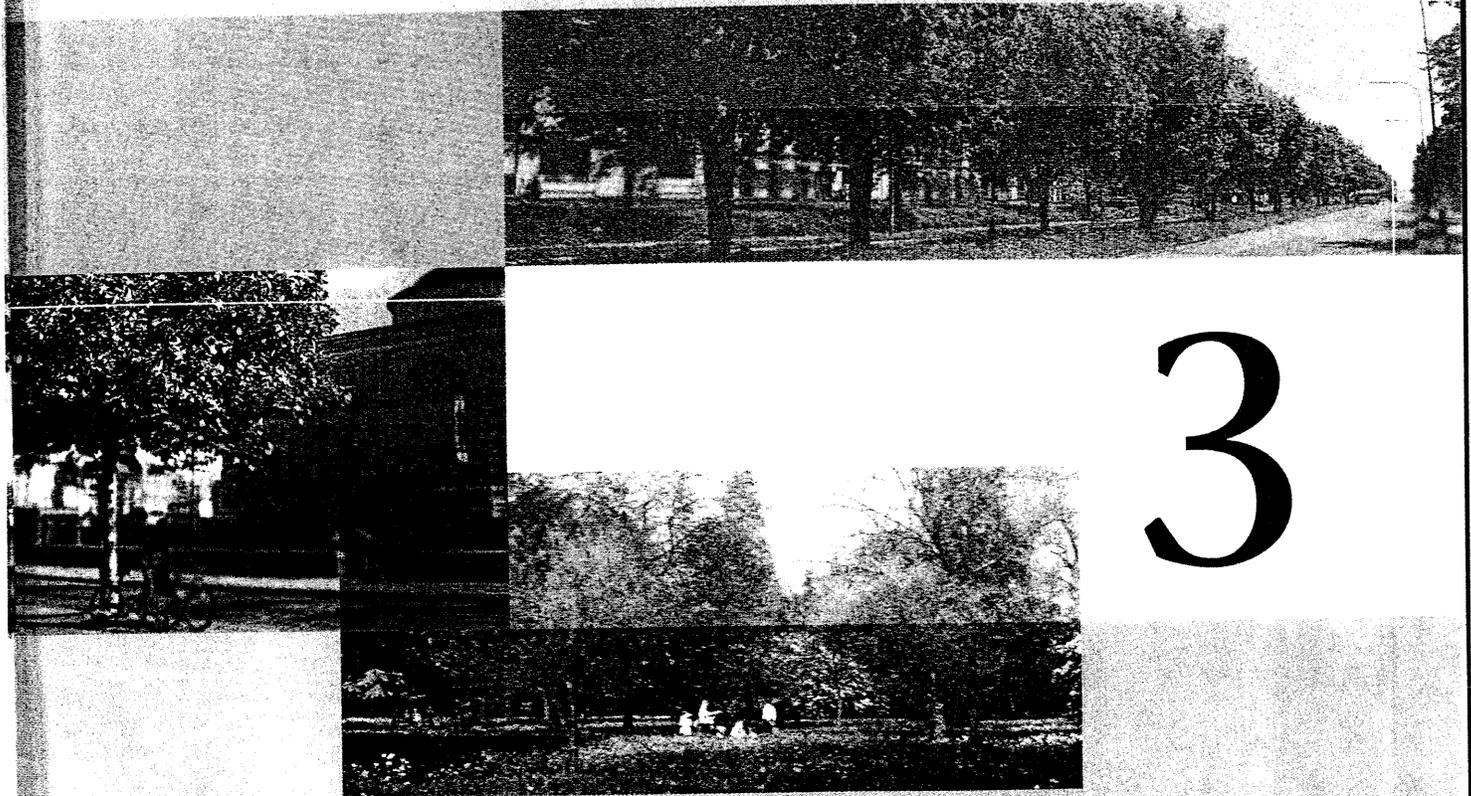
- Addison RB (1989) Grounded interpretive research: an investigation of physician socialization. In: *Entering the Circle: Hermeneutic Investigation in Psychology* (Eds. Packer MJ & Addison RB), pp. 39–57. New York: State University Press of New York
- Arluke A & Sanders C (1996) *Regarding Animals*. Philadelphia, PA: Temple University Press
- Bardach E & Publiaresi L (1977) The Environmental Impact Statement vs. the Real World. *The Public Interest* 49: 22–28
- Catton T & Mighetto L (1998) The fish and wildlife job on the National Forests: a century of game and fish conservation, habitat protection, and ecosystem management. USDA Forest Service

- Cestero B (1999) Beyond the hundredth meeting: a field guide to collaborative conservation on the West's public lands. Sonoran Institute, Tucson, AZ
- Clark TW (1993) Creating and using knowledge for species and ecosystem conservation: science, organizations, and policy. *Perspectives in Biology and Medicine* 36: 497–525
- Daniels SE & Walker GB (2001) Working through environmental conflict: The collaborative learning approach. Praeger Press, Westport, CT
- Duane TP (1997) Community participation in ecosystem management. *Ecology Law Quarterly* 24: 771–798
- Ebel FW (2000) Science should come before politics. *The Forestry Source* 6 (6): 1
- Hays RL (1997) Beyond command and control. *Transactions of the North American Wildlife and Natural Resource Conference* 62: 164–169
- Hekman S (1984) Action as a text: Gadamer's hermeneutics and the social scientific analysis of action. *Journal for the Theory of Social Behavior* 14: 333–354
- KenCairn B (2000) Public agencies in collaboration: a panacea to gridlock or the next big debacle. Unpublished paper presented at the National Leadership Conference, Yale University, October 2000
- Larsen G, Holden A, Kapaldo D, Leasure J, Mason J, Salwasser H, Yonts-Shepard S & Shands WE (1990) Synthesis of the Critique of Land Management Planning. USDA Forest Service Policy Analysis Staff Publication FS-452, Washington, D.C.
- Manring NJ (1993) Reconciling science and politics in Forest Service decision making: new tools for public administrators. *American Review of Public Administration* 23 (4): 343–359
- McCloskey M (1999) Local communities and the management of public forests. *Ecology Law Quarterly*, 25: 624–629
- O'Loughlin J (1990) Has Participatory Democracy Killed Forest Planning? *Journal of Forestry* 88 (5): 19
- Pacelle W (1998) Forging a New Wildlife Management Paradigm: Integrating Animal Protection Values. *Human Dimensions of Wildlife* 3 (2): 42–49
- Patterson ME, Shuey ML & McGlincy BE (1997) Redefining the Role of Social Science in Natural Resource Planning and Management: Emerging Perspectives on the Social Construction of Wildlife. Progress Report submitted to North Central Forest Experiment Station, Evanston, IL
- Patterson ME, Guynn DE & Guynn Jr. DE (2000) Human Dimensions and Conflict Resolution. In: *Ecology and Management of Large Animals in North America*. (Eds. Demarais S & Krausman PR) Prentice Hall, Upper Saddle River, New Jersey
- Peterson TR & Horton CC (1995) Rooted in the soil: how understanding the perspectives of landowners can enhance the management of environmental disputes. *Quarterly Journal of Speech* 81: 139–166
- Primm SA (1996) A pragmatic approach to grizzly bear conservation. *Conservation Biology* 10: 1026–1035
- Shands WE, Sample & LeMaster DC (1990) National Forest planning: searching for a common vision. USDA Forest Service Policy Analysis Staff Publication FS-453. Washington, DC
- Shannon MA (1981) Sociology and public land management. *Western Wildlands* 7 (1): 3–8
- Shuey ML (1997) Using a meaning-based approach for exploring the underlying belief systems that drive human wildlife conflicts. Masters of Science Thesis. Clemson University, Clemson, SC
- Sutherland A & Nash JE (1994) Animal Rights as a New Environmental Cosmology. *Qualitative Sociology* 17: 171–186
- Tapper R (1988) Animality, humanity, morality, society. In: Ingold T (Ed.) *What is an Animal*. Unwin Hyman, Ltd, London
- Terwee SJS (1990) Hermeneutics in psychology and psychoanalysis. Springer-Verlag, Berlin
- Thomas JW & Burchfield J (1999) Comments on "the religion of forestry: scientific management." *Journal of Forestry* 97 (11): 10–13
- Whittaker DG & Torres S (1998) Introduction: Ballot initiatives and Natural Resource Management. *Human Dimensions of Wildlife* 3 (2): 1–7
- Williams BA & Matheny AR (1995) Democracy, dialogue, and environmental disputes: the contested languages of social regulation. Yale University
- Wondolleck JM, Yaffee SL & Crowfoot JE (1994) A conflict management perspective: applying the principles of alternative dispute resolution. In: *Endangered Species Recovery: Finding the Lessons, Improving the Process* (Eds. Clark TW, Reading RP & Clarke AL), pp. 305–314. Island Press, Washington, DC
- Van Riper L & Patterson ME (2000) The renegotiation of social constructions in response to changing wildlife policy: possible consequences of elk farming using bison as a case study. *Midwest Sociological Society 2000 Annual Meeting*. Chicago, Illinois. April 19–22, 2000

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