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The role of discretion in recreation decision-making by resource professionals in the USDA Forest Service

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ABSTRACT

This paper explores opportunities for administrative discretion in decision-making for natural resource management. We carried out an exploratory study in the USDA Forest Service to understand factors affecting administrative actions related to recreation use in riparian areas. We conducted semi-structured interviews with 27 resource professionals from a national forest in the northwest region of the United States. Questions focused on professional judgments about recreation in riparian areas, administrative actions related to management of these activities, and the potential for personal values to influence decisions. We analyzed the transcribed interviews using Atlas.ti, coding the data for salient themes. In this paper, we discuss perceptions of resource professionals about the potential for personal values to influence administrative actions and decisions. We highlight four distinct realms in the planning process where expanded discretionary capacity exists and values may emerge. Finally, we suggest ways to reduce the potential influence of value-based judgments in decision-making.

1. Introduction

Administrative agencies accomplish the majority of the government's day to day work and have the most immediate and direct impact on the everyday lives of citizens (Anderson, 2010). To be responsive to public needs and consistent with agency goals, many federal agencies in the United States were developed based on a Progressive-era philosophy of scientific management and expert administration by professionals who make informed, objective, rational, and fair decisions (Simon, 1971; Weber, 1946). Policies are implemented through the chain of command and supported by hierarchical structures and systems of accountability (Wilson, 1991). Agency rules and operating norms reinforce consistency and promote efficiency. Processes and protocols regularize, organize, and direct how decisions are made (Davis, 1975). Tightening administrative controls limits variations in the interpretation of rules (Sabatier and Mazmanian, 1979). Yet, these controls do not eliminate all opportunities for administrative discretion, which is defined as the capacity to make decisions by exercising reason and professional judgment, rather than strict adherence to laws or regulations (Arendt, 2003).

The role and scope of discretion in the public sector and its implications for citizens is the focus of much debate (Vinzant and Crothers, 1998). Lipsky (1980) explored the actions and decisions made by front-line public servants and found that despite working in agencies with clear policy directives and strictly codified guidelines, these "street-level bureaucrats" operated with a great deal of discretion, making everyday decisions based on their unit's interpretation of agency directives as well as local conditions (Brehm and Gates, 1999; Lipsky, 1980). While policy-makers may seek reforms to curtail the decision-space of government employees, some scholars of public policy argue that a degree of discretion is acceptable, if not desirable, to provide effective and equitable government services (Handler, 1986; Moore, 1987).

The capacity to exercise discretion does offer the possibility for personal values to influence administrative actions (Brehm and Gates, 1999). Values are guiding principles or enduring, deeply-held beliefs of what-is morally or ethically desirable or just (Kempton et al., 1995). While research has explored institutional factors that expand discretionary capacity (Lipsky, 1980), as well as different types of discretion that are practiced (Evans and Harris, 2004), few studies have explored the potential influence of personal values in these situations. Additionally, existing research on discretion has looked at social services, prisons, police, education, and other institutions with a high degree of public interaction (Carrington, 2005; Evans and Harris, 2004; Jewell and Glaser, 2006; Maupin, 1993; Riccucci, 2002). Less well understood is the

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discretionary capacity of natural resource professionals at the field level, who deal with everyday actions related to land or resource management. We apply the notion of a street-level bureaucrat to understand the factors that contribute to administrative discretion in the USDA Forest Service.

This study focuses on decisions related to recreation management in riparian areas, a zone of transition between aquatic and terrestrial ecosystems (Norris, 2001). Resource managers must balance the mutual goals of enhancing public access while preserving the integrity of the riparian zone (Gregory, 1997). These complex decisions are akin to "wicked problems." Unlike tame problems, which have a clear goal and resolution, wicked problems are difficult to define and analyze, and the solutions are not obvious. In fact, it is a challenge "identifying the actions that might effectively narrow the gap between what-is and what-ought-to-be (Rittel and Webber, 1973: 159)." The popularity of riparian sites among recreation users makes them vulnerable to overuse (Johnson and Carothers, 1982). Studies have examined the effects of recreation use on soils and plants (Cole and Marion, 1988), but the absence of models that explain the impacts of human activity on riparian ecosystems under various biophysical and social conditions complicates their management. Moreover, as this study found, resource professionals in the Forest Service often have differing viewpoints about recreation use, the impact of recreation activity, and the management of these areas. This complexity means that a variety of factors, including personal values, may shape decisions related to managing recreation in riparian areas when there is sufficient discretionary capacity.

This multifaceted issue provides an opportunity to explore how resource specialists and line officers exercise discretion in the process of deliberation and decision-making within a public land management agency. For our study, we analyzed qualitative data from interviews with 27 professional staff in one national forest located in the Pacific Northwest region. We identify opportunities for expanded discretionary capacity in the decision-making process and offer examples where personal values may inform the outcome. Lessons learned from this study will inform social scientists and public land managers about the conditions that make this possible and ways in which the influence of values may be reduced.

2. Discretion and the "street-level bureaucrat"

Guided by agency rules and norms, Lipsky's "street-level bureaucrats" have latitude to make choices regarding the distribution of government benefits or access to public services (Lipsky, 1980; Maynard-Moody and Musheno, 2000). For example, these public servants have autonomy when choosing among strategic alternatives within certain legal, ethical, or administrative boundaries (Vinzant and Crothers, 1998). They have discretion when determining which activities or programs to prioritize, promote, or fund, and which to downgrade or deactivate (Cox III, 2005). They may make discretionary decisions about how to apply or enforce rules and the type and quality of services to be delivered to the public (Handler, 1986). Sometimes these decisions are made in empty spaces, where professionals are required to interpret policy and generate solutions in the absence of rules. In extreme cases, public servants may operate in violation of rules, providing citizens with services or access to resources to which they are not entitled, for example, or denying services to a qualified individual (Evans and Harris, 2004). Within a given agency, there may be wide variation in the amount of discretion held, based on personal characteristics, their position in the agency, and their scope of work (Arendt, 2003).

Lipsky (1980) identifies four conditions that potentially affect discretionary capacity. (1) In agencies bound by a voluminous set of regulations or that respond to multiple sets of rules, street-level bureaucrats possess discretion to selectively adhere to existing rules. (2) Bureaucratic agencies that operate without concrete goals, work under competing mandates, or where complex tasks are not addressed through a clear programmatic approach may be subject to greater discretion on the front lines. (3) In public agencies facing budget cuts, downsizing, backlog, or high workloads, public servants may employ discretion in order to simplify or streamline bureaucratic actions. These "coping mechanisms" are typically viewed as rational responses to improve efficiency in an agency stymied by paperwork or overwhelmed by process (Lipsky, 1980; Nielsen, 2006). (4) Individuals may expand the discretionary space available to them through assertive communication styles and other tactics such as taking actions that bend or manipulate the rules. In addition to these conditions, others have found expanded discretion in agencies where budgeting protocols promote flexibility (Robbins, 2005). External factors, such as political climate, also can influence discretionary capacity (Holzer and Kaifeng, 2005). Organizations under close scrutiny by the public may face more stringent controls that limit discretion (Robbins, 2005).

From the standpoint of the Weberian rational-decision model, the actions of street-level bureaucrats are viewed as deviations or maladaptations (Maupin, 1993). Yet, discretionary decision-making may also be understood as a reasonable, rational response to conditions that require innovation, strategic thinking, assertion, and flexibility (Lipsky, 1980; Moore, 1987; Robbins, 2005). Professionals generally try to reduce the complexity of their work and curtail ambiguity by establishing protocols, both as individuals and as administrative units. Street-level bureaucrats possess on-the-ground knowledge of issues and public needs, which they leverage as they interpret bureaucratic regulations to make decisions. However, when front-line workers have discretion, there is potential for personal values to influence decisions both intentionally and implicitly (Moore, 1987). Resulting actions may not correspond to standards set by regulations and policy, but instead may reflect individual beliefs or personal biases.

3. Decision-making in the USDA Forest Service

The Forest Service is responsible for managing the federal system of 155 national forests and 20 grasslands throughout the U.S. Typical of Progressive-era institutions, the Forest Service fosters top-down accountability through a hierarchical chain of command (Handler, 1986; Kaufman, 1960). In the early years, line officers (e.g., national forest supervisors and district rangers) crafted decisions based on principles of scientific forestry and professional judgment with little public input. Homogeneity was achieved through common forestry education, strong organizational norms, and frequent relocation (Kaufman, 1960; Kennedy and Quigley, 1997). However, the dispersed, decentralized organization gave line officers discretion to make decisions about forest management practices (Kaufman, 1960). Beginning in the 1970s, a series of environmental laws and regulations complicated the agency's decision-making authority (Koontz, 2007). Both the National Environmental Policy Act (NEPA) and the National Forest Management Act resulted in Forest Service decision-making becoming more pluralized and transparent, with internal and external actors playing a greater role (Ackerman, 1990). In addition, Section 102 of NEPA stipulates the use of "a systematic interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and decision-making which may have an impact on man's environment (Sec. 102 [42 USC § 4332])."

The Forest Service developed the model of interdisciplinary (ID) teams to conduct NEPA assessments and forest planning. Over time, the ID team approach also became a default process for considering resource actions outside the scope of NEPA. According to the Forest Service Handbook, ID teams are responsible for analyzing proposed actions and their potential effects on the natural and social environment (USDA Forest Service, 2010). Their introduction required a new cadre of subject experts in aquatic biology, wildlife biology, hydrology, sociology and other specializations (Brown and Harris, 1993; Kennedy, 1991; Thomas and Mohai, 1995) who work together to measure the intensity of likely project impacts for each alternative, including direct, indirect, and cumulative effects (Garcia, 1989; USDA Forest Service, 2010). Line officers select ID team leaders, make recommendations for team members, and outline team expectations and direction. The team leader and line officer mutually develop the project purpose and decision framework, identify key issues and resource areas, and assign roles. The team leader manages group interactions, coordinates analysis of alternatives, and synthesizes scientific findings.

Previous studies have noted challenges to the interdisciplinary process including difficulty communicating across disciplinary boundaries and tendencies for resource specialists to advocate for their subject matter (Reid, 1996). Some suggest that Forest Service ID teams actually are multi-disciplinary rather than interdisciplinary, with members working in isolation and evaluating project effects on their own subject area (e.g., fish, wildlife) rather than collaboratively working on integrated problems (Freeman et al., 2011; Garcia, 1989). This multi-disciplinary model suggests greater potential for resource specialists to influence the outcome. ID teams exert influence on how alternatives are shaped and presented to the decision-maker (Stern and Mortimer, 2009), which scientific tools and frameworks to use (Cerveny et al., 2011a), and styles of collaboration to invoke (Freeman et al., 2011). Studies of ID teams also have shown that NEPA outcomes may be influenced by team members' disciplinary training, dispositions, and values (Stern et al., 2009). Thus, ID teams have transformed the agency's decision-making culture (Koontz, 2007; Sabatier et al., 1995), shifted some of the power of decision-making from the line officer to resource specialists (Stern et al., 2010), and changed the opportunities for discretion in the process.

Though they have not studied the relationship between discretion and values in decision-making, researchers have shown that environmental values can influence judgments about forest management and the acceptability of forest practices (Shindler and Cramer, 1999; Vaske et al., 2001; Zinn et al., 1998). And, as much as specialists strive for objectivity, they have been shown to make technical decisions with an assortment of values embedded in them (Susskind and Dunlap, 1981).

In this paper, we explore the realms of decision-making where discretionary capacity may be expanded, potentially leading to values-based outcomes. This study did not seek to directly measure the values of resource professionals in the sample. Rather, our findings are based on interpretation of qualitative data where various resource professionals discussed the potential for a range of values to exist among their ranks and provided examples where values have played a role in decision-making. The thrust of this paper lies in identifying spaces in the planning and decision-making process where discretion exists and values can potentially influence decisions.

4. Research design and methods

We initiated this exploratory study in 2005 in one national forest in the Pacific Northwest. The study goal was to assess what factors influence judgments and decisions about the management of public natural resources by government agencies. We focused on the appropriateness of recreation use in riparian areas while also gathering information about decision-making in other contexts.

We defined the entire population of potential study participants to be resource professionals at the national forest (supervisor's office) level and at the ranger district level who were engaged directly in decision-making related to riparian management ($N = 32$). Job functions included: district rangers, hydrologists, aquatic biologists, wildlife biologists, recreation and trails staff, ecologists, and planning & ecosystems coordinators.

We tested the interview protocol at one ranger district, which was selected because of its accessibility and small staff size. We conducted interviews with the district ranger and all four staff who were involved in decision-making about riparian recreation. We concurrently interviewed two ecosystem coordinators at the forest supervisor's office, a function not found at the district level. Based on these initial interviews ($n = 6$), we modified the protocol to reduce the length and to emphasize questions designed to elicit in-depth responses about decision-making processes and specific administrative actions. We used the revised guide for the duration of the research.

We contacted the remaining individuals in the study population to request their participation. We interviewed 18 of these possible subjects. One study participant referred an additional field staff member, who was not on our original list because of his current job title. We added this individual to the sample because he had extensive experience with decisions related to riparian recreation.

In total, we interviewed 27 resource professionals, including line officers and resource specialists in a variety of roles in four ranger districts and the supervisory office (Table 1). The majority of interviews took place with district office staff, while a quarter of informants worked at the supervisor's office. The sample included three rangers, capturing the line officer's perspective. Interview subjects had diverse educational experiences, with the majority having studied natural sciences and forestry (Table 2). Two-thirds of the study sample was male, which was comparable to their

Table 1
Job function and level in agency of informants ($n = 27$).

	Ranger District	Supervisor's Office	Total
Aquatics (Fisheries Biologist, Hydrologist)	6	1	7
Wildlife Biologist	4	1	5
Public Services (Recreation, Trails Staff)	8	1	9
Planning & Ecosystems Coordinator	0	2	2
District Ranger	3	0	3
Ecologist	0	1	1
Total	21	6	27

Table 2
Socio-demographic characteristics of informants ($n = 27$).

Characteristics	Number of Informants
Area of Education[a]	
Biological Sciences (e.g., Wildlife, Botany, Ecology)	8
Ecosystem Management	1
Fisheries	4
Forestry (e.g., Forest Management, Forest Sciences)	8
Physical Sciences[b] (e.g., Hydrology, Geology)	2
Social Sciences (e.g., Political Science, Recreation, Economics)	4
Gender	
Female	9
Male	18

[a] Area of study is for the highest degree attained.
[b] One subject has a Masters in both Fisheries Science and Hydrology.

representation (61.7%) within the Forest Service in 2006 (USDA Forest Service as cited in Brown et al., 2010).

The final interview guide took approximately 1 h to complete and included questions about the subjects' professional background and current responsibilities, views about recreation use in riparian areas, and perceptions of recreation impacts. The guide also queried study participants about how managers respond to various biophysical conditions in riparian areas and views about the appropriateness of management decisions. Another set of questions dealt with their perceptions about opportunities for personal values to affect decision-making.

We recorded and transcribed all but two interviews, during which the interviewer used standard note-taking procedures. We systematically coded and analyzed the transcripts using Atlas.ti, a qualitative data analysis software application (Scientific Software Development GmbH, 1993–2008). The objective of this approach was to find patterns within that data instead of letting preconceived notions shape the results (Charmaz, 1988; Emerson et al., 1995; Glaser and Strauss, 1967). Through the iterative process of refining and revising themes from interview transcripts, we developed theories about the factors that influence decisions related to recreation. In this paper, we focus on one aspect that emerged, how with discretionary capacity, values may shape professional judgments by national forest professionals.

5. Results

5.1. Potential for values to influence resource decision-making

We asked resource professionals whether it was possible for values to influence professional judgments that shape administrative actions. More than three-quarters of subjects in our small sample answered affirmatively. Like the recreation manager quoted below, many provided examples of decision-making processes and actual management decisions influenced by personal values.

> Do we want mountain biking on XYZ trail? Well, some people would really feel strongly against that, but you know resource wise there may not be any issue. That's a case where personal values would be influencing the decision. We have a trail like that. We don't have mountain biking on it. (INT02)

However, informants were divided on how frequently personal values enter these processes and the implications. Often, they qualified their statements, saying that they rarely affect administrative actions. Other study subjects saw this as a fact of life, not a problem that required special attention. For instance, one wildlife biologist said it was impossible to separate personal and professional opinions, while another said:

> In my opinion, there is nothing that personal values don't enter into in any phase of life, in any form, and of any person. I mean we all are influenced by them, no matter how objective we would like to be. We're not. So there's no way to keep 'em out. (INT14)

What is more, a few study subjects believed personal values should inform management discussions. One district-level fisheries biologist declared that the agency allowed staff "to really take our environmental ethic to the ground and be able to do some of the things that we feel are compatible with our values." (INT12) Meanwhile, a district-level recreation specialist indicated that values lead to healthy debate.

> I think our values always color how we feel, for good or for bad. And I think a lot of those are really strongly held because, for a lot of people, that's why we're doing these jobs. I think that sometimes brings up conflict, but I think that's a healthy thing. It's conflict because people care about what they're doing. (INT02)

However, other subjects felt that personal values adversely affect decision-making, leading in some cases to inappropriate administrative actions. For example, a recreation specialist clearly felt frustrated by what he called the "biological backwardness" of natural science staff. Explaining further, he said:

> They've come into an agency with blinders as to our entire job, which is managing the recreation initiative, in addition to wildlife and habitat and so forth, and in the same way that we used to be blinded to that because all we did was harvest timber. (INT10)

Despite the lack of consensus among informants about the implications of values-influenced administrative actions, these occurrences may be problematic for the agency, which is charged with managing the nation's forests to protect forest resources and meet the public needs in a way that is equitable, fair, and responsible. The next section discusses when personal values may enter the decision-making process.

5.2. Discretionary capacity in the decision-making process

Individual and institutional factors described in this section contribute to discretionary capacity and facilitate its expansion at certain points during decision-making. In some instances, we refer to a decision process that is being carried out by an ID team as part of a formal NEPA assessment, such as an environmental impact study, environmental analysis, or a categorical exclusion, which requires an abbreviated ID team process. In other cases, the examples are from less formal interdisciplinary processes and discussions not covered under NEPA. For simplicity, we have organized the section to correspond to four conceptual decision-making realms that emerged from our discussions with informants. These do not necessarily correspond to the formal decision processes employed by the Forest Service. The realms are: (1) problem identification and assessment; (2) project prioritization and funding; (3) problem deliberation and team interactions; and (4) selection and implementation of a final decision. In each area, we focus on issues raised by subjects and identified by the research team as significant. The list of factors is not exhaustive. Additionally, some factors we identified occur or enhance discretion in more than one realm. However, we discuss each only once in the results below.

5.2.1. Problem identification and assessment

Identifying a problem is the first step in resource planning processes. As envisioned, ID teams would strive to use an integrated approach, which incorporates a holistic understanding of biophysical and socioeconomic dimensions and a clear definition of problem parameters. However, a fisheries biologist working at the district level pointed out that for particular natural and recreation resources, the process to analyze a problem is not specific.

> We don't have a strategy for assessing and determining whether we have a problem, or whether we have a campground or a road system that needs to be repaired. We do have a decision-making process for assessing whether that should go on or not, but not necessarily relative to the resource. (INT12)

Informants frequently mentioned dispersed camping in riparian areas, noting that environmental values appeared to influence a number of assessments about the effect of these activities. While some subjects saw dispersed camping as negatively impacting the

riparian environment, declaring these effects "real obvious" from glancing at a site, many others stated that the disturbances were not significant. Scientific information may not always be used to inform these evaluations, according to subjects. Instead, they occur in a cursory manner. A district-level recreation specialist highlighted his concerns.

> Part of the problem we have is riparian [management] is an issue right now, so it's like denuding any area is bad. The question I always have is well, there's not a plant there, true, but, is it impacting fish? ... What are the actual impacts of the recreation use? (INT03)

One reason for these quick appraisals is a lack of funding, personnel, and time, which affects all phases of the decision-making process. Informants described a range of activities, from assessing the impact of erosion by streams to repairing bridges, where they did not have the capacity to undertake them despite the need. An ecologist from the forest said that with the modest funds allocated, "There's no way that those lands or those ecosystems can be monitored or regulated or restored given the high level of use, relative to a few decades ago, that they're getting." (INT09)

In another case, a biologist at the supervisory level recalled a request to set up an ID team to plan for recreation management on a district with significant resource damage. "Their people didn't have time, mainly recreation. So, that's where it sits. We have this problem still, so we're doing tactical things without a strategy." (INT11) Study subjects indicated that persistent capacity constraints mean decisions about riparian recreation and other issues often are reactive, rather than demonstrating a "conscious choice" about strategic management. Personal values may easily inform this "haphazard" process, as one informant claimed.

Despite the capacity limitations facing the Forest Service, when a staff person recognizes a problem, they can increase the likelihood that it will be addressed by being proactive. Tenacious staff may influence the visibility of a concern and its identification as a priority for their national forest. A specialist in hydrology working at the district level exemplified this tactic. He shared a story about how he went to a site for the first time and found evidence of OHV use that he perceived to be harmful.

> I couldn't believe what was there. The ruts were three feet deep in a riparian area. There were holes up to the windows [of a vehicle] deep. ... I sent out messages about it with digital photos to district staff and the SO [supervisor's office]. I talked about water quality damage, resource damage, wetland damage. Then things started to happen, [though] the ranger was reluctant to act. (INT19)

This assessment of the problem may have been correct, but it also appeared to reflect his personal philosophy against OHV use on national forest lands, which he vocalized throughout the interview. His determined advocacy influenced defining the site as a problem.

5.2.2. Project prioritization and funding

After an issue like the rutted riparian area has been identified and agreed upon as a problem, the district prioritizes it with respect to other projects and then seeks internal funding. On the forest we studied, district personnel ranked projects and issues by assigning numerical scores. While the prioritization process should filter individual beliefs, subjects agreed that does not always occur. As with any ranking process, they noted that this one is subjective and leaves room for discretion. By adjusting numbers slightly, one manager explained, one can substantially change the outcome. While resource specialists may use only professional judgments in the ranking, their personal values may enter this process, particularly if they feel strongly about an issue. This manager continued by saying,

> The devil's in the details. Should that be that heavily weighted? A lot of the projects come out with about the same score so there's a point where it makes a big difference as to whether you tweaked it a little bit, whether the project's really going to get worked on that year or deferred or dropped. (INT06)

A ranger or resource specialist with effective communication skills also can influence this and other phases of the decision-making process. As a recreation specialist at the district level explained, individuals can persuade their colleagues about a project they support, and this may not always reflect their professional judgment.

> Every year, [we] go in with a list of projects. There is a finite amount of funding and they all have to argue for what's the priority. Either they do a good job of convincing their peers or not, and it's based on their values. (INT05)

In theory, the mandate given to the Forest Service should limit the amount of discretionary capacity to pursue what one subject referred to as "pet projects." However, subjects navigated from within a dizzying array of regulations, laws, administrative directives, internal policies, regional forest plans, and overlapping layers of jurisdiction with federal regulatory agencies and the state, along with different agendas at the national, regional, and forest level. Lack of clarity in the agency mission also was mentioned. A wildlife biologist stated that "many of us feel the agency is wandering slightly mission-less. Our mission now is protecting the ecosystem, plus a few other things, but it's not this super clear mandate." (INT17) Additionally, as one recreation specialist with over 25 years experience noted, interpreting and applying management principles to specific sites, even when they are described in the Forest Plan or another document, is difficult. Another recreation manager explained how she felt when trying to reconcile the demands of a former district ranger with these directives, where despite the plethora of guidelines, he had discretion to implement his vision.

> Our ranger we had like 10 years ago, he looked at the district as his personal playground. He had some very definite things he wanted people to do or not do based on his perspective. It makes it difficult because you think, now how does that tie back in with the Forest Plan and where we thought we were supposed to be going, if it's too contradictory? (INT03)

In this muddled milieu, strategic plans for a ranger district may help Forest Service staff to identify priorities and make sound decisions about appropriate resource use. Without them, as one staff biologist explained, there is no comprehensive vision for addressing resources and site specific issues across a district.

> Recreation has said more than a few times that they don't have the funding to develop that type of analysis and so in the meantime there is no direction; there is no formal plan on how to deal with it. You just sort of deal with things on a site-by-site basis. (INT18)

5.2.3. Scientific evaluation, problem deliberation, and team interactions

During the problem deliberation phase, resource specialists act as consultants to the ID teams, providing information specifically about their resource. Only a few subjects raised the idea that specialists should provide an unbiased assessment instead of looking out for their resources' interests, like the wildlife biologist in the supervisor's office who said:

> Generally the specialists are supposed to provide just the facts. I'm not sure people always do that though. ... The line officer has the discretion to do [more] and at the lower levels we're not supposed to, but I think it happens. It's a hard line to draw. (INT15)

Presenting only the facts can be difficult, particularly if a resource specialist is passionate about a position during deliberations. A fisheries biologist at the district level said he didn't want to use the word "hysterical ... but people tend to get very emotional about their field and say 'something must be done.'" (INT12) Similarly, a recreation manager emphatically exemplified this issue:

> If I come in here [to the Forest Service] and I only know about squirrels. Well, what's going to be your passion? It is trees for squirrels. The hell with everything else. That's what I [want]. (INT01)

The ID team leader is supposed to integrate and synthesize the information from the decision-making process, sorting through any impartial presentations. The team leader reports this information to the line officer for a final decision. As one informant said, the team leader must learn to take everything with a grain of salt. According to study subjects, some team leaders are able to synthesize information well, while others do not. Instead, subjects like the wildlife biologist cited below asserted that some team leaders uncritically accept what specialists say in part because they appear knowledgeable.

> I think a lot of people recognize this, you work in the organization long enough, and through osmosis you learn things, you see things, you hear what the specialists are saying. It all makes sense and so you agree with them. (INT07)

Furthermore, those team leaders and line officers who are less active in the process may not recognize the embedded biases and emotions, nor be able to critically analyze the material presented. They also allow their staff more discretion during discussions by not being engaged. What is more, informants frequently mentioned how failures in execution during deliberations permitted personal values to influence outcomes, as a wildlife biologist who has worked at the Forest Service for over 20 years described.

> Well, if we followed a reasonable process, they [personal values] would be overcome a lot, maybe grudgingly. But because we don't often follow that process of getting other people looking at it and really actively seeking comments and trying to actively understand why we would propose to do various activities, I would say more often than not, they do influence the decision, and not always positively. (INT14)

Even when following the process, differences of opinions about alternatives arise. Commonly, they reflect different interpretations of observations and measurements. "There's a lot of different biologists, and depending on what their experience, their background, their interests, their emphasis are, studies would come to very different interpretations if presented with the same case study," (INT17) said one district-level wildlife biologist. A biologist from the supervisor's office stated, "I think [it's become] more acceptable for scientists to [interpret], and in the end you still have the problem of personal perspectives." (INT09) As another manager from this office stated, "Science is not value free." (INTP03)

Beyond the issue of subjective science, uncertainty also clouds findings about proposed projects. Effects of human interactions on salmon are a notable example where interpretations vary widely and allow for personal values to inform deliberations. A manager from the supervisor's office described the problem this poses with respect to projects in riparian areas.

> You can't get you're environmental work done because [US] Fish and Wildlife or normal [Forest Service] fisheries cannot decide on whether or not this project is going to have an effect on fish in the river because you're building a trail near the river. (INT16)

In these cases, the impacts may be too complex to easily measure systematically or the assessment may not produce a clear answer about the effects. The inexact nature of problem analysis and uncertainty in science provide room for Forest Service employees to use discretion when evaluating options.

5.2.4. Decision and implementation

The line officer has a great deal of discretion when signing off on an ID team assessment, and in cases where there is not a preferred alternative, the decision to move forward with a project or not is up to him or her. In both cases, the line officer may bring his or her personal values to bear. Certainly, they have to be able to defend their choice with respect to applicable documents, as multiple subjects noted. Nonetheless, study subjects recognized that line officers still made choices that aligned with their own viewpoint, as a district-level recreation manager stated.

> We have so many factors that we're protecting for while trying to provide a recreation experience that the groups that I work with, at least, are not silent members. You don't have a botanist or wildlife, or rec tech [recreation technician] that are silent. I encourage that dialogue because that's how you get your best projects. But, it's naïve to think that whoever's leading or whoever signs is not going to bring some sort of personal thoughts or wiseness [sic]. (INTP04)

In order to address the resource problems and project proposals presented to the line officer, many subjects cited the need for more integrators, or people who can compare "apples to oranges," in order to make the best decision about these multifaceted issues. However, with the increase in the number of resource specialists and the move away from common training in forestry, the perception is that there is less cross-disciplinary understanding today than previously, when all managers shared a common background and training experience. As one resource manager at the supervisor's office commented,

> I think you're looking at the functionalization that's gone on within the agency where you've got a specialist with the fish, and you've got one with the wildlife, and you've got one with the plants, and you've got another one with the cultural resources, and it's very hard to come up with a holistic view because you might have one of those other issues that will win out over the others or be perceived that way by the various specialists. (INT16)

Despite acknowledged problems with some decisions made via the process, subjects unanimously agreed that the team members should accept a result even when they do not agree with it. A recreation specialist colorfully described this outlook. "There's only room in the saddle for one person and that's the leader. But when the leader is making the decision you ought to live with it irregardless [sic] of how things shake out." (INT01) However, in direct contrast, many individuals gave counter-examples, reflecting a 'decision by delay' approach.

> I think at times if we haven't thought a project was a good idea, you know there was less support for it; it might have been slower to implement. Or, in the worst case, people would work against it. There's been a case for that too. So, it's like well, we don't really like this, let's put on the brakes, errrr... [Laughter] where really the decision to do something had already been made. (INT02)

Of course, when the decision seems quite far-fetched as seen in the example below, it may be hard to accept the outcome. In this case, a proposed link between two roads was declined for what was perceived as a staff member's personal concern with mountain goats.

> The major decision there that drove that whole thing was wildlife, and it was a migration route for mountain goats, which I don't know if there's a mountain goat alive on that same pass today, but the roads are not connected. It was driven by a personal bias of an individual that felt strongly about the goats. There was no knowledge other than what was in the top of his head. (INT01)

Hence, using discretionary capacity to influence a decision to conform to personal perceptions instead of professional expertise created the policy for this area. As the results demonstrate, this problem may occur at multiple points in the decision-making process due to discretion, both from institutional and personal factors.

6. Discussion

Resource professionals in our sample recognized variation in values within the agency. While we did not measure these systematically in this study, our findings suggest that there is a range of values that exist. In the case of riparian recreation, we found that these values can influence administrative actions and decisions, shaping the ways issues or problems are identified, prioritized, deliberated and decided. The results highlight multiple places in the decision-making process where discretionary capacity permitted this to occur, or where it was expanded (see Fig. 1). We discuss below in greater detail the factors that contributed to these incidents, and we make recommendations for the Forest Service to reduce the potential for values to affect decision-making.

Resource management conflicts arise in today's Forest Service in part because of the diversity of values held by resource professionals, which corresponds to the professional diversity encouraged in agency hiring since the 1980s (Thomas and Mohai, 1995). This diversity was deemed important for the agency to shift from a focus on commodities to a focus on ecosystems management (Kennedy and Quigley, 1997; Brown and Harris, 1992; Kennedy et al., 2005). In 2011, the Forest Service announced the Cultural Transformation process (USDA Forest Service, 2011a), which ensures that professional staff will represent an even greater variety of backgrounds, beliefs, and values in the future, thereby continuing the trend toward greater diversity. The challenge the agency may face is being able to embrace and incorporate this multiplicity of viewpoints fairly and appropriately.

While the Forest Service has been proactive in recognizing a need to diversify the perspectives of its professional staff, there has been less emphasis on developing a process for acknowledging and adequately integrating diverse values into planning and decision-making in a way that is transparent and constructive. As this study shows, when discretion exists in the planning and decision-making process, the opportunity for personal values to play a role exists. Implementing a process that identifies and incorporates values into problem identification and traces the role of values in the planning process may help to demystify the relationship between values and professional judgments.

Resource professionals in the Forest Service appear to have discretion at multiple points in the interdisciplinary process to assess riparian and recreation problems and determine a course of action. This capacity corresponds to the four factors raised by Lipsky (1980) as well as two additional factors not discussed

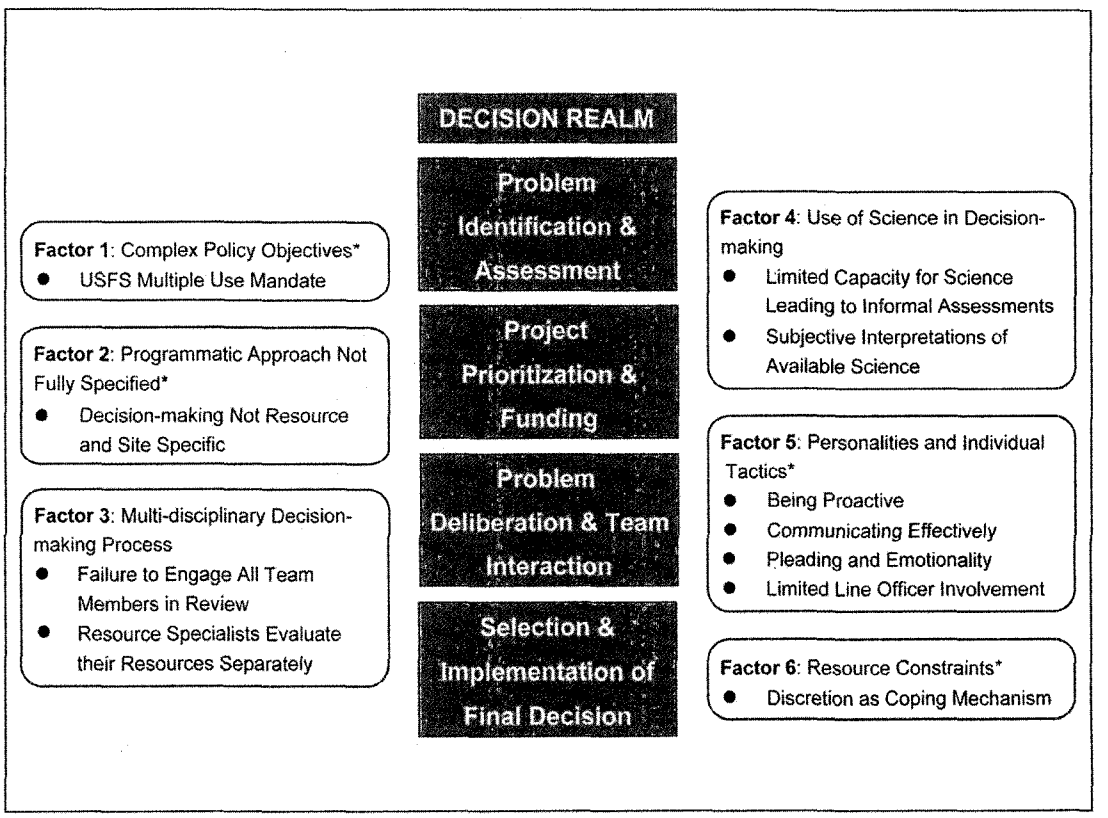

Fig. 1. Factors influencing discretion. *Factor identified by Lipsky (1980).

previously in the literature. As Lipsky described, agencies with complex or competing objectives or an unclear programmatic approach create opportunities for administrative discretion. According to study subjects, both apply to recreation management on the forest studied. The Forest Service's multiple-use mandate means that actions related to resource management often require a balance or trade-off between resource protection and public access. In addition, study subjects described how the current decision-making processes are difficult to apply to specific resources and sites. Given this context, street-level resource managers may develop their own protocols in order to accomplish a task, which is a rational act (Handler, 1986; Lipsky, 1980).

In this study, five different informants from multiple ranger districts discussed a specific quandary they faced: Do I move a giant boulder to close off access to the riparian area that is receiving heavy visitor use? Or, do I let the public into this sensitive space, to camp, drive OHVs, or to partake in some other activity? The multiple use mandate makes the decision about whether or not to move the boulder a difficult one. Although it is a challenge to balance human use and resource protection at the National Forest scale, having some management priorities at a smaller scale, such as the landscape or watershed level, may help to make these decisions less ambiguous and provide direction for resource managers, thereby reducing discretionary capacity. In doing so, multiple uses may be balanced at the national forest level, while certain uses may be emphasized within particular watersheds or landscapes via strategic planning.

Resource professionals also have discretionary capacity related to the use of science in decision-making, a point not raised by Lipsky (1980). The Forest Service historically has emphasized scientific approaches to resource management, relying on the training and professional judgment of highly qualified foresters (Kaufman, 1960). More recently, planning rules and agency regulations that implement NEPA have emphasized the use of the "best available science" to inform the development of decision alternatives, which remains a critical element in the recently-proposed Forest Service planning rule (USDA Forest Service, 2011b). However, study subjects discussed how limited capacity prevented the collection of empirical evidence about each unique problem considered. In the absence of site-specific scientific facts, informal assessments based on data from similar cases elsewhere or professional experience sometimes informed decisions. Additionally, informants acknowledged that when available, science could be subjectively interpreted and was often uncertain. These factors expand the discretion available to participants in the deliberation process as well as the team leader and line officer. While more and better science may reduce uncertainty and limit discretionary capacity, given the complexity of the issues faced, this simply may not be sufficient. Moreover, given funding trajectories, the agency's capacity for generating site-specific scientific data is limited. A database of science-based decision models, case studies, and best-practices could guide specific site decisions and may help resource managers develop solutions that suit local conditions.

Another factor not directly addressed in the literature, which seemed to expand discretion in the decision-making process, is the use of multi-disciplinary versus interdisciplinary approaches. Many of the ID teams discussed by informants appeared to adopt the former, which has implications for the decision outcome. ID teams typically are comprised of a diverse group of subject matter specialists (Cerveny et al., 2011b; Garcia, 1989), yet team diversity alone does not ensure a truly interdisciplinary approach. Informants mentioned that specialists often worked in isolation and that ID teams often did not engage all team members to review and comment upon findings and options. A multi-disciplinary approach may impede the ability to conduct integrated problem framing or decision alternatives selection (Freeman et al., 2011). In addition, when you have a team with resource specialists working separately to evaluate project effects on "their resource," there is an expansion of discretionary capacity for these specialists to influence the process (Stern et al., 2010). New decision tools and frameworks may be needed to help ID teams adopt and maintain integrated approaches throughout the duration of problem identification, framing and deliberation (Clark and Stankey, 2006). This also suggests the potential for training for teams to improve their integration skills, which according to study subjects, not all leaders possessed in equal measure.

The personalities and tactics of participants in decision-making, a factor discussed by Lipsky (1980), and the involvement of the team leader and line officer in interdisciplinary processes also influenced the amount of discretion available. Study subjects cited passionate pleas, being proactive, and effective communication as means for team members or leaders to shape a personally desired outcome. Additionally, in cases where the line officers were less involved and less attentive to the material presented, study subjects described how ID team members could insert their personal values into deliberations. In other cases, it was a line officer who effectively used discretion to choose an alternative aligned with his or her beliefs, like the line officer who sought to curtail OHV use on his district. Our findings, along with recent conclusions about the influence of collaboration styles and empowerment on the perception of successful outcomes (Stern and Predmore, 2011; Stern et al., 2010) indicate that directing additional attention to ID team interactions may lead to better results (Stern et al., 2009).

Finally, a recurrent topic throughout the interviews was the lack of resources, both budgetary and personnel, necessary to adequately address recreation and riparian problems, which contributed to expanded discretionary capacity. In the Forest Service, requirements to comply with NEPA have extended the duration and complexity of decision-making, further complicating the situation. Additionally, regulatory requirements necessitate involvement from outside agencies like U.S. Fish and Wildlife to comply with changing rules about threatened and endangered species. As Lipsky (1980) notes, employing discretion can facilitate actions in resource-constrained agencies. Resource specialists and rangers, like other street-level bureaucrats, demonstrate the desire to cope with capacity constraints and regulatory requirements by taking concrete actions to address a problem in a way that is consistent with perceived priorities, like moving the giant boulder to prevent OHV riders from accessing the stream. New efforts are being made to streamline NEPA assessments to improve efficiency and reduce redundancy, thus potentially lifting some of the planning burden which may reduce the reliance on these coping strategies.

We have briefly discussed possible solutions to potential problems associated with discretionary capacity in Forest Service decision-making about riparian and recreation issues. Managing recreation represents a quintessential wicked problem, one that is inherently messy due to the lack of a clear problem statement, multiple and competing objectives, fragmented stakeholders, a high degree of uncertainty, variability in risk, and no obvious solution (Shindler and Cramer, 1999). Salwassar (2004) discusses a decision analysis method that may be a way to integrate values and acknowledge uncertainty. Rather than focus on science to solve wicked problems, what might be useful is a structured decision analysis method that carefully diagnoses the problem and systematically identifies various elements that make it complex, such as competing stakeholder values, differential trade-offs, risks, uncertainties, as well as awareness of how the problem interacts with broader ecological and socioeconomic systems. One of the key

benefits of this approach is that the competing values and interests along with risks and uncertainties become transparent and may be treated as social facts, rather than swept under the rug. A decision analysis method like that proposed by Salwassar can be adapted to NEPA assessments and forest planning processes and applied to less formal processes as well. This method could integrate the solutions proposed above, like strategic planning at smaller scales and the database of solutions and case studies. In doing so, there is potential to reduce points in the process when discretionary capacity may be expanded and when values may influence decisions.

7. Conclusion

Forest Service personnel require some level of discretion in order to fairly and adequately provide access to public natural resources and to manage public lands. However, recognition of values as a factor in decisions made about recreational activities on the forest studied, particularly in riparian areas, suggests that additional consideration be given to the degree and form of discretion that resource managers have and its implications on the public. Given the exploratory nature of this study, which does not allow for generalization to a larger population, further research is needed to understand patterns in discretionary action among "street-level resource managers," and the extent to which personal values shape resource decisions. If the results are validated, the agency might want to consider the possibility of revisiting the current planning and decision-making processes employed so that personal values have less opportunity to inform outcomes while discretion remains to adapt actions to local contexts.

This is in contrast to the instinct to "tighten up" the deliberative process to further reduce discretionary capacity of professional staff engaged in resource management. This response might be counterproductive and costly, in terms of budget and time needed to monitor, without adding significant value to the quality and fairness of decisions reached. The results from this study and related work on wicked problems suggest a way to start working toward this objective, by recognizing the complexity of the riparian recreation management problems the Forest Service is trying to solve and developing processes better suited to them. As our informants pointed out, values play some role in nearly every action or decision. An approach that identifies and incorporates values early in the process, so they can be factored in objectively and discussed openly, without speculation about their role, may allow fruitful deliberation and encourage creative alternatives and solutions.

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